

# MASTOLOGY

*Official Journal of the Brazilian Society of Mastology*

Volume 31, Supplement 1, 2021

ISSN 2594-5394



**Abstracts from the Brazilian Breast  
Cancer Symposium - BBCS 2021**

 **Sociedade Brasileira de  
Mastologia**

# MASTOLOGY

*Official Journal of the Brazilian Society of Mastology*

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Volume 31, Supplement 1, 2021

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Mastology is a publication of the Brazilian Society of Mastology. The responsibility for concepts emitted in the articles is exclusive of its authors

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## OBITUÁRIO

O Professor Benedito Borges da Silva, MD, PhD, mastologista, foi Professor Titular do Departamento Materno Infantil da Universidade Federal do Piauí, ícone da pesquisa e ensino em Mastologia, pesquisador do CNPQ, membro fundador da Academia de Ciências do Piauí, publicou mais de 130 trabalhos indexados, além de capítulos de livros, resumos em congressos e orientações de trabalhos científicos. Faleceu em setembro de 2021.

# Contents

## EDITORIAL

- 1 CONTINUITY OF TEACHING AND ASSISTANCE ACTIVITIES FOR BREAST CANCER SPECIALISTS DURING THE PANDEMIC**  
Gil Facina

## DETECTION / DIAGNOSIS

### AXILLARY NODES

- 2 ANALYSIS OF MALIGNITY RATES OF PERCUTANEOUS BIOPSY IN LYMPH NODES OF BREAST CANCER PATIENTS**  
Marina Diogenes Teixeira, Maria Isabela Bloise Alves Caldas Sawada, Anna Lya Menezes Martins, Andre Mattar, Luiz Henrique Gebrim
- 3 OCCULT PRIMARY TRIPLE NEGATIVE BREAST CANCER IN AN ELDERLY PATIENT: CASE REPORT**  
Anna Carolina Pereira Jacome, Ingrid Bernucci Neto, Patrícia Aguiar Bellini, Luciana Carvalho Horta, Bruno Henrique Jacome Alvarenga
- 4 CAN AXILLARY ULTRASONOGRAPHY WITH CORE NEEDLE BIOPSY BE A USEFUL TOOL IN THE APPROACH OF BREAST CANCER PATIENTS?**  
Marcelo Ribeiro da Luz Cruz, Valeria Fernandes Roppa Cruz, Alfredo Almeida Cunha, Renato Souza Bravo
- 5 AVERAGE SURVIVAL OF PATIENTS TREATED ON STAGE I AND CLINICALLY NO BREAST CANCER, FROM JANUARY 2010 TO DECEMBER 2019 SUBMITTED TO AXILLARY LYMPHONODECTOMY OR SENTINEL LYMPH NODE**  
Anna Lya Menezes Martins, André Mattar, Felipe Andreotta Cavagna, Luiz Henrique Gebrim

### BREAST LESION

- 6 IMPACT OF COVID-19 ON BREAST CANCER TUMOR SIZE AT DIAGNOSIS**  
Andrei Alves de Queiroz, Gustavo Machado Badan, Marilucia Batina Fernandes Moreira, Amanda Neves Machado
- 7 SQUAMOUS CELL CARCINOMA METASTASIS OF THE MAMMARY GLAND: CASE REPORT**  
Marcelo Moreno, Amauri de Oliveira, Tália Cássia Boff, Gabriela Nogueira Matschinski, Izadora Czarnobai
- 8 RELATIONSHIP BETWEEN IMMUNOHISTOCHEMICAL CHARACTERIZATION AND FORM OF DIAGNOSIS OF BREAST CANCER**  
Andre Moreno, Kimberly Masiero Cola, Larissa Heberle, Marcelo Moreno
- 9 THE IMPORTANCE OF INTEGRATED AND RESOLUTIVE CARE TO REDUCE THE TIME TO START TREATMENT IN 8,357 BREAST CANCER PATIENTS TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS) AT A WOMEN'S HEALTH REFERENCE CENTER (CRSM).**  
Igor Duarte de Oliveira, Jorge Yoshinori Shida, André Mattar, Silvana Maria Graziani, Luiz Henrique Gebrim
- 10 UNSUAL BEHAVIOR OF COLLOID BREAST CARCINOMA: CASE REPORT**  
Anna Carolina Pereira Jacome, Alice Morais de Castro Silva, Daniela Beggiato Correa, Ingrid Bernucci Neto, Patrícia Aguiar Bellini
- 11 LYMPHOCYTIC MASTOPHATY PRECEDING BILATERAL PRIMARY BREAST LYMPHOMA – CASE REPORT**  
Jéssica Moreira Cavalcante, Mauro Henrique Muniz Goursand, Douglas de Miranda Pires, Paula Clarke, Fernanda Silveira de Oliveira
- 12 STUDY OF MORPHOLOGICAL AND ANGIOGENIC FEATURES OF TRIPLE NEGATIVE TUMORS BY ULTRASONOGRAPHY**  
Felipe Cordeiro Fonseca, Eduardo Carvalho Pessoa, Carla Priscila Kamyia Pessoa, Benedito Sousa Almeida Filho, Heloisa Maria De Luca Vespoli
- 13 ANALYSIS OF THE EFFECTIVENESS OF MAMMOGRAPHIC SCREENING IN A PINK OCTOBER CAMPAING**  
Fernando Vivian, Daniela Boeira, Bruna Kikuchi Sacchielle, Gabriela Grechi Carrard, Luiza Herdy Boechat Luz Tiago
- 14 ADENOID CYSTIC CARCINOMA OF THE BREAST**  
Sheila Alhana Pratt, Valeria Sanabria, Ana Soskin, Aurora Rocio Rizzi, Marcos Cabrera

### IMAGING AND SCREENING

- 15 ANALYSIS AND CORRELATION OF IMAGING FINDINGS WITH THE ANATOMOPATHOLOGICAL STUDY OF BI-RADS 4A LESIONS**  
Thais Bianco, Renata Drizlionoks, Gabrielle Fernandes de Paula Castanho, Gabriel Lucca de Oliveira Salvador, Maria Helena Louveira

**16 THE CORRELATION BETWEEN ULTRASSONOGRAFIC PREDICTORS, LOBAR ANATOMY AND TUMOR BIOLOGY**  
Dênia Reis de Paula, Benedito de Sousa Almeida Filho, Carla Priscila Kamiya Carvalho Pessoa, Heloisa Maria De Luca Vespoli, Eduardo Carvalho Pessoa

**17 EXPERIENCE WITH CONTRAST-ENHANCED MAMMOGRAPHY: BREAST CANCER DETECTION IN PATIENTS REFERRED TO PERCUTANEOUS BIOPSIES**  
Laila Feld Feld, Valeska Davi Caldoncelli de Andrade, Vania Ravizzini Manoel Sondermann, Rosana de Castro Ribeiro dos Santos, Henrique Alberto Pasqualette

## **PATHOLOGY**

**18 METASTATIC THYMOMA OF THE BREAST – CASE REPORT**  
Anna Dias Salvador, Gabriela Ramos Alves, Enaldo Melo Lima, Bernardo Ferreira Paula Ricardo, Henrique Moraes Salvador Silva

**19 DERMATOFIBROSARCOMA PROTUBERANS ON THE BREAST: A CASE REPORTED AND DISCUSSION ABOUT THE STEPS FOR YOUR DIAGNOSIS**  
Fernanda Mabel Batista Aquino, Larissa Santos Lourenço Ferreira, Jader Rodrigues Gonçalves, Clarissa Amaral Abreu, Maria Isabel Oliveira Silva

**20 STANDARDIZATION OF THE LABORATORY RESEARCH PROTOCOL AND ANATOMOPATHOLOGICAL DIAGNOSIS OF BREAST GRANULOMATOUS INJURIES**  
Daniella Serafin Couto Vieira, Bráulio Leal Fernandes, Érica Elaine Traebert Simezo, Amanda Amaro Pereira, Mara Scheffer

**21 VALIDATION OF IMMUNOPHENOTYPING BY FLOW CYTOMETRY IN THE INVESTIGATION OF DIAGNOSTIC AND PROGNOSTIC MARKERS FOR BREAST CANCER**  
Daniella Serafin Couto Vieira, Sandro Wopereis, Laura Otto Walter, Maria Claudia Santos da Silva

**22 BREAST CRYPTOCOCCOSIS IN IMMUNOCOMPETENT PATIENTS**  
Mariana Fiori, Carlos Marino Cabral Calvano Filho, Pollyanna Dornelas Pereira, Marco Vinícius Fernandes, Daniela Omar de Souza

## **DETECTION / DIAGNOSIS – OTHER**

**23 PYODERMA GANGRENOSUM AFTER LUMPECTOMY AND MAMMOPLASTY RESPONDS TO THE USE OF ANTI-TNF MONOCLONAL ANTIBODY**  
Rebeca Neves Heinzen, Liliane Raupp Gomes Pizzato, Evandro Luiz Mitri Parente, Ivanio Alves Pereira, Adriana Magalhães De Oliveira Freitas

**24 EVALUATION OF AGE GROUP OF 11,323 BREAST CANCER PATIENTS TREATED FROM JANUARY 2011 TO DECEMBER 2019 AT PEROLA BYINGTON HOSPITAL**  
Priscilla Maquinêz Veloso, Jorge Yoshinori Shida, Luiz Henrique Gebrim, André Mattar

**25 ACCURACY OF STEREOTACTIC VACCUM-ASSISTED BREAST BIOPSY FOR INVESTIGATING SUSPICIOUS CALCIFICATIONS IN 2,021 PATIENTS AT A PUBLIC HOSPITAL IN BRAZIL**  
Andressa Amorim, Marcellus N. M. Ramos, Andre Mattar, Maria Isabela B. A. C. Sawada, Luiz Henrique Gebrim

**26 VACUUM ASSISTED BIOPSY FOR BREAST CARCINOMA DIAGNOSIS: COST MINIMIZATION ANALYSIS**  
Andre Mattar, Andressa Amorim, Maria Isabela B. A. C. Sawada, Jorge Shida, Luiz Henrique Gebrim

**27 VOLUMETRIC EVALUATION OF UPPER LIMB FOR THE BREAST CANCER ASSOCIATED LYMPHEDEMA**  
Fabiola Cristina Brandini Silva, Almir José Sarri, Jonathas José Silva, Idam Oliveira-Junior, René Aloisio Costa Vieira

## **EPIDEMIOLOGY, RISK, AND PREVENTION**

### **EPIDEMIOLOGY**

**28 LOBULAR BREAST CARCINOMA: THE RISK FOR CONTRALATERAL BREAST IS NOT PERMANENT**  
Andrei Alves de Queiroz, Debora Garcia y Narvaiza, Ana Maria Kemp, Gisele Tolaini Gomes Pereira, Vanessa Ribeiro Lopes

**29 EXPERIENCES IN THE MASTOLOGY SERVICE OF A BRAZILIAN HOSPITAL DURING THE COVID-19 PANDEMIC**  
Penelope Santos e Lacerda, Luciana Jandre Boechat Alves, Carolina da Cunha Silveira Freitas, Saulo Bandeira Dias, Tania da Rocha Santos

**30 BREAST CANCER IN WOMEN: CHARACTERIZATION OF CASES INCLUDED IN THE HOSPITAL-BASED CANCER REGISTRY OF THE STATE OF SÃO PAULO AND FACTORS ASSOCIATED WITH ADVANCED STAGES**  
Raissa Janine de Almeida, Arthur Felipe Decker, Carolina Terra de Moraes Luizaga, Cristiane Murta-Nascimento

**31 SURVIVAL AND PROGNOSTIC FACTORS OF BREAST CANCER IN WOMEN IN THE STATE OF SÃO PAULO**  
Raissa Janine de Almeida, Carolina Terra de Moraes Luizaga, Cristiane Murta-Nascimento

- 32 THE EFFECT OF THE COVID-19 PANDEMIC ON BREAST CANCER STAGES**  
Andrei Alves de Queiroz, Ana Maria Kemp, Vanessa Ribeiro Lopes, Debora Garcia y Narvaiza
- 33 EPIDEMIOLOGIC PROFILE OF MEN HOSPITALIZED WITH BREAST CANCER IN BRAZIL**  
Gabriel Fiorio Grando, Juliano Peixoto Bastos
- 34 AVERAGE SURVIVAL ACCORDING TO THE CLINICAL STAGE IN 10,532 PATIENTS WITH BREAST CANCER TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS) FROM JANUARY 2011 TO DECEMBER 2019 AT PÉROLA BYINGTON HOSPITAL**  
Tayana Moreira Faria, Felipe Andreotta Cavagna, André Mattar, Jorge Yoshinori Shida, Luiz Henrique Gebrim
- 35 INITIAL CLINICAL STAGING AND INCIDENCE OF MOLECULAR SUBTYPE IN BREAST CANCER PATIENTS TREATED FROM JAN/2011 TO DEC/2019 AT PÉROLA BYINGTON HOSPITAL**  
Mauro Orlando Meurer Oliveira, Jorge Yoshinori Shida, André Mattar, Felipe Andreotta Cavagna, Luiz Henrique Gebrim
- 36 FEMALE MORTALITY FROM BREAST CANCER IN THE STATE OF PARÁ BETWEEN 2015 AND 2019**  
José Wilker Gomes de Castro Júnior, José Pedro da Silva Sousa, Beatriz Siems Tholius, Anna Luiza Alves de Oliveira Miranda, Érika Maria Carmona Keuffer Cavalleiro de Macedo
- 37 LOCAL RECURRENCE AND 5-YEAR SURVIVAL AFTER CONSERVATIVE SURGERY IN STAGES I AND II IN PATIENTS WITH BREAST CANCER TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM FROM JANUARY 2011 TO DECEMBER 2019 AT PÉROLA BYINGTON HOSPITAL**  
Karoline de Oliveira Senna Conceição, Jonas Sarro, Felipe Cavagna, Jorge Shida, Luis Henrique Gebrim

#### **FAMILIAL BREAST CANCER**

- 38 ANALYSIS OF PATHOGENIC AND UNCERTAIN SIGNIFICANCE VARIANTS IN NINE GENES OF THE BRCA1-MEDIATED HOMOLOGOUS RECOMBINATION PATHWAY IN PATIENTS WITH SUSPECTED HEREDITARY BREAST AND OVARIAN CANCER SYNDROME IN CENTRAL BRAZIL.**  
Rebeca Mota Goveia, Paula Francinete Faustino Silva, Thais Bomfim Teixeira, Isabela Gasparini Arraes, Ruffo Freitas-Júnior, Elisângela Paula Silveira-Lacerda

#### **RISK FACTORS AND MODELING**

- 39 BLOOD PRESSURE LEVELS AND RISK FOR BREAST NEOPLASIAS**  
André Chaves Calabria, Inara Regina Frühauf
- 40 PALPEBRAL METASTASIS 11 YEARS AFTER DIAGNOSIS OF DUCTAL BREAST CARCINOMA**  
André Chaves Calabria
- 41 EVALUATION OF METABOLIC SYNDROME AND OBESITY IN WOMEN WITH BREAST CANCER TREATED IN A SERVICE WITH INTERDISCIPLINARY ATTENTION. A PROSPECTIVE COHORT**  
Vanildo Prado, Daniel Araújo Brito Buttros, Eduardo Carvalho Pessoa, Heloísa Maria Lucca Vespoli, Eliana Aguiar Petri Nahás
- 42 ASSOCIATION OF KI-67 VALUES AND PROGNOSTIC FACTORS IN BREAST CANCER**  
Maria Fernanda de Anhaia Arrieira, Fabio Postiglione Mansani, Mario Rodrigues Montemor Netto, Marina Besati Bertucci, Ruffo Freitas Junior

#### **EPIDEMIOLOGY, RISK, AND PREVENTION – OTHER**

- 43 CROSS-SECTIONAL ANALYSIS OF CLINICAL AND MORPHOLOGICAL FACTORS OF BREAST CANCER IMMUNOPHENOTYPES: A COMPARATIVE STUDY OF TWO DIFFERENT METHODOLOGIES OVER A 24-YEAR HISTORICAL SERIES**  
Daniella Serafin Couto Vieira, Laura Otto Walter, Ana Carolina Rabello de Moraes, João Pércles da Silva Jr, Maria Cláudia Santos-Silva
- 44 BRAZILIAN OUTLOOK OF BREAST CANCER MORTALITY IN VALIDITY OF MAMMOGRAPHIC SCREENING - A TIME REVIEW**  
Letícia Passos Souza, Sabrina Santos Alves, Ícaro García Viana
- 45 A MULTICENTRIC STUDY ON BREAST CANCER IN ULTRA YOUNG WOMEN: I – A CLINICAL AND EPIDEMIOLOGIC PICTURE**  
Adriana Akemi Yoshimura, André Mattar, Bruna S. Mota, Carlos Elias Fristachi, Eduardo Carvalho Pessoa, Felipe Eduardo Andrade, Giuliano Tosello, Heloísa Maria De Luca Vespoli, Idam de Oliveira Junior, João Bosco Ramos Borges, José Roberto Filassi, Luiz Henrique Gebrim, Marina Filie Haddad Piccinilli, René Aloisio Costa Vieira, Vicente Tarriconi Junior, Alfredo Carlos Simões Dornellas de Barros



## TUMOR CELL, MOLECULAR BIOLOGY, PREDICTIVE AND PROGNOSTIC FACTORS

### BIOMARKERS

- 46 ASSOCIATION BETWEEN GATA3 AND PATHOLOGICAL AND IMMUNOHISTOCHEMICAL PREDICTIVE AND PROGNOSTIC PARAMETERS IN EARLY BREAST CANCER**  
Priscila M. Souza, Filomena M. Carvalho, Fernando N. Aguiar, Débora Gagliato, Alfredo C. S. D. Barros,
- 47 IMMUNOHISTOCHEMICAL PROFILE STRATIFIED IN AGE RANGE IN 11,326 PATIENTS FROM THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS) IN SÃO PAULO**  
Catharine Coelho Santos, Camila Santos Farabotti, Pedro Santos Gomes, Luiz Henrique Gebrim, André Santos Mattar
- 48 ESTROGEN RECEPTOR  $\beta$  AND AS A POSSIBLE BIOMARKER OF TAMOXIFEN RESISTANCE**  
Martina Lichtenfels, Gilberto Schwartsmann, Stefan Wiemann

### GENETICS

- 49 PREVALENCE OF VARIANTS OF UNCERTAIN SIGNIFICANCE IN TESTS REQUESTED FOR BREAST CANCER PATIENTS IN A PRIVATE SERVICE**  
Rebeca Neves Heinzen, Maria Eduarda Meyer, Liliane Raupp Gomes Pizzato, Adriana Magalhães de Oliveira Freitas
- 50 EXPRESSION OF miRNAs SUGGESTS A POTENTIAL ROLE IN BREAST CANCER**  
Tamyres MIngorage Carvalho, Tayana Schultz Jukoski, Guillermo Ortiz Brasil, Flavia Kuroda, Enilze M. S. F. Ribeiro
- 51 IN SILICO AND PROTEOMICS APPROACHES SUGGEST UPREGULATION OF miR-146a-5p IN TNBC AND MODULATION OF CRITICAL PROTEINS**  
Tayana Schultz Jukoski, Talita Helen B. Gomig, Tamyres MIngorage Carvalho, Cicero Andrade Urban, Enilze Maria Souza Fonseca Ribeiro
- 52 TLNC-UC.147, A NOVEL LONG RNA (lncRNA) FROM AN ULTRACONSERVED REGION AS POTENTIAL BIOMARKER IN LUMINAL A BREAST CANCER**  
Erika Pereira Zambalde, Ana Carolina Rodrigues, Rubens Silveira Lima, Enilze Maria Souza Fonseca Ribeiro, Jaqueline Carvalho Oliveira

### PREDICTIVE BIOMARKERS

- 53 ANALYSIS OF CD80 AND CD86-EXPRESSING B LYMPHOCYTE LEVELS IN THE BLOOD OF WOMEN WITH LOCALLY ADVANCED TRIPLE NEGATIVE BREAST CANCER**  
Amanda Forte Mendes Tejo Salgado
- 54 PREDICTIVE VARIABLES OF PATHOLOGIC COMPLETE RESPONSE (PCR) IN INVASIVE DUCTAL CARCINOMA**  
Iris Rabinovich, Isabela Chaves Monteiro Soares, Julia Mizrahi Jakobson, Eduardo Milleo Kac, Bruno Luiz Zonta

### PROGNOSIS FACTORS

- 55 RECURRENCE PROFILE AND PROGNOSIS IN A NEGATIVE SENTINEL LYMPH NODE BREAST CANCER PATIENTS COHORT TREATED AT HOSPITAL DO SERVIDOR ESTADUAL DE SÃO PAULO**  
Raissa Naiara Alves Barros Vasconcelos, Marcelo Antonini, Samira Marcondes Cabral, Mariana Soares Cardoso, Matheus de Paula Solino

### TUMOR CELL, MOLECULAR BIOLOGY, PREDICTIVE AND PROGNOSTIC FACTORS - OTHER

- 56 5-YEAR SURVIVAL ACCORDING TO THE MOLECULAR SUBTYPE OF 9,516 BREAST CANCER PATIENTS TREATED IN A REFERENCE CENTER**  
Nathália Karina Abreu, Bruno Neto Martins Aguiar, André Mattar, Jorge Yoshinori Shida, Luiz Henrique Gebrim
- 57 COMPLETE PATHOLOGICAL RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY IN BREAST CANCER PATIENTS: ANALYSIS OF 83 PATIENTS TREATED AT A FEDERAL PUBLIC SERVICE**  
Maria Gabriela Ferreira Silva, Isabella Cristina Santos Soares, Flávia Pinto Cardozo, Flávia Maria Souza Clímaco, Aguinaldo Ferreira Leite Filho
- 58 TIN VITRO BREAST CANCER CHEMORESISTANCE TEST**  
Martina Lichtenfels, Camila Alves Silva, Caroline Brunetto Farias, Alessandra Borba Anton Souza, Antônio Luiz Frasson
- 59 CORRELATION OF CLINICAL-PATHOLOGICAL VARIABLES WITH THE PATHOLOGIC COMPLETE RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY IN TRIPLE-NEGATIVE BREAST CANCER**  
Gilandira Ivanda Da Costa Soares, Josmara Ximenes Andrade Furtado
- 60 IMPACT OF LOCAL RECURRENCE ON PATIENTS WITH BREAST CANCER DIAGNOSIS SUBMITTED TO CONSERVATIVE SURGERY AT HOSPITAL PÚBLICO DO SERVIDOR ESTADUAL**  
Samira Marcondes Cabral, Marcelo Antonini, Raissa Naiara Barros Vasconcelos, Mariana Soares Cardoso, Matheus de Paula Solino

**61 CORRELATION BETWEEN THE PRESENCE OF ANDROGENIC RECEPTORS AND MOLECULAR AND HISTOPATHOLOGICAL VARIABLES IN BREAST CANCER**

Beatriz Baaklini Geronymo, Filomena Marino Carvalho, Adriana Akemi Yoshimura, Juliana Zabukas de Andrade, Danúbia Ariana de Andrade, Alfredo Carlos Simões Dornellas de Barros

**62 A MULTICENTRIC STUDY ON BREAST CANCER IN ULTRA YOUNG WOMEN: II – HISTOPATHOLOGIC AND MOLECULAR DATA**

Adriana Akemi Yoshimura, André Mattar, Bruna S. Mota, Carlos Elias Fristachi, Eduardo Carvalho Pessoa, Felipe Eduardo Andrade, Giuliano Tosello, Heloísa Maria De Luca Vespoli, Idam de Oliveira Junior, João Bosco Ramos Borges, José Roberto Filassi, Luiz Henrique Gebrim, Marina Filie Haddad Piccinilli, René Aloisio Costa Vieira, Vicente Tarriconi Junior, Alfredo Carlos Simões Dornellas de Barros

## TREATMENT

### DCIS

**63 CLINICAL, IMAGING AND THERAPEUTIC CHARACTERISTICS OF 332 PATIENTS WITH DUCTAL CARCINOMA IN SITU (DCIS): A SINGLE-CENTER ANALYSIS**

Marcellus Nascimento Moreira Ramos, Andressa Gonçalves Amorim, Andre Mattar, Luis Henrique Gebrim, Mariana Dinau Leal Passos

**64 NIPPLE-SPARING MASTECTOMY WITH IMMEDIATE IMPLANT-BASED RECONSTRUCTION FOR PATIENTS WITH PURE DUCTAL CARCINOMA IN SITU**

Antônio Luiz Frasson, Ana Beatriz Falcone, Isabela Miranda, Betina Vollbrecht, Mônica Adriana Rodriguez Martinez Frasson

### SURGERY AND RECONSTRUCTION

**65 SIZE OF METASTATIC INFILTRATION IN THE SENTINEL NODE AS A PREDICTOR OF NON-SENTINEL NODES INVOLVEMENT**

Danúbia Ariana de Andrade, Filomena Marino Carvalho, Fernando Nalesso Aguiar, Alfredo Luiz Jacomo, Alfredo Carlos Simões Dornellas de Barros

**66 TYPES OF SURGERY AND BREAST RECONSTRUCTIONS PERFORMED ON PATIENTS TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM AT PÉROLA BYINGTON HOSPITAL**

Renata Borges Aquino, Luiz Henrique Gebrim, Andre Mattar, Jorge Yoshinori Shida

**67 BREAST-CONSERVING SURGERY AFTER NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH STAGE II AND III TREATED IN THE PUBLIC HEALTH SYSTEM**

Marina Diogenes Teixeira, Felipe Andreotta Cavagna, Jorge Yoshinori Shida, Andre Mattar, Luiz Henrique Gebrim

**68 RELATIONSHIP BETWEEN BODY MASS INDEX (BMI) AND SURGICAL COMPLICATIONS AFTER BREAST ONCOLOGICAL SURGERY**

Juliana Ferreira de Lima, Rebecca Correia de Oliveira, Antônio Carlos Toshihiro Nisida, Ricardo Faure, Luis Henrique Gebrim

**69 THE USE OF BREAST MOLDS IN PREOPERATIVE MARKINGS FOR ONCOPLASTIC SURGERIES**

Emmanuel Filizola Cavalcante, Nathaniel dos Santos Sousa, Paulo Victor Almeida Miguel, Luiz Gonzaga Porto Pinheiro, Karla Sorandra Rodrigues Oliveira

**70 RECONSTRUCTION OF THE THORACIC WALL WITH EPIPLOON AND DERMO-CUT ABDOMINAL LOWER NEO FLAP IN BREAST ANGIOSARCOMA - CASE REPORT**

Maria Eduarda Bernardino Martins Melo, Darley de Lima Ferreira, Irnanda Layanna Gomes Oliveira, Julia Cavalcanti dos Santos Carneiro, Gabriela Prado Lopes

**71 EVALUATION OF IMMEDIATE AND LATE COMPLICATIONS IN BREAST RECONSTRUCTION WITH IMPLANTS IN PATIENTS WITH BREAST CANCER TREATED IN A TERTIARY SERVICE IN CEARÁ**

Aline Carvalho Rocha, Lays Samara da Costa Silva e Silva, Gina Zully Carhuancho Flores, Cristina Poliana Rolim Saraiva dos Santos, Gabriela Carvalho Pinheiro

**72 HEREDITARY MULTIPLE EXOSTOSIS: THE ROLE OF THE MASTOLOGIST IN AN INTERDISCIPLINARY APPROACH**

Gláucia Mesquita Cordeiro, Katrine Evelen Carole Silva Sousa Caçado, Nilo Antunes Souza Filho, Jessica Mendes Costa Freitas Santos, José Pereira Guara

**73 THORACIC DUCT INJURY AFTER MASTECTOMY - CASE REPORT AND LITERATURE REVIEW**

Juliana Ferreira de Lima, Bruna Anderson, Antônio Carlos Toshihiro Nisida, Fabiano Cataldi Engel, Luiz Henrique Gebrim

- 74 IS NIPPLE-SPARING MASTECTOMY AN OPTION FOR PATIENTS WITH IPSILATERAL BREAST CANCER RECURRENCE?**  
Antônio Luiz Frasson, Martina Lichtenfels, Fernanda Barbosa, Alessandra Borba Souza, Carolina Malhone
- 75 3D TATTOO OF THE NIPPLE-AREOLA COMPLEX AS A COMPLETION OF BREAST RECONSTRUCTION: CASE REPORT**  
Paula Clarke, Douglas de Miranda Pires, Jéssica Moreira Cavalcante
- 76 USE OF LATERAL INTERCOSTAL PERFURATED FLAPS (LICAP) IN TUMORS OF THE UPPER EXTERNAL QUADRANT OF THE BREAST**  
María Laura Ramos Pérez, Carlos Ricardo Chagas, Fernando de Carvalho, Martín Falla Jimenez

## **MALE BREAST CANCER**

- 77 MALE BILATERAL BREAST CANCER: CASE REPORT**  
Maria Eduarda Bernardino Martins Melo, Gabriela Prado Lopes, Darley Lima Ferreira Filho, Irnanda Layanna Gomes Oliveira, Maria Eduarda Vasconcelos Florêncio Cavalcanti
- 78 POROCARCINOMA IN MALE BREAST**  
Lilian de Sá Paz Ramos,, Juliana Almeida Frank, Suzana Imbassahy de Sá Bittencourt Câmara e Silva, Diogo Silva Almeida

## **PREGNANCY-ASSOCIATED BREAST CANCER**

- 79 BREAST CANCER DIAGNOSIS IN PREGNANCY DURING THE COVID-19 PANDEMIC: A CASE REPORT**  
Angelita Kurlle Meneghini, Luiza Machado Kobe, Ana Paula Reginatto Tubiana, Alessandra Borba Anton de Souza, Felipe Pereira Zerwes
- 80 RECURRENT INFILTRATING DUCTAL CARCINOMA IN LEFT MASTECTOMY PLASTRON DURING PREGNANCY: A CASE REPORT**  
Juber Mateus Ellwanger, Caio Bertolini, Samuel Cavalcante Reis, Daniela Takito, Priscila Ribas

## **PHYLLODES TUMORS AND SARCOMAS**

- 81 MALIGNANT PHYLLODES TUMOR IN A 14 YEAR-OLD PATIENT: A CASE REPORT**  
Leonardo Ribeiro Soares, Joana Ermida Spagnol, Flaviane Marques de Assis, Sebastião Alves Pinto, Alexandre Roriz Blumenschein
- 82 DIAGNOSTIC CHALLENGE OF A LOCALLY ADVANCED LESION: CASE REPORT OF PRIMARY BREAST ANGIOSARCOMA**  
Persis Araújo Oliveira, Juliana Campelo Aragão Bitencourt, Lorena Natali Cardoso Fernandes Caldas

## **MASTITIS**

- 83 PUERPERAL MASTITIS COMPLICATED WITH MYIASIS: A CASE REPORT**  
Jan Pawel Andrade Pachnicki, Alice Soares Paes Giugliano Meschino, Fernanda Cristina Kilian, Gabriela Vanim de Moraes, Sarah Oliveira de Lima

## **TREATMENT – OTHER**

- 84 RELAPSING AXILLARY LYMPHANGIOMA IN AN ELDERLY PATIENT: CASE REPORT AND LITERATURE REVIEW**  
Vinicius de Aquino Calasso Correa Gomes, Gil Facina, Simone Elias, Joaquim Teodoro de Araujo Neto
- 85 PLASMOBLASTIC LYMPHOMA WITH MAMMARY MANIFESTATION: A CASE REPORT**  
Rodrigo Quevedo de Lima, Eimi Nascimento Pacheco, Luiz Henrique Santana de Araujo, Cassio Fernando Paganini, Katsuki Arima Tiscoski
- 86 NEOAJUVANT ENDOCRINE THERAPY IN BREAST CANCER: THE FIRST RESULTS OF 59 PATIENTS**  
Paola Ferreira Freitas, Juliana Costa Souza, Andre Mattar, Jorge Yoshinori Shida, Luiz Henrique Gebrim
- 87 PATHOLOGICAL COMPLETE RESPONSE IN 2,141 PATIENTS SUBMITTED TO NEOADJUVANT CHEMOTHERAPY IN A BREAST CANCER REFERENCE CENTER**  
Mayane Freitas Desiderio Silva, Marcela Bonalumi Santos, André Mattar, Jorge Yoshinori Shida, Luiz Henrique Gebrim
- 88 ASSESSMENT OF CHANGES IN BLEEDING PATTERNS AFTER CHEMOTHERAPY IN WOMEN WITH BREAST CANCER USING CONTRACEPTIVES**  
Bruna Luisa Ferraço Lima, Luís Carlos Sakamoto, Sthephanie Avesani João Figueiredo Carneiro, Natália Kathllen Colli Afonso, Luiz Henrique Gebrim

- 89 EFFECT OF THE COVID-19 PANDEMIC IN A MASTOLOGY SERVICE AT A TERTIARY HOSPITAL**  
Alexandre Villela de Freitas, Arnaldo Pereira Cortez Junior, Marília Silva de Souza Takimoto, Vanessa Radavelli de Araujo, Carolina Rosa de Araujo
- 90 A CASE REPORT OF BREAST CANCER TREATMENT IN TRANSGENDER MEN WITH BILATERAL SUBCUTANEOUS MASTECTOMY**  
Mirella Laranjeira Nunes, João Esberard de Vasconcelos Beltrão Neto,, Rossano Robério Fernandes Araújo, Ana Leide Guerra dos Santos, Guilherme Simão dos Santos Figueira
- 91 A MULTICENTRIC STUDY ON BREAST CANCER IN ULTRA YOUNG WOMEN: III – THERAPEUTIC ASPECTS AND ONCOLOGICAL OUTCOMES**  
Adriana Akemi Yoshimura, André Mattar, Bruna S. Mota, Carlos Elias Fristachi, Eduardo Carvalho Pessoa, Felipe Eduardo Andrade, Giuliano Tosello, Heloísa Maria De Luca Vespoli, Idam de Oliveira Junior, João Bosco Ramos Borges, José Roberto Filassi, Luiz Henrique Gebrim, Marina Filie Haddad Piccinilli, René Aloisio Costa Vieira, Vicente Tarriconi Junior, Alfredo Carlos Simões Dornellas de Barros

## **QUALITY OF LIFE AND EDUCATIONAL ASPECTS**

### **QUALITY OF LIFE**

- 92 A PROSPECTIVE EVALUATION OF BREAST SATISFACTION AND EXPECTATION IN PREOPERATIVE BREAST RECONSTRUCTION PATIENTS**  
Flávia Kuroda, Cicero Andrade Urban, Marcelo Paula Loureiro, Mateus Ricardo Ulsan Lourenço, Bernardo Passos Sobreiro
- 93 IMPACT OF THE COVID-19 PANDEMIC ON LIFESTYLE AND ANXIETY LEVELS IN WOMEN WITH BREAST CANCER**  
Alice Aparecida Rodrigues Ferreira Francisco, Jader Brito Ramos da Silva, Lais Moriyama Pereira Lima, Karen W. Wonders, Otavio Augusto Soares Machado

### **SURVIVORSHIP RESEARCH**

- 94 FUNCTIONAL SEQUELAE IN THE LIMBS ASSOCIATED WITH BREAST CANCER. CAN QUALITY OF LIFE QUESTIONNAIRES REPLACE OBJECTIVE CLINICAL MEASUREMENTS?**  
Jonathas José Silva, Fabiola Cristina Brandini Silva, Almir José Sarri, Idam Olivieira-Junior, René Aloisio Costa Vieira

### **QUALITY OF LIFE AND EDUCATIONAL ASPECTS - OTHER**

- 95 INFLUENCE OF PHYSICAL ACTIVITY ON QUALITY OF LIFE OF BREAST CANCER PATIENTS**  
Alexandre Almeida Barra, Ana Silvia Diniz Makluf, Elyonara Mello Figueiredo, Danielle Aparecida Gomes Pereira, Cristóvão Pinheiro Barros

# Continuity of teaching and assistance activities for breast cancer specialists during the pandemic

Gil Facina<sup>1</sup>

Dear friends,

In 2021, the world that had been devastated by the pandemic of the new coronavirus that affected millions of people in all spheres and caused a great socioeconomic impact began to recover with the development of different vaccines for the prevention of coronavirus disease 2019 (COVID-19).

Parallel to this effort by the pharmaceutical industry, doctors committed themselves to the treatment of people affected by this disease, and due to the advance of the pandemic, many patients stopped looking for primary services to perform screening for breast cancer.

It is estimated that in Brazil, there was a decline in mammograms of about 42%, that is, the SUS (Unified Health System) carried out, in 2019, 1.9 million mammograms among patients who aged 50–69 years and performed, in 2020, in the full pandemic, only 1.1 million exams.

Based on this observation, mastologists, together with the Brazilian Society of Mastology, began to guide patients so that they would not stop performing mammographic screening and launched the campaign with the motto The sooner, the better, so that the population becomes aware of the importance of early diagnosis and treatment, in addition to lifestyle changes.

Despite all the difficulties imposed by the pandemic, in April 2021, breast cancer specialists held a great online event, the XXIII Brazilian Congress of Mastology, which was exquisitely organized by the Brazilian Society of Mastology — Regional of Santa Catarina with support from SBM — National.

Countless international and national speakers brightened our event, and dozens of works were presented. The best studies are available in this supplement!

Good reading!

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## AXILLARY NODES

<https://doi.org/10.29289/259453942021V31S1002>

# ANALYSIS OF MALIGNANCY RATES OF PERCUTANEOUS BIOPSY IN LYMPH NODES OF BREAST CANCER PATIENTS

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**Introduction:** The evaluation of regional lymph nodes in patients with breast cancer is one of the main predictive and prognostic factors for treatment. The methods of percutaneous evaluation of suspicious lymph nodes frequently used are fine-needle aspiration (FNA) cytology and core-needle biopsy (CNB). According to the international literature, CNB and FNA are considered diagnostic methods with high specificity (98% vs. 99%). However, the FNA may present up to 21% of inconclusive results by insufficient material. Although CNB is well established as a percutaneous method for diagnostic evaluation of suspected breast lesions, the literature is scarce on the use of this technique for the evaluation of suspicious lymph nodes in breast cancer patients. **Objectives:** Analyze the positivity of FNA and CNB performed in suspicious lymph nodes for breast cancer metastasis according to the anatomical location of biopsies and the type of needle used, verifying which technique was preferred. **Methods:** A retrospective study was conducted by evaluating the database of patients treated in the non-palpable lesions sector of a public hospital in São Paulo. Women submitted to ultrasound-guided percutaneous biopsy of lymph nodes from May 2015 to November 2019 were included in the study. The data were analyzed using IBM-SPSS version 27 and Microsoft EXCEL version 2010. **Results:** A total of 499 biopsies were performed, and the mean age of the women was 54.2 years (SD±11.9) in the CNB group and 53.4 years (SD±11.8) in the FNA group (p=0.619). According to the anatomical location, 385 were axillary (77.2%), 62 supraclavicular (12.4%), 48 cervical (9.6%) and 4 infraclavicular (0.8%). Regarding the type of needle, 393 were CNBs (78.8%) and 106 were FNA (21.2%). When analyzing the results of the FNA, 38 (35.8%) did not present enough material, 31 (29.2%) were positive, 32 (30.2%) were negative and 5 (4.8%) showed atypical cells. Among the 393 CNBs performed, 255 (64.9%) were positive, 132 (33.6%) were negative, 1 (0.3%) showed atypical cells and 5 (1.3%) had no representative material. No complications were reported after the procedures. **Conclusions:** CNB was the preferred diagnostic technique in our service, being considered a feasible procedure to evaluate lymph nodes in different sites and with low rates of inconclusive results due to insufficient material. In the future, studies evaluating indirect costs may confirm the feasibility of CNB in patients with suspicious lymph nodes in terms of obtaining greater agility and resolute conducts in the public healthcare system.

<https://doi.org/10.29289/259453942021V31S1003>

# OCCULT PRIMARY TRIPLE NEGATIVE BREAST CANCER IN AN ELDERLY PATIENT: CASE REPORT

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**Introduction:** Occult primary breast cancer is very rare, accounting for less than 1% of all cases of breast cancer, generally associated with a poor prognosis. It is defined as a clinically recognizable metastatic carcinoma derived from an undetectable primary breast tumor, with metastasis to the axillary and cervical lymph nodes. Clinical and radiological examinations represent the first steps in the diagnosis, followed by a histological and immunohistochemistry (IHC) analysis, as well as a multidisciplinary team evaluation and therapy - essential for diagnosis and treatment. The most common phenotype is a positive hormone-receptor adenocarcinoma for which there is no clear consensus about optimal management, however a standard approach is axillary lymph node (ALN) dissection. Ipsilateral mastectomy, neoadjuvant chemotherapy and radiotherapy are controversial but may be acceptable in selected cases. **Case report:** A 72-year-old woman with a history of colon adenocarcinoma surgically treated, presented with an axillary mass of rapid growth. Upon physical examination, a 5 cm mass in the left axilla and a palpable ipsilateral supraclavicular lymph node (SCLN) were identified, without any evidence of a breast lesion. imaging analysis with bilateral mammography, ultrasonography and breast magnetic resonance imaging showed suspicious axillary and SC adenopathy, both on the left side; no abnormal breast findings. She was submitted to core biopsy and IHC analysis, and an invasive triple negative metastatic breast cancer was diagnosed. The patient underwent neoadjuvant chemotherapy with cyclophosphamide / doxorubicin, evolving with disease progression, so the regimen was modified to carboplatin. There was no response to treatment, with persistent growing of the lesion. Neoadjuvant chemotherapy was interrupted and surgery was performed to resect the ALN and the SCLN. It was a difficult surgery due to the extension of the axillary mass, in conjunction with adherence to the subclavian vein. A histologic analysis confirmed the initial diagnosis of metastatic breast cancer. Surgery was followed by radiotherapy, but disease progression was fast. She manifested a large axillary recurrence and progressed to death 4 months after the beginning of treatment. This case report describes how challenging occult breast cancer can be, specially when associated with an unusual presentation such as a triple negative phenotype and SC adenopathy. At first, the hypothesis of colon metastasis was proposed due to the poor response to chemotherapy. Despite being submitted to the standard approach proposed and supported by literature, the aggressive and rapid progression to death represents an obvious need to discuss other treatment options for occult breast carcinoma with unusual presentations, such as negative hormone-receptor.

<https://doi.org/10.29289/259453942021V31S1004>

# CAN AXILLARY ULTRASONOGRAPHY WITH CORE NEEDLE BIOPSY BE A USEFUL TOOL IN THE APPROACH OF BREAST CANCER PATIENTS?

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**Introduction:** Metastatic involvement of axillary lymph nodes in patients with breast cancer is an important prognostic factor and it also has therapeutic implications. Nevertheless, the use of ultrasound for evaluating axillary lymph node status has been questioned. **Objective:** Evaluate the performance of ultrasound with core needle biopsy in the diagnosis of axillary metastasis. **Patients and Method:** A diagnostic validation study was performed to compare axillary ultrasound with core biopsy versus the surgical procedure. The scenario was a quaternary hospital in Rio de Janeiro where breast cancer patients were treated. The surgical procedure was the gold standard. Performance was assessed by calculating sensitivity, specificity, positive predictive value, negative predictive value, and estimated nodal disease burden. **Result:** Specificity and positive predictive values were 100% for the presence of axillary metastasis. The false negative rate was only 1.69% with a negative predictive value of 98.31% for the involvement of three or more lymph nodes. **Conclusion:** Axillary ultrasound with core needle biopsy shows excellent performance in assessing axillary metastatic impairment in patients with breast cancer, proving to be an effective tool in different clinical contexts.



<https://doi.org/10.29289/259453942021V31S1005>

# AVERAGE SURVIVAL OF PATIENTS TREATED ON STAGE I AND CLINICALLY N0 BREAST CANCER, FROM JANUARY 2010 TO DECEMBER 2019 SUBMITTED TO AXILLARY LYMPHONODECTOMY OR SENTINEL LYMPH NODE

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**Introduction:** Axillary lymph node involvement is an important assessment in breast cancer staging, prognosis and predicts therapeutic specificity. Despite the large proportion of advanced cases in the Public Health System in Brazil, about 67% of our patients are in stages I and II. The absence of reports of survival in Brazil motivated us to carry out this study.

**Objectives:** To retrospectively assess the median survival of 2,170 stage I breast cancer patients who underwent axillary lymph nodes dissection (ALND) compared to those who underwent only sentinel lymph node biopsy (SLNB) using the patent blue technique. **Methods:** This is a cross-sectional, retrospective clinical study, aiming to assess the average survival of patients with stage I breast cancer without clinical lymph node involvement (N0), submitted to ALND after positive SLNB during the surgical procedure or SLNB failure guided by patent blue. 2,170 patients were included in stage I. The study was carried out between January 2010 and December 2019. **Results:** The average number of sentinel lymph nodes was 3.2. In patients in stage I, the mean survival for more than five years was higher in those submitted only to a 98.31% SLNB (n=1228). In those who performed ALND, survival was 94.13% (n=867). In less than five years, longer survival was observed in patients who underwent ALND 5.87% (n = 54). Axillary lymph node dissection was essential in the treatment of breast cancer for many years in the last group. However, high morbidity directly interfered with the patients' quality of life. Therefore, long-term studies introduced SLNB as a standard for axillary evaluation in clinically T1, T2 and N0 patients, noting that patients with negative SLNB and not submitted to ALND showed no difference in axillary recurrence, disease-free survival and overall survival. Our results at Stage I, although the 5-year period is short, overlap with those in the literature. Over the years, surgical axillary staging and management of early breast cancer have evolved, becoming less invasive and more conservative, with imaging exams playing an important role in axillary disease, with the use of improved techniques in an attempt to minimize intervention. **Conclusions:** In view of the data presented, we concluded that the average survival for more than five years was higher in patients who underwent only 98.31% SLNB compared to those who underwent ALND (94.13%).

## BREAST LESION

<https://doi.org/10.29289/259453942021V31S1006>

# IMPACT OF COVID-19 ON BREAST CANCER TUMOR SIZE AT DIAGNOSIS

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**Introduction:** In 2020, COVID-19 affected the whole world, determining a pandemic situation, with recommendations for social isolation and lockdown. In the state of São Paulo, the shutdown of non-essential services was determined on March 22, 2020. Medical appointments and routine imaging exams were postponed and little is known about the impact on screening delay and the diagnosis of neoplasms. Considering that survival and cure of breast cancer are directly related to an early diagnosis, the size of these malignant tumors can be used in researching the delay in breast cancer diagnoses.

**Objectives:** To evaluate the impact of the pandemic on the size of breast cancer in histological diagnosis, as well as on the number of diagnostic procedures performed at our hospital. **Methods:** Through a retrospective, analytical and cross-sectional study, we analyzed data regarding tumors with histological results of malignancy of core needle breast biopsies guided by ultrasound performed at a private hospital in São Paulo between January 1, 2019 and December 31, 2020. The mean tumor sizes were compared to identify differences between pre-pandemic and pandemic periods. The pre-pandemic period (PRE) was established between January 1, 2019 and March 31, 2020, and the pandemic period (PAN) was considered from April 1 to December 31, 2020. Based on the sample size, this study has the power of 80% to detect a variation of 1 cm in the mean tumor size. **Results:** A total of 493 core needle biopsies were identified in 443 patients. A total of 103 (20.1%) biopsies in 94 patients were malignant. In the PAN group, 36 cases of cancer were diagnosed (4 cases/month), while the PRE group diagnosed 67 cases (4.5 cases/month). The mean size of PRE tumors was 1.66 cm, while in PAN tumors it was 2.21, showing a difference of 0.55 cm without statistical significance (95%CI 0.12–1.21;  $p=0.12$ ). When considering staging (TNM – Tumor, Node, Metastases), the stages T1, T2 and T3 had no significant difference among the groups ( $p=0.12$ ). The age at diagnosis of malignant lesions ranged from 30 to 82 years in the PRE period, and from 34 to 85 years in the PAN period. The mean age of patients with malignant lesions diagnosed in PAN was higher than PRE, without statistical significance (59.2 vs 56.0;  $p=0.30$ ). Despite the fewer biopsies performed in both periods, ( $p<0.001$ ), there was no statistical difference in the number of biopsies with malignant results ( $p=0.18$ ), since there were proportionally more diagnoses of malignancy in the PAN period (28.6% vs. 18.3%; RR 1.14; 95%CI 1.01–1.29;  $p=0.02$ ). **Conclusions:** Although the pandemic affected breast cancer screening, no statistically significant increase in the mean size of tumors has been diagnosed in this service so far.

<https://doi.org/10.29289/259453942021V31S1007>

# SQUAMOUS CELL CARCINOMA METASTASIS OF THE MAMMARY GLAND: CASE REPORT

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**Introduction:** Primary squamous cell carcinoma (SCC) of the breast is a rare neoplasm, which represents less than 0.1% of invasive breast cancers. Therefore, it is essential to discriminate between a primary SCC and a metastatic SCC. In order to be considered a primary carcinoma of the breast, a histological examination of the lesion must show more than 90% of squamous neoplastic cells, in addition to the absence of cutaneous SCC or other anatomical sites. Extra-mammary neoplasm metastases are uncommon, representing 0.5% to 2% of breast malignancies. Metastatic SCC in the mammary gland is an uncommon event. To date, only three cases were reported in the literature of secondary involvement of vulvar SCC in the mammary gland. The objective of this work is to report the case of a patient with secondary mammary metastasis to a vulva SCC. **Case report:** A 74-year-old female patient who underwent radical modified vulvectomy 10 years before. Her pathological stage was characterized as IIIB. For this reason, she was also submitted to adjuvant treatment with chemotherapy associated with radiotherapy to the vulvar region, inguinal lymph node chains and pelvic arteries. On the ninth year of cancer follow-up, she presented recurrence in the vaginal wall. In the complementary image exams, an extension of neoplasia to pelvic organs was identified, but no distant metastatic lesions were found. She underwent monobloc resection of pelvic organs, with reconstruction of the urinary and intestinal transits. The patient showed a good clinical evolution, with no pelvic complaints. After one year, the patient returned complaining of a nodule in the right breast. On physical examination, a lesion was observed at the junction of the lateral quadrants of the breast, measuring +/- 3.5 cm, with associated inflammatory signs and imprecise limits, with a central region showing a fistulous orifice through which the necrotic material passed. On the mammography, a dense, rounded and partially delimited lesion was identified. She underwent a core biopsy that described a SCC. According to her clinical history, it was considered a remote relapse of the vulvar SCC. The patient was submitted to a quadrantectomy with an ipsilateral axillary lymphadenectomy and reconstruction with a lateral thoracic flap. On an anatomopathological examination there was a description that the neoplasm would invade the underlying muscle tissue; and the resection margins were free. Four out of the fourteen isolated axillary lymph nodes had metastases, without perinodal soft tissue invasion. Six months after breast surgery, the patient evolved metastases to both lungs and soon after she died without response to the systemic treatment employed. This report was approved by the Research Ethics – UFFS (Universidade Federal da Fronteira Sul) (number 4.034.565).

<https://doi.org/10.29289/259453942021V31S1008>

# RELATIONSHIP BETWEEN IMMUNOHISTOCHEMICAL CHARACTERIZATION AND FORM OF DIAGNOSIS OF BREAST CANCER

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**Introduction:** Breast cancer is the most incident neoplasia among Brazilian women. According to immunogenetic characteristics, it is possible to verify that malignant breast neoplasms with greater biological activity would be those classified as luminary B, HER2+ and triple-negative, and that the one with the lowest biological activity would be the luminal subtype A. Thus, a mammography would be more likely to detect cancers with a low degree of biological characteristics such as “luminal A”. On the other hand, mammary carcinomas with greater potential for systemic dissemination show faster growth in the breast parenchyma and are detected predominantly by self-examination. Knowledge of this difference in the clinical behavior of mammary malignant neoplasms is important for the diagnosis of “interval” breast cancers, that is, breast cancer that appears in the period between the performance of annual screening mammograms. **Objectives:** Verify the relationship between immunohistochemical characterization of malignant breast neoplasms and the finding that motivated the medical consultation, in women with breast cancer and residents of Western Santa Catarina, Brazil. **Methods:** Observational, cross-sectional study, which included women diagnosed with breast cancer and treated at an oncology referral center in the city of Chapecó, state of Santa Catarina, Brazil, from January 2000 to December 2016. Patients that presented medical records whose main complaint was towards the diagnosis of breast cancer were included (example: nodule diagnosed by imaging exams, self-examination, clinical examination). Besides this, the breast injury related to this complaint should have been breast cancer diagnosed by an anatomopathological examination and an immunohistochemistry study. The project was developed in accordance to CEP/UNOCHAPECO no. 1819869. **Results:** Data from 209 patients were analyzed, from which 83 (39.7%) cases of breast cancer were detected by a mammography examination; 115 (55%) cases by breast self-examination and 11 (5.2%) cases by other forms of examination, which included clinical breast examination done by a doctor, magnetic resonance imaging and ultrasound. The luminal A immunohistochemical profile was more prevalent among patients who underwent breast cancer detection through mammography (62.6%). There was a correlation between lymph node invasion and the screening method, in which 78.6% of cancers detected by self-examination showed expansion to lymph nodes, while those detected by mammography presented an invasion rate of 45.7% ( $p=0.002$ ). **Conclusions:** Breast cancer with immunohistochemical characterization, related to greater biological activity, were most often detected by self-examination, while neoplasms with indolent development were diagnosed predominantly by mammography.

<https://doi.org/10.29289/259453942021V31S1009>

# THE IMPORTANCE OF INTEGRATED AND RESOLUTIVE CARE TO REDUCE THE TIME TO START TREATMENT IN 8,357 BREAST CANCER PATIENTS TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS) AT A WOMEN'S HEALTH REFERENCE CENTER (CRSM).

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**Introduction:** In 2021, it is estimated that Brazil will have 66,280 new cases of breast cancer. Unfortunately, around 55% of the cases treated by the Brazilian Unified Health System (SUS) are symptomatic and are in advanced stages. The long time before biopsy and the late start of treatment contribute to the progression of these tumors, with worsening prognosis. In order to reduce the time to start therapy, we implemented a model of integrated multidisciplinary care with high resolution (CARE). **Objectives:** The purpose of this work is to demonstrate the main barriers and the solutions found to reduce the time of treatment start at the institution, according to Law no. 12,732, which recommends the start of therapy within 60 days of diagnosis, preventing the progression of the disease and reducing mortality. **Methods:** The information was registered at the Women's Health Reference Center (CRSM) data collection system from the first day of care until the start of therapy (surgery or chemotherapy), in a cross-sectional cohort of 8,357 patients from January 2011 to December 2018. Patients referred were seen at CARE and underwent consultation with an anesthesiologist or oncologist in the service having a previous appointment to start treatment. **Results:** After the integration of anesthesiologists and clinical oncologists, in 2014, there was a significant reduction (from 55 to 38 days) in the time of treatment start. **Discussion:** CARE started integrated care with biopsy on the same day as the initial consultation in 2006, reducing returns and time to diagnosis from 90 to 15 days. CRSM serves more than 1,200 new cases/year, about 30% of SUS cases in the city of São Paulo (SP). A 12-week surgical delay for all breast cancer patients from one year (for example in the COVID 19 pandemic) would lead to 1,400 excess deaths in the United Kingdom and 6,100 in the United States, assuming surgery was the first choice of treatment for 83% of the patients. **Conclusion:** Our experience shows that the training of mastologists to perform a biopsy in the first consultation, that the public/private partnership to obtain the anatomopathological and immunohistochemical results in 15 days and that a multidisciplinary integrated care is possible, allowing the average onset of treatment to be close to 30 days, which may reduce the proportion of advanced cases in SUS.

<https://doi.org/10.29289/259453942021V31S1010>

# UNUSUAL BEHAVIOR OF COLLOID BREAST CARCINOMA: CASE REPORT

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**Introduction:** Colloid breast carcinoma is a rare variant of invasive ductal carcinoma, representing 1% to 6% of the cases. It is characterized by rich deposition of extracellular mucin upon anatomopathological analysis (AP). In general, it has positive hormone receptors, inclusion in the Luminal A molecular subtype, and an epidemiological profile of older women. Its behavior is usually indolent, associated with a low grade and favourable prognosis. It is unlikely to infiltrate axillary lymph nodes or be associated with metastatic potential. We present a case report of a patient with invasive colloid carcinoma of the breast associated with ductal carcinoma in situ (DCIS) and early axillary recurrence of a colloid pattern, contesting the mild behavior that is the gold standard in the literature. **Case report:** A 63-year-old patient, without relevant risk factors, was admitted due to a palpable nodule in the upper outer quadrant (UOQ) of her left breast (LB). Radiological exams showed a nodular lesion of 15x16x10 mm, heterogeneous and non-circumscribed associated with microcalcifications, with core biopsy showing colloid carcinoma. The axillae were clinically and radiologically negative. She underwent a sentinel lymph node biopsy and lumpectomy. AP results showed invasive colloid carcinoma, grade 2, measuring 1.7 cm, associated with cribriform DCIS occupying 20% of the total area of the neoplasia, free margins and three negative sentinel lymph nodes. Immunohistochemistry was compatible with Luminal A. Treatment with radiotherapy and the use of tamoxifen followed. During follow-up, in July 2020, a physical examination showed thickening in the UOQ and a hardened palpable lymph node on the left. Routine examinations showed a complex nodule compatible with clinical thickening in the UOQ and grouped and heterogeneous microcalcifications in the retroareolar region of the LB, in addition to axillary lymphadenopathy with asymmetric cortical thickening at ipsilateral level I. For better elucidation, breast magnetic resonance imaging was requested, which showed areas suggestive of fibrocicatricial changes and suspicious-looking lymph node enlargement on the left. Fine-needle aspiration biopsy (FNAB) guided by ultrasound was performed, compatible with positivity for atypical cells. Thereby, a new surgical approach was performed: mastectomy and level I axillary node dissection on the left. AP was compatible with 0.6mm DCIS associated with intraductal papilloma without atypia of LB and 1 in 6 lymph nodes, positive for diffuse infiltration by colloid pattern carcinoma. Today, the patient is being followed up, using anastrozole, without oncological changes in other follow-up exams. Cases that deviate from the standard in literature, such as the exposed surprisingly aggressive behavior of a rare variant, should be reported to encourage discussions about adequate approach and treatment.

<https://doi.org/10.29289/259453942021V31S1011>

# LYMPHOCYTIC MASTOPATHY PRECEDING BILATERAL PRIMARY BREAST LYMPHOMA – CASE REPORT

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**Introduction:** Lymphocytic mastopathy is a rare condition, responsible for 1% of all benign breast lesions, commonly associated to autoimmune disorders and diabetes (especially insulin-requiring diabetes). The differential diagnosis may be difficult, since the clinical and imaging aspects can mimic malignant disease. Some authors suggest that lymphocytic mastitis could be a precursor of primary breast lymphoma. However, other studies disagree with such correlation, presenting the mastopathy as a distinct diagnosis, but one of difficult differentiation from lymphoma. To avoid misdiagnosis, an appropriate study of the specimen is recommended, through image-guided or surgical biopsy and immunohistochemical markers. Due to its unique presentation and scarce reports in global literature, we present a case of a patient with lymphocytic mastopathy that preceded the diagnosis of primary bilateral lymphoma. **Case report:** A healthy 46-year-old, nulliparous, premenopausal female patient, with a negative family history of breast cancer, presented palpable masses in the inferior medial quadrants (IMQ) of the right and left breasts, measuring 5 cm and 1.2 cm, respectively, both classified as Category 4 in the BIRADS lexicon. She was referred for excisional surgical biopsy, with anatomopathological diagnosis compatible with nonspecific chronic mastitis in both specimens. Immunohistochemistry (IHC) revealed lymphocytic mastitis, without signs of malignancy. The patient maintained regular control with a mastologist and after two years of follow-up, two new category 4 masses were identified: one in the IMQ of the right breast, and another in the retro-areolar (RRA) region of the left one. Core biopsy of the masses revealed lymphoproliferative disease, with IHC showing non-Hodgkins' diffuse large B-cell lymphoma, (Ki67 60%, CD20+, BCL6+). A magnetic resonance imaging of the breasts identified bilateral breast masses in the RRA region, with extension to the medial quadrants and no cleavage plane with the nipple, the largest measuring 4.5 cm, in the left breast, with heterogeneous internal enhancement and type III kinetic pattern, in addition to an atypical lymph node in level I of the right axilla. Positron emission tomography-computed tomography (PET-CT) ruled out distant disease, and confirmed it was restricted to the breasts. The patient received six cycles of chemotherapy with cyclophosphamide, doxorubicin, vincristine, and prednisone, presenting a complete metabolic response on PET-CT. Subsequently, radiotherapy was performed on both breasts at a dose of 30 Grays in 15 fractions each and, after a clinical follow-up of two months, no new abnormalities have been noted.

<https://doi.org/10.29289/259453942021V31S1012>

# STUDY OF MORPHOLOGICAL AND ANGIOGENIC FEATURES OF TRIPLE NEGATIVE TUMORS BY ULTRASONOGRAPHY

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**Introduction:** Since 2013, after the Saint Gallen International Breast Cancer Conference, breast cancer is classified by its morphological, biological and prognostic features into three subgroups according to the immunohistochemical expression, which is similar to the genetic expression of the tumor. These groups, known as luminal, HER2 enriched and triple negative, are classified according to the positivity or negativity of nuclear receptors (estrogen [ER] and progesterone receptors [PR]) or membrane receptors (HER2). Triple negative tumors do not express positivity for any of these receptors. This group is composed of tumors with a more adverse biology and more aggressive behavior, affecting women in a younger age than other groups, and they also have higher rates of recurrence and lower overall survival. **Objectives:** This study aims to assess morphological and angiogenic features of these tumors by ultrasound exams. **Methods:** This is a prospective study, in which 129 lesions with an immunochemistry study compatible with triple negative tumors were selected from 1,180 breast carcinomas diagnosed by ultrasound and core biopsy from 2012 to 2017. Features assessed were shape, margin, posterior acoustic effect, reaction of the surrounding tissue, presence of calcifications within the lesion, presence of vascular flow with resistance index (RI), pulsatility index (PI), and maximum velocity of the vascular flow (Vmax). **Results:** Among the 129 tumors included, oval shape was the most prevalent with 72 cases (56%), 43 tumors (33%) had an irregular shape, and only 14 (11%) were round. As for their margin, the most prevalent was microlobulated, observed in 60 cases (46%), followed by circumscribed (35 cases, 27%), indistinct (19 cases, 15%), and the less frequent margins were angled and spiculated, with 10 (8%) and 5 cases (4%), respectively. The most prevalent posterior acoustic effect was enhancement (50 cases, 39%), followed by absence of posterior effect (38 cases, 27%), mixed effect (23 cases, 18%) and the least frequent was acoustic shadowing, accounting for only 18 cases (14%). The absolute majority of the tumors, 92% lesions in total, did not present calcifications within the lesion and 89% did not have a hyperechogenic halo in the surrounding tissue, presenting with abrupt lesion limits. From all cases, 110 (85%) had normal peritumoral tissue, causing no tissue thickening. In relation to the angiogenic study, most lesions had vascular flow (81 cases, 63%). The mean PI was 1.5, RI was 0.7 and the average Vmax was 19.7 cm/s. **Conclusions:** From an ultrasonographic point of view, some prevalent features are noted, which can help in their radiogenomic determination. Oval shape, abrupt interface, microlobulated margins, posterior acoustic enhancement, absence of internal microcalcifications and hyperechogenic halo prevailed.



<https://doi.org/10.29289/259453942021V31S1013>

# ANALYSIS OF THE EFFECTIVENESS OF MAMMOGRAPHIC SCREENING IN A PINK OCTOBER CAMPAIGN

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**Introduction:** The month of October was chosen to raise the population's awareness of breast cancer, with strategic actions being taken in order to optimize an early diagnosis of malignant breast lesions, as well as their treatment. The city of Caxias do Sul annually promotes a health action on a Saturday in October, known as the Pink October Campaign. The analyzed campaign was on the first Saturday of October 2017, with the operation of all Basic Health Units (UBS), and according to recommendations from the Brazilian Society of Mastology, offering mammographic evaluation and screening for women over 40 years of age. **Objectives:** To identify the number of diagnoses of malignant neoplasms in women who underwent screening mammography in a municipal campaign, the number of examinations performed in the campaign, and the prevalence of the BI-RADS 4 and BI-RADS 5 categories. **Methods:** Observational, descriptive, and retrospective study. All patients who had mammograms requested in the Pink October campaign were identified. The BI-RADS 4 and 5 cases on mammography, or after the completion of a complementary ultrasound for presenting BI-RADS 0 on the initial mammography, were referred to a reference service and had a biopsy with a posterior segment. **Results:** 1220 mammograms were made. In the BI-RADS 4 category, nine patients were identified (0.73%); all had biopsies performed, and three patients had confirmed carcinoma: two of them with invasive carcinoma and one case with carcinoma in situ. There were two cases of BI-RADS 5 mammograms (0.16%), and both had pathological confirmation of malignancy through biopsy. The prevalence of BI-RADS 4 and 5 in this population was 0.73% and 0.16%, respectively. There were 126 BI-RADS 0 mammograms (10.33%), making it possible to perform 90 complementary breast ultrasound exams. Four cases were classified as BI-RADS 4, with a negative biopsy for malignancy, and one case of BI-RADS 5, with a diagnosis of invasive lobular carcinoma. **Conclusions:** The Pink October Campaign held in 2017 in Caxias do Sul provided the diagnosis of six cases of breast malignancy in women between 43 and 65 years of age, one of them still in the non-invasive stage (carcinoma in situ), representing 0.49% of the population tracked in the campaign.

<https://doi.org/10.29289/259453942021V31S1014>

# ADENOID CYSTIC CARCINOMA OF THE BREAST

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**Introduction:** Adenoid cystic adenoid carcinoma (ACC) of the breast is a rare variant that occurs in large series only in less than 1% of the patients. It has favorable prognosis and morphological resemblance to tumors originating in the salivary glands. Histopathological diagnosis is based on a mixture of proliferating glands, which correspond to the adenoid component and the replication of the basal membrane in the form of cylinders established by the pseudoglandular component. It usually occurs in adult women. Its form of clinical presentation is a painless breast nodule, located in the retroareolar region, without compromise of skin or nipple secretion, of small size and circumscribed limits. Treatment of ACC is not protocolized, although it is accepted that conservative surgery is applicable in most cases. Our goal is to publicize the clinical case of a patient treated in our service and to show some clinical and histopathological aspects of this same rare pathology. **Case report:** 63-year-old patient, with no history of cancer in the family, menarche at 16 years of age, three full births, 24 months of lactation, menopause at 46 years of age, no hormone replacement therapy. Hypertensive and diabetic, a right breast nodule was self-detected six months before; slow and painless growth that then fistulizes the skin and is accompanied by serohematic secretion of a gelatinous consistency. On physical examination, a 7 cm nodule is felt in lower quadrants, showing elastic consistency and poorly defined edges. No adenopathies in the armpits or neck. Sectional biopsy performed in another service. Pathological anatomy: differential diagnosis between Cystic Hypersecretory Carcinoma and Cystic Secretory Hyperplasia. With the diagnosis of ACC of the right breast, T2N0Mx stage IIa. Mammography: breasts type b, at the junction of lower quadrants of the right breast, dense delimited mass measuring 5x4 cm, no retraction or skin edema. BIRADS V. Ecograph: A mass located in H6 to 3 cm of the nipple with well delimited edges, with heterogeneous characteristics with liquid and solid areas of 5.71 cm x 4.06 cm. BIRADS V. Extensive resection and sentinel node biopsy is performed. Histopathological result revealed ACC G1 of 5.5 cm with no associated in situ carcinoma. No vascular plungers or perineural invasion are observed. Free surgical limits. pT3 Nx.Mx. Immunohistochemistry: RE-; RP-; HER2-;ki67<14%. Our case showed a neoplastic proliferation consisting of two types of cavity formation; true glandular lights (adenoid component) and pseudo lumens that produce basal membrane material (cylinder component) with eosinophilic basal membrane material, the adenoid component with basophilic mucin and surrounded by myoepithelial cells. Three negative lymph nodes metastasis. Radiation therapy was decided as an adjuvant treatment.

## IMAGING AND SCREENING

<https://doi.org/10.29289/259453942021V31S1015>

# ANALYSIS AND CORRELATION OF IMAGING FINDINGS WITH THE ANATOMOPATHOLOGICAL STUDY OF BI-RADS 4A LESIONS

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**Introduction:** The Breast Imaging Reporting and Data System (BI-RADS<sup>®</sup>) was developed in 1993 by the American College of Radiology to standardize reports based on imaging findings, classifying them into six categories. Its fourth edition proposed the subdivision of category 4 into three subcategories according to malignancy suspicion. Category 4A shows likelihood of malignancy between 2% and 10%, and diagnosis by biopsy is recommended. Frequent histological findings in the literature for 4A lesions include fibrocystic breast changes, fibroadenoma, columnar cell lesions with atypia, stromal sclerosis, inflammatory disorders, and proliferative epithelial lesions. **Objectives:** To show the most relevant radiological and histological findings for the BI-RADS<sup>®</sup> 4A subcategory, corroborating its likelihood ratio of malignancy. **Methods:** This is a cross-sectional study based on the review of medical records of patients submitted to the anatomopathological study of BI-RADS 4A lesions in public and private health services from Curitiba, Paraná, Southern Brazil, between March and September 2019. The findings were subsequently correlated with histopathological results. **Results:** A total of 727 core needle breast biopsies were performed – 78.6% guided by ultrasound and 21.4% by stereotaxy. Approximately 35.8% of ultrasound-guided procedures (group X) and 55.4% of stereotaxic biopsies (group Y) were classified as BI-RADS 4A. Among the main imaging findings in group X, solid nodules, solid cystic lesions, and solid heterogeneous areas stood out. Group Y presented clusters of heterogeneous, punctate, amorphous microcalcifications, and findings that did not fit the BI-RADS classification. Benign changes predominated among the histopathological findings in both groups. The malignancy rate according to guidelines of the European classification for anatomopathological results of breast lesions<sup>4</sup> remained around 2% in group X and 8.7% in group Y. **Conclusions:** Based on the results obtained, we concluded that the malignancy rates of biopsies from patients classified as BI-RADS 4A were within the acceptable values established by the literature. However, they varied considerably according to the biopsy method chosen, presenting higher values in patients submitted to stereotaxy.

<https://doi.org/10.29289/259453942021V31S1016>

# THE CORRELATION BETWEEN ULTRASSONOGRAFIC PREDICTORS, LOBAR ANATOMY AND TUMOR BIOLOGY

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**Introduction:** Since the 90s, breast ultrasound (US) features that predict malignancy or benignity are well established, but recently Stravos and Taboul et al. brought new concepts that set out to understand lobar anatomy and its relationship with breast lesions. Nowadays we seek to understand the relationship between breast anatomy and imaging to differentiate malignant from benign lesions and to predict their biological behavior. **Objectives:** To correlate breast lesions morphology and tumor biology with BIRADS<sup>®</sup> ultrasound predictors. **Methods:** This study was performed from 2012 to 2017. A total of 1,070 breast lesions underwent US examination and anatomopathological study. Collected data included patients' age, tumor size, presence or absence of echogenic halo and ultrasound predictors of BIRADS<sup>®</sup> 5th edition (shape, margin, surrounding tissue, presence of calcifications, echogenicity, posterior acoustic effect, lesion borders, orientation and doppler). Patients  $\geq 18$  years old with benign lesions and breast carcinomas were included. **Results:** When a lesion grows affronting lobar anatomy in a non-parallel manner, a malignant process is suspected. The risk of malignancy for this predictor was 7.92-times higher. Benign lesions do not infiltrate adjacent tissue, resulting in a circumscribed margin. Breast carcinomas grow infiltratively creating tissue reactions. Thus, when margins are infiltrative, there is a greater risk of malignancy – spiculated (61.4 times), angulated (24.4 times), microlobulated (9.4 times), indistinct (6.8 times). The presence of halo increased the risk by 25.3 times and thickening of the surrounding tissue by 6.7 times. In carcinomas, irregular shape is the most prevalent. But in fast growing lesions, round shape can also be found. We found a 6.27-fold increased risk in irregular tumors and 1.86-fold in round ones. Carcinomas with a large fibrous component generate posterior acoustic shadowing, a finding linked to cancer. We found a 2.56-fold increased risk. Acoustic enhancement was also observed in high cellularity tumors, such as triple negative. In our series, the risk of malignancy was 8.1 times higher. Ultrasound also contribute to the study of calcifications. Its presence within the nodule increased the risk by 3.55 times for malignancy. Heterogeneous lesions in this study showed a 5.1-fold risk. Angiogenesis is important in differentiating benign and malignant lesions, using doppler to assess this. Lesions with inner flow increased the risk by 5.39 times. **Conclusions:** Breast imaging, mainly with radiogenomics and radiomics development, is used to assess predictors of malignancy and benignity from a new perspective. It is important to understand the reason of a particular phenotype and its biological implications. In this context, the present study shows new data and brings a reflection on the reason for each finding, adapting the interpretation of US predictors to a new era of breast imaging.

<https://doi.org/10.29289/259453942021V31S1017>

# EXPERIENCE WITH CONTRAST-ENHANCED MAMMOGRAPHY: BREAST CANCER DETECTION IN PATIENTS REFERRED TO PERCUTANEOUS BIOPSIES

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**Introduction:** Breast cancer is the leading cause of cancer deaths in the Brazilian female population, and it is the most common malignant tumor in women in the world. The only method that has proven to decrease breast cancer mortality is mammography and, therefore, screening programs are based on this test in several countries. However, its sensitivity in the general population ranges from 75% to 80%, being especially lower in the case of dense breasts, more common in young women, ranging from 30% to 48% in this group. The most sensitive method in the detection of breast cancer is magnetic resonance imaging, (80% to 97.8%, according to current studies), due to its ability of studying vascular changes in the tissues. Aiming to combine the morphological study provided by mammography with the analysis of tumor perfusion allowed by studies that use intravenous contrasts, contrast enhanced digital mammography (CEDM) or angiogramography was developed. **Objective:** Assess whether CEDM is an effective method in the detection of breast cancer, as well as its reliability to rule out the presence of malignancy. **Methods:** Patients were recruited at the time of attendance to the service for breast percutaneous biopsy of lesions detected on previous mammography and /or ultrasound examinations, previously requested by their physicians. Those who made themselves available to participate in this study did sign the Informed Consent Form (ICF). Patients were submitted to bilateral mammographic study in craniocaudal and medio-lateral oblique incidences, obtaining low-energy images and recombined high-energy images. Low-energy images, equivalent to digital mammography, were described and classified according to the BI-RADS lexicon. The contrasted studies were described in order to comply with the recommendations of the current literature, observing that, until the present, there is no standardization by BI-RADS for contrast mammography reports. These studies were compared to histopathological findings of biopsies, the gold standard in this study. **Results:** This is an ongoing investigation. From September 2019 to October 2020, 180 patients underwent CEDM and percutaneous biopsies. 27 had invasive ductal carcinomas (IDC) and 10 ductal carcinomas in situ (DCIS). 26 of the 27 IDC cases and all of the DCIS cases had positive CEDM findings. Among DCIS cases, six had no abnormal enhancement on CEDM, but were evident on a 2D study. The observed sensitivity was 97%. **Conclusions:** These preliminary results demonstrated that CEDM is a highly sensitive method for breast cancer detection, including for non-invasive lesions. The study is still in progress and further data is needed to describe the benefits of CEDM in breast cancer detection.

## PATHOLOGY

<https://doi.org/10.29289/259453942021V31S1018>

# METASTATIC THYMOMA OF THE BREAST – CASE REPORT

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**Introduction:** Thymomas are rare malignant epithelial neoplasms arising in the thymus. These tumors are commonly located in the prevascular mediastinum but can also be found in other regions of the mediastinum, neck, pulmonary hilum, thyroid gland, lungs, pleura, or pericardium. This disease could be suspected as an incidental finding identified on imaging, local thoracic symptoms or due to a paraneoplastic syndrome. Pleural or pericardial effusions are the most common manifestations of more disseminated disease and may also cause thoracic symptoms. Extrathoracic metastases are seen in fewer than seven percent of patients at presentation, most commonly in the kidneys, extrathoracic lymph nodes, liver, brain, adrenals, thyroid, and bone. **Case report:** A 66-year-old, white female patient, with previous left mastectomy due to a phyllodes sarcoma in 1997. Diagnosed with malignant thymoma in 2013 and pleural involvement, undergoing systemic chemotherapy and surgery with complete remission of the disease at that time. Two years after, in 2015, presented with disease recurrence in the diaphragm, pleura and lymph nodes, undergoing new surgery, radiotherapy and a second line chemotherapy regimen. Over the years, the disease progressed despite the cancer treatment instituted. In December 2020, the patient presented nodulation in the right breast, with core biopsy suspicion of ductal carcinoma. Undergoing quadrantectomy with lymph node biopsy, with the surgical pathological report finding of thymoma metastasis, resected with free margins. The patient is currently at the 31st pembrolizumab cycle, in good clinical condition.

<https://doi.org/10.29289/259453942021V31S1019>

# DERMATOFIBROSARCOMA PROTUBERANS ON THE BREAST: A CASE REPORTED AND DISCUSSION ABOUT THE STEPS FOR YOUR DIAGNOSIS

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**Introduction:** Dermatofibrosarcoma Protuberans (DFSP) is a soft tissue tumor, with slow growth and low metastasis rate, but with a high chance of local recurrence. Epidemiologically, DFSP represents only 0.1% of all malignant tumors. It is more common in women aged between 30 and 50 years and the most affected site is the trunk. However, the presentation in the breast is rare. Clinically, DFSP is revealed as a slow and asymptomatic growth nodule that originates in the dermis and invades the subcutaneous tissue. The diagnosis is made by histopathology, with the result of uniform spindle cells with low atypia or mitotic activity, and immunohistochemistry, demonstrating, mainly, positivity for the CD34 antibody, and negativity for the S100 antibody. The standard treatment of DFSP is a complete surgical resection with negative margins. However, the minimum resection margin to achieve local control remains undefined. The present study aims to discuss a case of DFSP with a rare presentation in the mammary region and the steps for its diagnosis.

**Case report:** A 37-year-old woman with an exophytic and ulcerated lesion of 5 cm in the lower inner quadrant (LIQ) of the right breast (RB). The patient reported the appearance of a skin lesion 10 years before in the same location, evolving with a superficial nodule over the last five years and with an accelerated growth of the lesion one month before. There are no other tangible nodules in the breasts and no axillary lymph nodes. Breast ultrasound: exophytic and vascularized nodule in RB LIQ, of 8.4 cm - BIRADS 4. Histopathological report after lesion excision: spindle cell neoplasm of mesenchymal origin, without necrosis, measuring 5.8x5.8 cm, mitotic index: 03 mitoses in 10 high-magnification fields. The immunohistochemistry of the excised lesion indicated positivity for the CD34 and Ki-67 antibodies and negativity for the S-100, CD99, Desmin and Myogenin antibodies. The immunohistochemical profile, associated with the morphological findings, corroborates the diagnosis of Dermatofibrosarcoma protuberans. Surgical margins indicated involvement by the neoplasm. Thereafter, a surgical approach was discussed and indicated, which was not accepted by the patient.

<https://doi.org/10.29289/259453942021V31S1020>

# STANDARDIZATION OF THE LABORATORY RESEARCH PROTOCOL AND ANATOMOPATHOLOGICAL DIAGNOSIS OF BREAST GRANULOMATOUS INJURIES

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**Introduction:** Granulomatous breast lesions are multifactorial conditions, with clinical, mammographic, and ultrasound findings like those observed in cases of breast carcinoma. Histological evaluation can present key characteristics to define the lesion pattern. Although this entity is rarely reported in the literature, it is associated with inflammatory conditions such as Ductal Ectasia and foreign body reaction. However, it can also be associated with agents such as bacteria, fungi, and parasites. Furthermore, idiopathic causes and exclusion diagnosis, such as sarcoidosis, can be included in the etiology of the process. **Objectives:** To establish a correlation between the anatomopathological diagnosis and the laboratory investigation by culture for breast granulomatous lesions diagnosis, with validation of the sample's analysis protocol. **Methods:** Samples were selected from 17 women treated at the Mastology Service of a Public Hospital in Brazil, with a history and physical examination that raised suspicion of breast granulomatous lesion and they had previous clinical indication of breast core biopsy. The collection of samples was guided by ultrasonography (USG). In turn, they were stored in a blood culture flask (BD BACTECTM) to perform culture tests by automation (VITEK2), bacterioscopy and fungi exams, and acid resistant bacillus (ARB) tests at the Laboratory of Clinical Analyses. Simultaneously, core biopsy samples, fixed in 10% buffered formaldehyde, were sent to a Laboratory of Pathological Anatomy, for a morphological evaluation and research of ARB, fungi, and other bacteria, using the Ziehl-Nielsen, Grocott, PAS and GRAM histochemical methods. **Results:** Of the 17 samples, 11 had a chronic inflammatory response pattern with a non-lobulocentric granulomatous reaction component and one of them had a lymphocytic mastitis pattern. The five patients with morphological pattern of lobulocentric granulomatous mastitis presented positive culture, four for *Corynebacterium kroppenstedtil*, and one for *Staphylococcus hominis*. Sensitivity, Specificity, Positive Predictive Value and Negative Predictive Value in this sample was 100%. **Conclusion:** The clinical and radiological aspects can bring difficulties that obscure the diagnostic and etiological interpretation of granulomatous lesions. Thus, the morphological details observed in the anatomical pathological examination and the use of the laboratory investigation protocol with standardization of histochemical reactions associated with the use of tools for microbiological diagnosis show increased sensitivity and specificity for the detection of specific etiologic agents in granulomatous mastitis.



<https://doi.org/10.29289/259453942021V31S1021>

# VALIDATION OF IMMUNOPHENOTYPING BY FLOW CYTOMETRY IN THE INVESTIGATION OF DIAGNOSTIC AND PROGNOSTIC MARKERS FOR BREAST CANCER

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**Introduction:** Due to the high prevalence of breast cancer, it has a major financial impact on health systems. Currently, the diagnosis is made by morphological and immunohistochemical analysis (IHC). However, this methodology has some limitations. Therefore, methodologies capable of rapid and safe detection of tumor cells are needed, which can assist those already in use. **Objectives:** To validate immunophenotyping by flow cytometry (FC) in the investigation of diagnostic and prognostic markers for breast cancer; and to investigate lymphocyte subtypes infiltrated in the tumor and their relationship with tumor development. **Methods:** 52 breast tumor samples were sectioned and macerated in phosphate-saline buffer and stained with antibodies against estradiol (RE), progesterone (RP), HER2, Ki67, CD3, CD4, CD8 and CD45 receptors and analyzed by FC. All results were compared with IHC (reference method) in relation to sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV), except for Ki67, where bias was compared between methodologies and correlation between lymphocyte subtypes and tumor characteristics. **Results:** The comparison of the FC with the IHC for each marker presented the RE analysis (sensitivity: 75%, specificity: 90%, PPV: 96.7%, VPV: 47.4%); PR analysis (sensitivity: 72%, specificity: 70%, PPV: 79.3%, VPV: 60.8%); analysis of HER2 (sensitivity: 80%, specificity: 90.2%, PPV: 66.7%, VPV: 94.9%). The analysis of Ki67 by FC was shown to be equivalent to IHC, with the advantage of not having an observational bias. No correlations were observed between the molecular subtype intratumor lymphocyte population profile and the tumor histological grade. **Conclusion:** The results show the FC's ability to safely and quickly detect breast cancer markers used in clinical practice. It is believed that the use of FC, in conjunction with morphological analysis and IHC, can overcome the individual limitations of each of the methodologies and provide reliable results in a faster and more efficient way, which will result in faster diagnoses and more accurate prognoses, directly benefiting patients.

<https://doi.org/10.29289/259453942021V31S1022>

# BREAST CRYPTOCOCCOSIS IN IMMUNOCOMPETENT PATIENTS

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**Introduction:** Cryptococcosis is prevalent in immunocompromised individuals. Immunocompetent patients can develop latent infections, the breast being a rare focus of primary disease, with few reports in the literature. **Case report:** GHMC, female, 27 years old, married, ticketing operator, resident in Valparaíso / GO, Brazil. She denied comorbidities, use of medication, smoking or drinking, as well as contact with caves, farms, farms, wild animals and ingestion of game meat. She reported fever (38°C), left mastalgia associated with hardened erythema with subsequent fistulization and removal of purulent secretion. Upon examination, she was in good general condition, with a palpable nodule of about 6 x 4 cm, in union of the lower quadrants (ULQ) of the left breast (LB), which was regular, soft, felt a little painful on palpation, with increased local temperature and without lymph node enlargement or papillary discharge. The ultrasound of the breasts showed a heterogeneous solid mass, with cystic areas of permeation, in ULQ of LB, of 4.2x2.2 cm, partially defined contours coinciding with a nodular image of 4 cm in the same topography in the mammography. Magnetic resonance imaging showed a nodular, irregular, hypodense image in T1, hyperdense in T2, with parietal enhancement and heterogeneous, progressive internal enhancement, in addition to capturing septa, measuring 6.1x4.0x4.6 cm, suggesting mucinous carcinoma. Core biopsy of the solid part of the lesion and collection of mucinous fluid was performed. Concomitantly, oxacillin was started for seven days. There was no laboratory change during the entire disease period. Fifteen days after the end of the antibiotic use, the lesion became an erythematous lenticular ulcer, with flat edges, of 5.0x4.0 cm, with colloid secretion leaving its bed. Histology showed cryptococcosis, and liquid cytology showed cryptococcus neoformans. During immunosuppression investigation, the patient underwent chest and skull CT scans, serology, tumor markers, ANF (antinuclear factor), rheumatoid factor, C3, C4, lumbar puncture and blood cultures (all excluded any immunosuppressive pathology). The treatment was carried out with Fluconazole 800 mg/day for three months, with a reduction to 300mg/day for another three months. Two months after the start of treatment, the lesion resolved. Cryptococcosis is an invasive mycosis with high morbidity and mortality. It affects immunosuppressed individuals, and is rare in immunocompetent individuals. The main pathogenic species, *C. neoformans* and *C. gatti*, are prevalent in tropical and subtropical climates. The main sites affected are the brain and the lungs; other sites are rare. The dosage and duration of breast therapy is unknown, but 2-3g/day of amphotericin B or 400-800mg/day of fluconazole for 8–12 weeks has achieved therapeutic success in reported cases.

## DETECTION / DIAGNOSIS – OTHER

<https://doi.org/10.29289/259453942021V31S1023>

# PYODERMA GANGRENOSUM AFTER LUMPECTOMY AND MAMMOPLASTY RESPONDS TO THE USE OF ANTI-TNF MONOCLONAL ANTIBODY

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**Introduction;** Pyoderma gangrenosum (PG) is a rare neutrophilic dermatosis of unknown etiology, which can be triggered after a surgical procedure. It can occur at any surgical site, but it is more common after breast surgeries. The trauma of the surgery can increase levels of inflammatory cytokines and result in a dysfunction of the innate immune system leading to a condition with cellulitis and dehiscence in the surgical wound. Despite PG being a rare condition, a differential diagnosis is important, because the debridement can exacerbate the condition and the antibiotics don't have clinical effects. We present a case report of PG after a breast surgery. **Case report:** A 37-year-old Caucasian female presented with a growing breast lump and the desire to reduce the size of her breasts. The woman had no comorbidities, especially no history of autoimmune disorders. In 2009, she performed a primary mammoplasty in another service. At that time, she had a wound infection that resulted in an unfavorable aesthetic result. The patient underwent a lumpectomy in the right breast for a benign tumor (fibroadenoma) that was growing. In the same procedure, the plastic surgeon performed a second mammoplasty with a smooth prosthesis. Ten days later she presented with bilateral breast hyperemia, wound purulent discharge and dehiscence, without fever. As all breast lesions were sparing the nipple-areola complex, we had a strong suspicion of PG. She was treated with glucocorticoid prednisone 40mg once daily, colchicine 0.5mg twice daily and tumor necrosis factor (TNF) blocker 40mg subcutaneous every two weeks. After starting immunobiological therapy, she responded quickly with complete wound healing. **Discussion:** PG diagnosis was done based on clinical characteristics. It is important to be aware that this condition is frequently mistaken for a wound infection, but antibiotics do not alleviate the condition. Misdiagnosis could lead also to surgical management for wound debridement which would probably make lesions worse. Most PG starts after four days to six weeks post-operatively. In this case it started ten days after the surgery. The PG occurred after a benign breast surgery with mammoplasty, but it can also occur after breast cancer surgeries and reconstructions. Our patient did not have any disease associated with PG, such as inflammatory bowel disease, spondyloarthritis, rheumatoid arthritis, or hematologic malignancy. As reported in the literature, the PG was bilateral, but sometimes it can be unilateral. There have never been any reports describing involvement of the nipples and areolas. We presented a rare case of PG in a woman without risk factors who had a successful treatment with glucocorticoids.

<https://doi.org/10.29289/259453942021V31S1024>

# EVALUATION OF AGE GROUP OF 11,323 BREAST CANCER PATIENTS TREATED FROM JANUARY 2011 TO DECEMBER 2019 AT PEROLA BYINGTON HOSPITAL

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**Introduction:** According to estimates from the Brazilian Department of Health, in 2021 we will see more than 65,000 cases of breast cancer in Brazil. The predominance of advanced cases in the Brazilian Unified Health System (SUS) stems from the long time for diagnosis and treatment of patients and, consequently, leads to a higher mortality rate. There is a lack of data on the age of our patients to establish an adequate coping strategy for the disease and thus reduce mortality in our country. The Department of Health recommends mammography from the age of 50. The Brazilian Society of Mastology (SBM), on the other hand, recommends exams starting at 40. Before that, only for groups at risk. In 2018, there were 2,1 million new cases, equivalent to 11.6% of all estimated cancers. This value corresponds to an estimated risk of 55.2/100 thousand. The highest expected incidence rates were in Australia and New Zealand, in Northern European countries and in Western Europe. Regardless of the country's socioeconomic situation, the incidence of this cancer ranks among the top positions for female malignancies. On the other hand, there has been a decline in the trend of incidence rates in some developed countries, partly linked to the decrease in hormone replacement therapy in postmenopausal women. **Objectives:** This paper aims to describe treatment of breast cancer according the age group of 11,323 women by SUS at Pérola Byington Hospital from January 2011 to December 2019. **Methods:** A hospital-based observational cross-sectional study was carried out, in which the eligible population consisted of 11,323 patients with breast cancer treated by SUS at Pérola Byington Hospital whose data was registered in the data collection system of that hospital. Women under the age of 20 years up to over 80 years were selected. **Results:** A predominance of the diagnosis was observed in women aged 50 to 59 years (27.91%), followed by patients aged 40 to 49 years (23.90%) and by patients aged 60 to 69 years (22.26%). Women under the age of 20 were diagnosed in 0.06% of cases and over 80 years of age in 4.75%. **Conclusions:** The diagnosis of breast cancer in women under 40 years of age is rare, representing around 10% of all registered cases. But, when it occurs in this age group, the disease tends to be more aggressive, raising a question of from what age the screening test should be performed.

<https://doi.org/10.29289/259453942021V31S1025>

# ACCURACY OF STEREOTACTIC VACCUUM-ASSISTED BREAST BIOPSY FOR INVESTIGATING SUSPICIOUS CALCIFICATIONS IN 2,021 PATIENTS AT A PUBLIC HOSPITAL IN BRAZIL

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**Introduction:** The gold standard for breast biopsy procedures is currently an open excision of the suspected lesion. The cost and morbidity associated with this procedure has prompted many physicians to evaluate less invasive, alternative procedures. More recently, image-guided percutaneous coreneedle biopsy has become a frequently used method for diagnosing palpable and non-palpable breast lesions. Although sensitivity rates for core-needle biopsy are high, it has the disadvantage of histological underestimation. Vacuum-assisted stereotactic biopsy (VASB) was developed to overcome some of these negative aspects of core-needle biopsy. VASB allows for a sufficient specimen to be obtained with a single insertion and can provide a more accurate diagnosis and completely remove the lesion. **Objectives:** To evaluate the accuracy of vacuum-assisted stereotactic biopsy (VASB) in the investigation of non palpable suspicious calcifications. **Methods:** It was a retrospective study from July 2012 to December 2020, in which 2,021 women with suspicious calcifications detected on mammography (BI-RADS 4 and 5) had VASB performed at Hospital Estadual Pérola Byington, São Paulo, Brazil. The device used was Suros Pearl (Hologic, Malbolrough, Massachusetts, USA), with probe gauge 9. Fragments were obtained and sent to anatomopathological study; a metal clip was placed on the biopsy site. Four groups were analyzed, based on the biopsy results: benign, precursor lesions, Ductal Carcinoma In Situ (DCIS) and Invasive Ductal Carcinoma (IDC). Most patients with positive or discordant cases underwent surgical treatment and the previous biopsy results were compared to surgery results. **Results:** Patients' median age was 55y (49–63y). Pathology results on VASB were classified respectively as benign n=1,340 (66.3%), precursor lesions n=84 (4.1%), DCIS n=441 (21.8%) and IDC n=156 (7.7%). Surgery was performed in the 60 patients with benign results on VASB, because of anatomopathological disagreement, with the following results: benign n=30 (50%), IDC e DCIS n=21 (35%) e precursor lesions n=9 (15%). ROC curve and AUC were calculated to compare the results of lower and higher risk lesions groups according to VASB and surgery results (AUC=0.79). The  $\chi^2$  test was performed between the groups ( $p<0.05$ ). The sensitivity of the method was 91.7 %, specificity was 97.1%, false negative rate was 3%, positive predictive value was 92.4%, negative predictive value was 96.9%. **Conclusions:** The VASB method has a good accuracy to distinguish lower from higher risk lesions groups comparing to the gold standard. It has high predictive value in both benign and malignant lesions, guiding therapeutic planning.

<https://doi.org/10.29289/259453942021V31S1026>

# VACUUM ASSISTED BIOPSY FOR BREAST CARCINOMA DIAGNOSIS: COST MINIMIZATION ANALYSIS

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**Introduction:** Breast cancer treatment depends on the diagnostic biopsy and the positivity of the biomarkers. Diagnostic lumpectomy is available in most centers but requires access to the operating room and can cause deformities, has high cost and morbidity. Vacuum assisted biopsy (VAB) is a less invasive and highly accurate alternative for diagnosis besides being a cheaper outpatient procedure. **Objectives:** To carry out the cost-minimization analysis between a VAB and a lumpectomy. **Methods:** Assuming that there is no difference in the accuracy between the two procedures, a cost-minimization analysis was performed. A decision tree model was developed considering patients undergoing VAB or lumpectomy. Depending on the result and the procedure performed, the patient may or may not perform a therapeutic lumpectomy. The analysis was based on a retrospective evaluation of 1,833 VABs at Pérola Byington Hospital (PBH), including the pathological results and the proportion of patients requiring a lumpectomy after the procedure. It was analyzed from three perspectives: PBH (direct medical costs), the Brazilian Unified Health System - SUS (Sigtap) and the Brazilian Society (Sigtap and indirect costs). The VAB cost kit (needle, guide clip, marker and reservoir) was estimated in R\$ 2,173. The cost of lost productivity was based on Gross Domestic Product (GDP) per capita (R\$ 120 per business day). It was considered that a VAB does not require hospitalization and results in two days of absence, while the lumpectomy requires two days of hospitalization and seven days of absence. **Results:** From HPB perspective, the average total cost for a patient who undergoes a VAB is R\$ 3,667 and for a lumpectomy is R\$ 4,313 (average savings of R\$ 646). Under the SUS perspective the average cost for a VAB is R\$ 2,987 and for a lumpectomy it is R\$ 2,700 (an increase of R\$ 287). The analysis from the perspective of society resulted in savings of R\$ 128 per patient (fewer days away than for patients undergoing a VAB). **Conclusions:** VAB is an invasive procedure that has advantages in relation to the days of hospitalization and absenteeism when compared to the lumpectomy. The cost-minimization found that VAB is cost-saving compared to lumpectomy (from the perspective of the PBH), which exclusively sees SUS patients, as well as the perspective of society. When analyzed from the perspective of SUS, there is a small increase in cost, but the cost of a VAB kit used may have overestimated the costs, and an incorporation could decrease the material costs.

<https://doi.org/10.29289/259453942021V31S1027>

# VOLUMETRIC EVALUATION OF UPPER LIMB FOR THE BREAST CANCER ASSOCIATED LYMPHEDEMA

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**Introduction:** Lymphedema is one of the main complications associated with the treatment of breast cancer. Multiple methodologies can be used in the diagnosis of lymphedema. A simple and clean, easy methodology is lacking, aiming to correlate with the findings of volumetry. **Objectives:** To evaluate different methodologies for the evaluation of indirect volumetry, by calculating the Frustrum and potential cutoff points related to direct volumetry. **Methods:** Study approved by the Ethics Committee under number 782/2014. A cross-sectional study with prospective collection, diagnostic evaluation, performed in patients with breast cancer undergoing surgical treatment of the breast. The participants were subjected to evaluations of the upper limbs using volumetry (total limb and hand), cylindrical and radial perimetry for diagnosis of lymphedema at equidistant points every 5 cm (V10) and 10 cm (V6). One software was created based on the cylindrical and diametrical measurements of the upper limbs. Concomitant upper limb and hand volumetry was performed, with a difference of 200 mL in volume being considered a lymphedema. The formula  $VFC=h(C12+C1C2 + C22)/12\pi$  was used for the cylindrical Frustrum (VFC), and for the elliptical Frustrum (VFE) the formula  $VFE= (L\pi/3)A2B-a2b)/(A-a)$  was used. To compare the agreement of the volumes, the Interclass Correlation Index was used. In order to equalize values associated with volumetry, the ROC curve was used. Grant from FAPESP project no. 2014 08197-0 and Institutional IEP/HCB no 5/2017. **Results:** 300 patients were evaluated. With regard to VFE, the result was not adequate in 25.5% in the V10 assessment and in 8.9% in the V6. The correlation between the difference in volume in total volume and the difference in volume without hands was excellent (ICC = 0.993). The difference of the risk member was compared with the contralateral of the VC10 and VC6 volumes with hand and VC10 and VC6 without the hand, the intra-class correlation coefficients were 0.840, 0.878, 0.835, 0.878, respectively. The presence or absence of the hand did not change the correlation, given the difference in volume (dV). Considering the difference in volume of the limbs of 200 mL, in the VFC formula dVC6 this value corresponded to 108.79 mL, with a sensitivity of 88.9, specificity of 87.3 and accuracy of 87.7; and in the VFC dVC10 formula this value was 96.9 mL, with a sensitivity of 92.1, specificity of 85.7 and accuracy of 87. **Conclusions:** The use of cylindrical Frustrum proved to be satisfactory, and different cutoff points should be used in clinical practice. The creation of the software facilitates the evaluation because it is a clean and reproducible methodology.

## EPIDEMIOLOGY

<https://doi.org/10.29289/259453942021V31S1028>

# LOBULAR BREAST CARCINOMA: THE RISK FOR CONTRALATERAL BREAST IS NOT PERMANENT

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**Introduction:** The invasive lobular carcinoma of the breast occurs in approximately 10% of breast cancers. The increased risk for multicentric and bilateral breast tumor is well-documented in the literature, but few data is available regarding the interval for occurrence of contralateral tumors. **Objectives:** This study aims to analyze the characteristics of the bilaterality of the lobular tumor and time to the occurrence of the bilateral tumor in comparison with non-lobular tumors. **Methods:** Retrospective, analytical study from the American Surveillance, Epidemiology and End Results Program (SEER) database. Patients with unilateral and bilateral breast cancer (synchronous and metachronous) were filtered from this database in women aged 20 to 75 years from 2000 to 2017. Patients with cancers diagnosed in other organs were excluded. **Definitions:** Lobular carcinoma at the first diagnosis (LC): patients with lobular breast cancer at the diagnosis of the first neoplasm. Non-lobular carcinoma (NLC): patients with non-lobular carcinoma (ductal or special type) at diagnosis of the first neoplasm. **Results:** We identified 560,608 patients with breast cancer, 19,792 of which were patients with bilateral tumors (3.5%) and 45,156 (8.0%) lobular tumors at the first diagnosis. Patients with LC had significantly more tumors in both breasts throughout the research period (6.3% vs. 3.3%; OR: 1.97; 95%CI 1.89–2.06,  $p < 0.001$ ). The time for occurrence of contralateral tumor varied widely between patients with lobular and non-lobular tumors. The LC patients presented the diagnosis of contralateral breast tumor much earlier, with 50% of the contralateral tumors diagnosed within one month, and 75% in the first three months, while the NLC patients presented 50% of the contralateral tumors in the first three months and 75% after 54 months of follow-up. Cox's multivariate analysis shows a higher risk of contralateral breast involvement in LC patients when corrected by age and estrogen receptor expression (RR 2.0; 95%CI 1.93–2.09;  $p < 0.001$ ). This increased risk is not sustained when patients with a tumor in an interval greater than 12 months (RR 1.04; 95%CI 0.96–1.14;  $p = 0.3$ ). **Conclusions:** Invasive lobular carcinoma is associated with a higher incidence of contralateral disease, but the higher risk occurs in the first year of follow-up. After the one-year period, the incidence of contralateral breast cancer is similar in lobular and non-lobular cancers.



<https://doi.org/10.29289/259453942021V31S1029>

# EXPERIENCES IN THE MASTOLOGY SERVICE OF A BRAZILIAN HOSPITAL DURING THE COVID-19 PANDEMIC

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**Introduction:** The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has a disastrous global effect, with negative socioeconomic impacts and an unforgiven effect on health. Besides the high mortality rates and levels of sequela, the increased demand for resources caused by the pandemic also influenced the feasibility of elective procedures performed in services and hospitals worldwide. Breast cancer patients have a worse prognosis if infected with the coronavirus disease 2019 (COVID-19). However, delays in their treatment when attempting to reduce their exposure to SARS-CoV-2 or delays resulted from the redirection of hospital resources toward COVID-19 efforts may similarly result in a poor prognosis. In an attempt to spare hospital resources that could be utilized in the management of COVID-19 while securing the well-being of our patients with breast cancer, we implemented a new set of guidelines. Following the recommendations from the Brazilian Society of Clinical Oncology (SBOC) and the American Society of Clinical Oncology (ASCO), we established that oncological interventions would be acceptable in situations when we could maximize patient safety. As such, in our Mastology Service of the Hospital Central da Aeronáutica (MST-HCA), a Brazilian Air Force Hospital in Rio de Janeiro, we expanded our recommendations for neoadjuvant therapies, restricted surgeries, and maintained outpatient care only for emergency cases. **Objective:** The aim of this study was to focus on managing the quality of care and assessing the ways to ensure adequate therapy for cancer patients during the COVID-19 pandemic. **Methodology:** We performed a retrospective analysis of chart information reviewing the occurrence of surgical procedures and indications for neoadjuvant therapies for patients with breast cancer from MST-HCA. The study period was between March 16 and August 1, 2020, compared with the same period in the year 2019, prior to the COVID-19 pandemic. **Results:** From March 16 to August 1, 2020, the MST-HCA performed a total of 20 surgeries, out of which 16 were oncological surgeries. In the same interval in 2019, there were 28 surgeries, out of which 19 were oncological surgeries. We found a 28.6% reduction in the number of surgeries during the pandemic compared with the same period in 2019. In contrast, there was an increase of 133% in the prescriptions of neoadjuvant therapies, with three patients undergoing such treatments in 2019 versus seven patients in 2020. Six of these patients had an indication for conservative surgery and only one for total mastectomy, and methods of marking the lesion were used. These methods include the placement of a metal clip in patients with an impalpable disease by the Radiology team and the performance of a skin tattoo with ink in patients with a palpable disease by the Mastology team at the outpatient clinic. **Conclusions:** There was a difference in the number of medical procedures due to a higher risk of SARS-COV2 infection in patients. As this is a retrospective study, we did not assess the prognosis; however, we were able to maintain the team quality standard expected even in the pandemic scenario. Using the marking methods, we were able to perform a conservative surgical approach in a safer moment for hospitalization, since the sum of senility, multiple morbidities, and cancer diagnosis constitutes a high risk of coinfection by COVID-19.

<https://doi.org/10.29289/259453942021V31S1030>

# BREAST CANCER IN WOMEN: CHARACTERIZATION OF CASES INCLUDED IN THE HOSPITAL-BASED CANCER REGISTRY OF THE STATE OF SÃO PAULO AND FACTORS ASSOCIATED WITH ADVANCED STAGES

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**Introduction:** Breast cancer is a public health problem worldwide, being the most common malignancy in the female population. It is a potentially curable disease with an early diagnosis. The advanced stage at the time of diagnosis is associated with increased morbidity and low survival for the patients. **Objectives:** To describe the sociodemographic, clinical, and anatomopathological characteristics of breast cancer cases in women included in the hospital-based cancer registry (RHC) of Fundação Oncocentro de São Paulo (FOSP), and to investigate factors associated with the clinical stage at diagnosis. **Methods:** The study design was a case series. The sample consisted of women with breast cancer diagnosed between 2000 and 2014 and included in the RHC-FOSP. The outcome variable was a clinical-stage (stage 0–II versus III–IV). The explanatory variables were age at diagnosis and educational level. This study was approved by the Human Research Ethics Committee of the Botucatu Medical School, São Paulo State University, Brazil. **Results:** The study included 84,987 women with in situ and invasive breast cancer diagnosed between 2000 and 2014. The average age of women at diagnosis was 56.7 years (95%CI 56.6–56.8 years). Sixty-five percent of cases completed elementary school or less and the most frequent histological type was ductal carcinoma (77.2%). During the study period, there was a slight decrease in the proportion of tumors in more advanced stages, from 39.8% in 2000 to 32.6% in 2014. There was a statistically significant association between age at diagnosis and educational level with the women's grouped clinical stage. Women of older age and those with a higher education level had reduced odds ratios of having tumors in more advanced stages at the time of diagnosis. **Conclusions:** These findings may contribute to the development of policies for the identification of breast tumors at earlier stages.

<https://doi.org/10.29289/259453942021V31S1031>

# SURVIVAL AND PROGNOSTIC FACTORS OF BREAST CANCER IN WOMEN IN THE STATE OF SÃO PAULO

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**Introduction:** Breast cancer is the first most common malignancy in the female population worldwide. Monitoring the survival of women with breast cancer has been a strategy frequently adopted at the international level as a measure to assess the progress of public policies for the control of the disease. **Objectives:** To estimate the probabilities of five and ten year survival and to investigate the prognostic factors of women with breast cancer included in the hospital-based cancer registry (RHC) of Fundação Oncocentro de São Paulo (FOSP). **Methods:** It was a historical cohort study. The sample consisted of women with breast cancer diagnosed between 2002 and 2012 and included in the RHC-FOSP. The event of interest was breast cancer-specific mortality. Living cases at the end of follow-up (December 31, 2017), loss to follow-up, and death other than that due to breast cancer were considered censored on the date of the last contact or date of death. Descriptive analysis and survival analysis were performed using the Kaplan-Meier method. Survival curves were compared using the log-rank test. Hazard ratios (HR) and their 95%CI were estimated using Cox's proportional hazards model. This study was approved by the Human Research Ethics Committee of the Botucatu Medical School, São Paulo State University, Brazil. **Results:** Between 2002 and 2012, 53,146 cases of invasive breast cancer were registered at RHC-FOSP. The median age of women at diagnosis was 55.9 years. By the end of the follow-up, 20,683 patients died and 71.4% of such deaths were due to breast cancer. The five and ten year breast cancer-specific survival for the entire cohort was 76.1% (95%CI 75.7–76.5) and 64.8% (95%CI 64.2–65.3), respectively. In the multivariate analysis, the factors associated with prognosis were: age at diagnosis, year of diagnosis, educational level, grouped clinical stage, and histological type. **Conclusions:** Specific survival for breast cancer in the state of São Paulo is significantly associated with several characteristics. The knowledge of these characteristics can contribute to the development of public policies in the area.

<https://doi.org/10.29289/259453942021V31S1032>

# THE EFFECT OF THE COVID-19 PANDEMIC ON BREAST CANCER STAGES

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**Introduction:** The COVID-19 pandemic brought us several behavioral changes, including social isolation, which impacted breast cancer screening around the world, including in Brazil. With a decrease in the number of exams performed, the risk of breast cancer detection in later stages increases, negatively impacting the prognosis of the disease. **Objectives:** To analyze and compare breast cancer stages in patients at a hospital in Mogi das Cruzes - SP before and during the pandemic. **Methods:** Retrospective, observational, and analytical study carried out through analysis of records of patients admitted to the outpatient clinic between January 1, 2019 and December 31, 2020. This service is reference for 11 municipalities covering an estimated population of more than three million inhabitants. For statistical analysis, and to allow cases referred in the pre-pandemic period to be considered as such, the pandemic period was determined to be from April 1, 2020 on. **Results:** A total of 331 breast cancer patients who started treatment between 2019 and 2020 were identified. 23.6% fewer cases were admitted during the pandemic, with 102 patients attended, an average of 11.3 patients/month, while before the pandemic the average was 15.3 patients/month. There was a statistically significant difference of four patients/month ( $p < 0.001$ ). The mean age of the patients also varied significantly, the patients being younger during the pandemic, with a difference of 3.5 years (57.8 vs 54.3;  $p = 0.03$ ). In order to analyze the effect of the pandemic in breast cancer stages, the number of cases was studied each month, and a significant drop was identified in the stages 0 and I (3.2 vs 0.7 cases/month;  $p < 0.001$ ), with no increase identified in the other stages. A multivariate analysis also identified a significant drop in diagnoses at early stages, even after considering confounding factors (age), with  $OR = 0.29$  (95%CI 0.11–0.63;  $p = 0.004$ ). No significant change was identified in cases of locally advanced or metastatic disease (stages III and IV), with an  $OR$  of 0.86 (95%CI 0.51–1.41;  $p = 0.55$ ). It is important to remember that these early-stage patients are often asymptomatic and diagnosed, mostly, through screening tests. **Conclusions:** The deficit in patients diagnosed at early stages was not accompanied by an increase in advanced stages. It is possible that there are still many women with undiagnosed breast cancer, but with the possibility of early identification.

<https://doi.org/10.29289/259453942021V31S1033>

# EPIDEMIOLOGIC PROFILE OF MEN HOSPITALIZED WITH BREAST CANCER IN BRAZIL

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**Introduction:** Breast cancer is the most common type of cancer among women worldwide and in Brazil, just after non-melanoma skin cancer. Breast cancer can also occur in men, although being rare, representing 1% of the total number of notifications of the disease. Due the rarity of this pathology, little is known about the etiology of male breast cancer, but some risk factors such as advanced age, hormonal imbalance, and family history have been pointed out. **Objectives:** This study's objective was to understand the epidemiologic profile of the men hospitalized due breast cancer in Brazil in the previous five years. **Methods:** This is a descriptive study of secondary data, which were gathered using the IT Department of the Brazilian Unified Health System, and it corresponds to the cases registered from January 2016 to December 2020. The data of interest were those related to the total number of admissions, age range, ethnicity, mortality rate, average amount spent in each hospitalization. **Results:** There were 3,501 (100%) admissions in Brazil due to male breast cancer. In the Southeast, there were 1,439 (41.1%) hospital admissions, being this the part of the country with the majority of hospitalized men. Followed by this region are the Northeast (26.7%), the South (18.1%), the Midwest (8.3%) and the North (5.7%). The year showing most notifications was 2019, with 832 hospital admissions (23.7%). The other years under review do not show significant changes in the number of admissions. The predominant age group was between 60 to 69 years (26.5%), followed by 50–59 (21.5%), 70–79 (19.9%) and 40–49 years (13.4%). Regarding ethnicity, white and brown men had similar notifications, 1,326 (37.8%) and 1,248 (35.6%) respectively. The remaining percentage is for not registered (20.1%), blacks (5.0%), yellow (1.4%) and indigenous (0.02%). The mean length of hospital stay for men with breast cancer was 4.3 days, ranging from 3.0 to 5.5 across the regions. The mortality rate was 9.40% in Brazil. Regarding the regions, the Northeast showed the highest mortality rate, 14.50%. The average amount spent on each hospitalization was R\$ 1,917.70 (USD 354,74, approximately). **Conclusions:** In Brazil, the mortality rate of men due to breast cancer is higher than the mortality rate of women with breast cancer, which is 8.44%. Therefore, the prognosis for male and female breast cancer is similar, but the overall survival rates are lower for males due to older age and advanced stage at diagnosis. Patients and health providers should pay attention to the existence of breast cancer in men and its known risks factors. Also, at last, many patients receiving hormonal therapy as a treatment for other diseases (eg., prostate cancer) should be aware of its side effect of the development of breast cancer in men.

<https://doi.org/10.29289/259453942021V31S1034>

# AVERAGE SURVIVAL ACCORDING TO THE CLINICAL STAGE IN 10,532 PATIENTS WITH BREAST CANCER TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS) FROM JANUARY 2011 TO DECEMBER 2019 AT PÉROLA BYINGTON HOSPITAL

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**Introduction:** The distribution of the different clinical stages of cancer in the population is of paramount importance not only to assess prognosis and therapy, but mainly to establish public health strategies and priorities. The prevalence of advanced cases in some populations shows the need for public assistance policies aimed at early detection for a rapid reduction in mortality. Unfortunately, reports in Brazil about the different realities of assistance in the Brazilian Unified Health System (SUS) are scarce. **Objectives:** To evaluate the distribution of the different clinical stages, and the mean 5-year survival of 10,532 breast cancer patients treated by SUS at Pérola Byington Hospital, from January 2011 to December 2016. **Methods:** A hospital-based observational cross-sectional study was conducted. The population consisted of women with breast cancer treated by SUS at Pérola Byington Hospital. The data were registered in the institution's data collection system, based on the selection of all women diagnosed with breast cancer in the period from January 2011 to December 2016, and stratified by survival in relation to the initial clinical staging. **Results:** Our database consists of 620 patients in stage zero (DCIS), 2,479 patients in stage I, 3,998 in stage II, 3,082 in stage III and 353 patients in stage IV. The highest survival rate (98%) was observed in patients with ductal carcinoma in situ. In stage I patients, the 5-year survival rate was 94.7%. This result is slightly higher than that observed in stage II patients, where 90.6% of them had a survival of more than 5 years. In patients belonging to stages IIIA, IIIB and IIIC, the 5-year survival was 83%, 72% and 57%, respectively. Among the patients treated in stage IV, the 5-year survival rate was 55%. **Conclusions:** Among DCIS, 2% had recurrence and death within 5 years. Survival in patients belonging to stages I and II was 94.7% and 90.6%, respectively, which is very close, according to literature data. The survival of patients belonging to stages IIIA and IIIB exceeded 70%, indirectly showing the efficacy of locoregional and systemic therapy at SUS, which applies to stages IIIC and IV. These reports are unprecedented in the database of the Unified Health System of the Municipality of São Paulo, in a population that undergoes only opportunistic screening.

<https://doi.org/10.29289/259453942021V31S1035>

# INITIAL CLINICAL STAGING AND INCIDENCE OF MOLECULAR SUBTYPE IN BREAST CANCER PATIENTS TREATED FROM JAN/2011 TO DEC/2019 AT PÉROLA BYINGTON HOSPITAL

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**Introduction:** Clinical staging (CS) has great importance for therapeutic programming and prognostic evaluation in patients diagnosed with breast cancer. Malignant breast tumors can be classified according to their immunohistochemical (IHC) profile. The study of the IHC profile can also assist in public health strategies, since they determine therapeutic planning. **Objectives:** Compare our database with literature data. **Methods:** The staging database (TNM, Tumor, Nodes and Metastasis) of the CRSM-SP (Pérola Byington Hospital) of patients with breast cancer treated at this institution from January 2010 to December 2019. **Results:** It was observed that 5.7% of the patients had in situ tumors. In the invasive form of tumors, 22.7% of the patients were diagnosed in CS I. Stage II was the one with the highest occurrence, corresponding to 36.5%. Advanced cases belonging to stages III and IV respectively represented 28.2% and 3.26%. As for the IHC profile of our 10,665 patients, luminal tumors A represented 24.7%, luminal B 32.7%. Patients with overexpressed HER2 were subdivided into pure HER2 (7.7%) and triple positive (9.8%). Triple negative tumors represented 25.1% of patients. A Brazilian study with SUS (Brazilian Unified Health System) data included 201,079 women: 19.5% were in stage I, 40.4% in stage II, 30.9% in stage III, and 9.3% in stage IV. In comparison with the public health system in England, a population study of 86,852 cases of breast cancer found 37% of diagnoses in stage I, 32% in CS II, 8% in CS III, and 5% in CS IV. The high ratio of patients (17%) in an unknown staging is noteworthy. In the USA, in a population study of 320,124 women, 72.6% were classified as luminal A, 11.2% as luminal B, 4.8% with overexpression of HER2 and 11.3% as triple-negative. Data from a Brazilian publication with 2,461 patients observed luminal A in 28.8% of the cases, luminal B 39.5%, pure HER2 7.9%, triple positive 9.7% and triple-negative were 14%, with the exception of triple-negative, similar to our results. It is possible that the higher ratio of patients with triple negative tumors at CRSM is explained by the higher incidence of non-screened patients, aged under 50, which are about 39%. **Conclusions:** The finding of 28.4% of in situ tumors in stage I shows the results of an occasional screening. The predominance of patients in stage II (40.4%) shows the predominance of palpable tumors in our population and the importance of making an agile diagnosis, preventing progression to stage III. The predominance of luminal tumors 68.3% and HER 2 (16.7%) were similar to those in the literature. However, the ratio of 25.1% of triple-negative patients contributes to higher mortality in Brazil and requires greater diagnostic and therapeutic agility.

<https://doi.org/10.29289/259453942021V31S1036>

# FEMALE MORTALITY FROM BREAST CANCER IN THE STATE OF PARÁ BETWEEN 2015 AND 2019

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**Introduction:** Breast cancer is the most common type of cancer among women worldwide. This pattern is related to different risk factors such as diet, race, heredity, hormonal diseases, tobacco and alcohol use, which contribute to the incidence of breast cancer<sup>1</sup>. A late diagnosis is one of the biggest obstacles related to the treatment of this pathology since in Brazil there are no adequate conditions for the screening of the disease. **Objectives:** The objective of the present study is to analyze the epidemiological profile of female mortality from breast cancer in the state of Pará between 2015 and 2019. **Methods:** This is an exploratory, quantitative study. Only women, of any age, were analyzed using the Technology Department of the unified health system (Departamento de Informática do Sistema Único de Saúde – DATASUS) as a database between 2015 and 2019, in the state of Pará, Brazil. **Results:** Among the 3,426 women who died of breast cancer between 2015 and 2019 in Pará, 89.66% stated they were brown, 28.45% were between 40 and 49 years of age, and 82.31% of them lived in the city of Belém. Moreover, the years that showed the highest mortality rates were 2019, 2018 and 2017 with 838, 785, and 733 deaths, respectively. **Conclusions:** The findings of this study showed that some aspects affect more the incidence of breast cancer, among which race-related factors, age over 40 years, and residency in the capital city of Belém are the most relevant. Besides, it is crucial to understand the progressive increase in cases tracked over the last years. These data confirm the necessity of an intervention in the health system operating in the state of Pará.



<https://doi.org/10.29289/259453942021V31S1037>

# LOCAL RECURRENCE AND 5-YEAR SURVIVAL AFTER CONSERVATIVE SURGERY IN STAGES I AND II IN PATIENTS WITH BREAST CANCER TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM FROM JANUARY 2011 TO DECEMBER 2019 AT PÉROLA BYINGTON HOSPITAL

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**Introduction:** Breast cancer is the most common neoplasm in women in Brazil and in most of the known countries, and for this reason, and early diagnosis and treatment is essential to provide the best possible survival. Conservative breast surgery has been used as a standard procedure for the local treatment of breast cancer in the early stages. As a consequence of the preservation of breast tissue, ipsilateral recurrence in some patients is predictable. An ipsilateral recurrence rate of 10.4% was observed over an average follow-up period of 67.5 months). The survival data of patients diagnosed with breast cancer are important to know our service and evaluate the treatments provided to patients with the objective of improving the patients' more and more their quality of life and of trying to achieve the best possible treatment. **Objective:** To identify data related to 5-year survival after conservative surgery in stages I and II in patients with breast cancer treated at Pérola Byington Hospital. **Materials and Methods:** Data were collected from medical records of patients with breast cancer classified in stages I and II at Pérola Byington Hospital. **Results:** 11,237 patients were diagnosed with breast cancer at Perola Byington Hospital from January 2011 to December 2019, among which 9,477 patients underwent surgery as part of their treatment. Among the patients who underwent surgery, 4,593 (48.5%) had conservative surgery and 4,884 had radical surgery (51.5%). Most conservative surgeries were performed using the quadrantectomy technique in a total of 43.14% (4,088) of all surgeries and about 89% of conservative surgeries. Other techniques used were adenectomy / adenomastectomy with 2.10% of all surgeries, segmental resection 0.33% and 1.30% segmentectomy. The 5-year survival of 11,327 patients diagnosed with breast cancer in general was around 75% and 89% among patients undergoing surgical treatment. Patients in clinical stage I who underwent conservative surgery had a survival rate of less than one year (0.27%), of one to two years (0.54%) of two to three years (0.61%), of three to four years (0.34%), of four to five years (0.61%) and of more than five years (97.6%). The surgeries performed that resulted in free margins for invasive neoplasia were 93.27%, and 2.53% required a reoperation to reach free margins. **Conclusions:** The data related to the survival of breast cancer patients submitted to conservative surgery collected at Pérola Byington Hospital were similar to the data found in Dutch women demonstrating a survival very close to 97% to 99%. In American women, the 7-year survival rate in initial cases (stage I) was 97.8%. Conservative surgery when combined with radiotherapy had results in relation to 5-year survival which are very close to the ones patients undergoing mastectomy had.

## FAMILIAL BREAST CANCER

<https://doi.org/10.29289/259453942021V31S1038>

# ANALYSIS OF PATHOGENIC AND UNCERTAIN SIGNIFICANCE VARIANTS IN NINE GENES OF THE BRCA1-MEDIATED HOMOLOGOUS RECOMBINATION PATHWAY IN PATIENTS WITH SUSPECTED HEREDITARY BREAST AND OVARIAN CANCER SYNDROME IN CENTRAL BRAZIL.

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**Introduction:** Breast cancer is the most frequent type of cancer in the world and the biggest cause of female deaths. About 10%–15% of cases are due to hereditary factors. The profile of genetic variants is still scarcely known among the Brazilian population and there are no published data for the central region of the country. **Objectives:** This study aimed to analyze the profile of pathogenic variants (PV) and of the ones of uncertain significance (VUS) for the RAD50, RAD51C, RAD51D, ATM, PALB2, BRIP1, BARD1 and CHEK2 genes in this population. **Methods:** 113 patients diagnosed with breast or ovarian cancer who met the National Comprehensive Cancer Networking criteria for hereditary breast and ovarian cancer syndrome were selected. The genes had all regions sequenced using NGS (New Generation Sequencing) and the raw data were evaluated using the Sophia DDM and IonReporter softwares. **Results:** A total of 3.53% of patients had PV in the PALB2 (c.2257C>T), BARD1 (c.176\_177delAG), RAD50 (c.2165dupA) or ATM (c.7913G>A) genes. Patients with pathogenic variants in ATM and PALB2 genes were diagnosed before the age of 40. Patients with pathogenic variants in the BARD1 and RAD50 genes had triple negative breast cancer before the age of 60. The patient with a pathogenic variant in the RAD50 gene also developed ovarian cancer. It was observed that 24.77% of the patients had some VUS, 35.29% of which were in the ATM gene, and a new VUS in the CHEK2 gene (c.1151T>C), related to male breast cancer. **Conclusions:** These findings contribute to a better understanding of the phenotype of patients with pathogenic variants related to breast cancer in non-BRCA genes. In addition, it reveals a new pathogenic variant in the CHEK2 gene, not described in the literature, related to a case of male breast cancer.

## RISK FACTORS AND MODELING

<https://doi.org/10.29289/259453942021V31S1039>

# BLOOD PRESSURE LEVELS AND RISK FOR BREAST NEOPLASIAS

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**Introduction:** Breast cancer (BC) is one of the most prevalent cancers and considered one of the main causes of death among women worldwide. The genetic contribution to the incidence of BC is of great relevance, however, modifiable risk factors seem to be related to the development of this neoplasm. Several studies have provided evidence on the role of blood pressure (BP) levels in the carcinogenesis process. Goals assess the association between BP levels and the occurrence of BC. **Methods:** This is a case-control study nested in a cohort conducted between December 2013 and August 2014 in a municipality in the south of Brazil. Patients referred to oncology referral centers before starting adjuvant or neoadjuvant therapy for BC participated in the study. The control group was composed of women who visited the gynecology clinic during the same period. For each newly diagnosed case of BC, a control matched for age ( $\pm 5$  years) and menopausal status was included. Data were obtained through measurements with standardized techniques of BP levels and waist circumference (WC) measurement. Individuals with systolic BP  $\geq 130$  mmHg and/or diastolic BP  $\geq 85$  mmHg were considered to have altered blood pressure. **Results:** Eighty two patients with BC and 82 controls (n=164) were evaluated. Slightly different characteristics were found between the two groups: skin color (p=0.097), months of breastfeeding (p=0.185) and physical activity (p=0.160). These variables were included in the adjusted analysis. Regarding the BP measurement, patients with SBP  $\geq 130$  mmHg and with DBP  $\geq 85$  mmHg were 7.30 and 4.56 times more likely to have MF (Malignant), respectively (95%CI 2.43–21.91, p<0.001 and 95%CI 1.82–11.44, p=0.003). This relationship remained significant after adjustment for WC  $\geq 80$  cm (OR = 6.75, 95%CI 2.22–20.54 and OR=6.75, 95%CI 1.67–10.81). **Conclusions:** The results of this study corroborate the current findings in the literature, showing evidence of an association between BP and BC levels. BP assessment, already incorporated into clinical practice and considered a predictor of several comorbidities, may gain additional importance in the female population as a modifiable risk factor for the prevention of BC. Thus, the importance of interventions in the management of BP levels in this population is elucidated.

<https://doi.org/10.29289/259453942021V31S1040>

# PALPEBRAL METASTASIS 11 YEARS AFTER DIAGNOSIS OF DUCTAL BREAST CARCINOMA

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**Introduction:** We seek to report a rare case of metastasis of infiltrating ductal carcinoma of the breast in the eyelid with a presentation 11 years after diagnosis of the primary tumor. Ocular metastasis needs to be recognized, because although it has limited survival, a timely diagnosis and treatment can significantly improve the quality of life of these patients. **Case report:** M.S.V., female, 59 years old, presented with locally advanced right breast cancer, clinical stage T3N1M0, with a histopathological diagnosis of infiltrating ductal carcinoma by percutaneous biopsy in 2008. Initially submitted to neoadjuvant chemotherapy, with complete clinical and histopathological response. Then, radical mastectomy was performed with right axillary lymphadenectomy and immediate breast reconstruction associated with contralateral breast symmetrization; adjuvant radiotherapy and hormone therapy with tamoxifen. She would be a carrier of pathogenic variant heterozygous BRCA 2, but preferred not to perform other risk-reducing therapies. She had a favorable evolution, with good therapeutic response, and continued to undergo periodic clinical and imaging exams, without changes. In 2019, she presented right eyelid ptosis, with a diagnosis of eyelid tumor. Complementary exams with evidence of an infiltrative lesion with mild expansive effect on magnetic resonance imaging of the orbit; secondary implants in the frontal region of the skull evidenced in bone scintigraphy and magnetic resonance imaging; in addition to high AC 15.3 = 274.42. A biopsy of the eyelid lesion was performed, with histopathological results of metastatic adenocarcinoma of breast origin and an immunohistochemical panel with the presence of estrogen receptor, Ki67 5%, no expression of HER2 and progesterone receptor, in addition to the presence of GATA3. Currently under treatment with Fulvestrant. The case infers great importance, due to the rarity of the metastatic site, which indicates a poor prognosis. Furthermore, it appeared more than twice it was expected after detection of the primary tumor. Although rare, these lesions can be the first sign of systemic disease.

<https://doi.org/10.29289/259453942021V31S1041>

# EVALUATION OF METABOLIC SYNDROME AND OBESITY IN WOMEN WITH BREAST CANCER TREATED IN A SERVICE WITH INTERDISCIPLINARY ATTENTION. A PROSPECTIVE COHORT

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**Introduction:** Patients with breast cancer have a higher risk of gaining weight and of presenting with metabolic syndrome (MS), with worsening overall and specific survival. Intervention from an interdisciplinary team can influence the prognosis. **Objective:** To evaluate the occurrence of metabolic syndrome and its components in women during the first year after diagnosis of breast cancer. **Methods:** Prospective, single-centered clinical study that included women with a recent diagnosis of breast cancer, age  $\geq 40$  years, histological diagnosis of breast cancer, without metastatic disease and without established cardiovascular disease (CVD). Clinical and anthropometric data (blood pressure, body mass index [BMI] and waist circumference) were collected through interviews and physical examination. For biochemical analysis, HDL, triglycerides (TG) and glucose were requested. Women with MS were considered to have three or more diagnostic criteria: waist circumference (WC) $>88$  cm; TG $\geq 150$  mg/dL; HDL $<50$  mg/dL; blood pressure  $\geq 130/85$  mmHg; glucose  $\geq 100$  mg/dL. The measurements were carried out in three moments: first cancer consultation (T0m), six months (T6m) and 12 months (T12m). The patients underwent interdisciplinary evaluation and monitoring (nutritional and psychological), according to the service's routine. For statistical analysis, the McNemar test was used to compare the moments and the  $\chi^2$  test of trend. **Results:** Seventy two women with breast cancer were included, with a mean age of  $58.4 \pm 10.7$  years and 83.3% in the post-menopause. The cancer profile of the patients was that of an early-stage disease (94.4% stage I and II) with a favorable immunohistochemical profile (79.1% positive estrogen receptor, 72.2% positive progesterone receptor and 86.1% HER2 negative). In the assessment of MS, no differences were observed in the occurrence between the three moments, with 37.5% of patients with MS at diagnosis, 43% at 6 months and 44.4% at 12 months ( $p=0.332$ ). A significant difference was observed in the occurrence of hypertriglyceridemia (TG $\geq 150$  mg/dL) of 25% in T0m, 36.1% in T6m and 44.4% in T12m ( $p<0.05$ ). There was no increase in obesity criteria (BMI  $\geq 30$  kg/m<sup>2</sup> and waist circumference / WC $>88$  cm) in the studied period, with mean BMI of 28.9 kg/m<sup>2</sup>, 28.8 kg/m<sup>2</sup> and 28.8 kg/m<sup>2</sup> and WC equal 97.2 cm, 97.2 cm and 96.7 cm, at T0, T6 and T12 moments, respectively ( $p>0.05$ ). When comparing the individual MS criteria between the three assessment moments, there was only a statistical difference in the triglyceride and glycemia criteria. The analysis of glycemia showed a decrease in mean values, from 106.6 mg/dL in T0m, 100.4 mg/dL in T6m and 98.9 mg/dL in T12m ( $p=0.004$ ). Regarding TG, an increase in mean values was observed, from 121 mg/dL in T0m, 139.4 mg/dL in T6m and 148.4 mg/dL in T12m ( $p=0.003$ ). **Conclusion:** Women with breast cancer submitted to interdisciplinary evaluation did not show an increase in the occurrence of MS during the first year after cancer diagnosis. Among the components of MS, there was a reduction in blood glucose values and an increase in triglyceride values.

<https://doi.org/10.29289/259453942021V31S1042>

# ASSOCIATION OF KI-67 VALUES AND PROGNOSTIC FACTORS IN BREAST CANCER

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**Introduction:** This study observed the relation of ki-67 values with prognostic factors and sought which cutoff points would be the best predictors for tumor staging. **Objectives:** Find which cut-off points for ki-67 would be the best predictors of tumor staging in breast cancer. **Methods:** The medical records of patients diagnosed with breast cancer from Instituto Sul Paranaense de Oncologia (Ponta Grossa – PR) from 2016 to 2017 were analyzed, and statistical tests were performed to evaluate the relationship between ki-67 and prognostic factors in order to find the cutoff point with better sensitivity and specificity in the characterization of tumor staging. **Results:** The highest values of ki-67 were found in younger patients and histological grade III tumors. The 30% ki-67 cutoff point obtained 64.06% sensitivity and 62.67% specificity in differentiating tumors with lymph node metastasis (N +) or without lymph node metastasis (N0). The cutoff point of 40% obtained sensitivity of 74.3% and specificity of 70% in the prediction of early or advanced tumors. Ki-67 values were positively associated with prognostic factors such as histological grade, molecular profile, age, tumor size and lymph node involvement. **Conclusions:** The level of Ki-67 positivity is directly correlated with prognostic factors in breast cancer. Rates above 30% demonstrated a high correlation with lymph node involvement. The lack of studies in the literature that used the same methodology to calculate the sensitivity of ki-67 cutoff points in the prediction of lymph node metastasis was a differential point in this study, which may bring new perspectives for the use of this marker in the clinical and therapeutic orientation of breast cancer, requiring new studies with larger sampling to confirm the results found.

## EPIDEMIOLOGY, RISK, AND PREVENTION – OTHER

<https://doi.org/10.29289/259453942021V31S1043>

# CROSS-SECTIONAL ANALYSIS OF CLINICAL AND MORPHOLOGICAL FACTORS OF BREAST CANCER IMMUNOPHENOTYPES: A COMPARATIVE STUDY OF TWO DIFFERENT METHODOLOGIES OVER A 24-YEAR HISTORICAL SERIES

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**Introduction:** Breast cancer (BC) is the most incident form of cancer in women worldwide. The widespread use of breast screening programs, as well advances in molecular biology, and new drugs in chemotherapy have contributed to the recent survival rate improvement in high income countries. Furthermore, the study of cancer genome led to the elucidation of the intrinsic subtypes of invasive breast cancer (IBC), consequently, the success rate of targeted therapies improved the outcome in patients. However, considering that immunohistochemistry (IHC) is one of the main methods to determine the profile of protein expression in surgical pathology, most antibodies used have a presumed or already established role and represent proteins whose transcription has been previously described in genetic profile studies. **Objectives:** Describe the prevalence of IBC in women admitted to a public hospital in Brazil from 1994 to 2018, to establish a correlation between two models of immunohistochemical analysis, the 13th St. Gallen Conference classification and the biomarker-defined subtypes based on HER2 and estrogen receptor (ER) status, and to investigate the profile of these cases. **Methods:** Retrospective database analysis was performed. 1,335 women with histologic diagnosis of IBC were included in the study from a public hospital in Brazil between 1994 and 2018. Frequencies and univariate associations were estimated by using chi-square tests. Agreement between the immunohistochemical groups were tested by using Cohen's kappa coefficients. **Results:** The mean age was 56.1 years. The most prevalent subtype was luminal B/HER2 and the frequency of tumors with worse prognosis was 62.7%. An association was found between histological grade 3 (G3) and the worst prognostic subtypes: non-luminal A (OR=31.18; 95%CI 13.76–70.64), TNBC (OR=8.77; 95%CI 6.20–12.41), non-ER+/HER2- (OR=5.37; 95%CI 4.11–7.04) and ER-/HER2- (OR=8.50; 95%CI 6.10–11.85). A similar association was found for nuclear G3: non-luminal A (OR=6.3; 95%CI 4.29–9.47), TNBC (OR=5.14; 95%CI 3.64–7.31), non-ER+/HER2- (OR=4.83; 95%CI 3.80–6.15) and ER-/HER2- (OR=5.41; 95%CI 3.92–7.50). When the two models of immunohistochemical analysis were compared, the results showed an agreement rate of 99.48% to 100%. **Conclusions:** Our results show that most cases had worse outcomes, and there was absolute agreement between the two models of immunohistochemical analysis. These results can contribute to institutions that do not have molecular investigation, enabling accessible tools in routine practice.

<https://doi.org/10.29289/259453942021V31S1044>

# BRAZILIAN OUTLOOK OF BREAST CANCER MORTALITY IN VALIDITY OF MAMMOGRAPHIC SCREENING - A TIME REVIEW

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**Introduction:** Breast Cancer is the cancer with the highest incidence among the female population at national and worldwide levels, except for non-melanoma skin cancer. It is also the main cause of cancer deaths in women, representing an important public health problem. This scenario justifies the implementation of strategies that aim to reduce mortality and morbidity rates in its target population. Based on this demand, the document “Breast Cancer Control - Consensus Document” was prepared in 2004 by the Brazilian National Cancer Institute (INCA) and the Brazilian Department of Health, with an improvement in 2015 through the “Guidelines for Early Detection of Breast Cancer in Brazil”. **Objectives:** The objective of the present work is to evaluate the outlook of breast cancer mortality in women in Brazil between the years 2009 and 2018, considering the mammographic screening implementation. **Methods:** A retrospective and descriptive epidemiological study was carried out using the last ten years of Brazilian data available on INCA’s Online Mortality Atlas (from 2009 to 2018). In addition, documents released by INCA and the Department of Health that contemplate breast cancer issues in women and mammographic screening were selected, as they reflect the reality of the country. The age group primarily observed was between 50 and 69 years, which correspond to that indicated for mammographic screening in the current legislation. **Results:** Deaths due to breast cancer rose from 11,968 to 17,572 between 2009 and 2018, which represents an increase of 46.82%, as shown in Table 1. Considering the same time frame, the values in percentage show an increase of 0.48% when compared to the total number of deaths (from 2.54% to 3.02% - as shown in Table 2). The mortality rate by age group increased: from 32.54 to 35.63 for the group aged 50 to 59 and from 41.78 to 53.63 for the group aged 60 to 69 years. The data show the persistent increase in the mortality rate due to the disease, despite the implementation of mammographic screening. The significant reduction in mortality predicted in the literature for the age group 50 to 69 years depends on factors such as high coverage and quality of screening, in addition to adequate treatment. Globalization and industrialization increased exposure to risk factors. The increase in life expectancy is expected to interfere with incidence and prevalence. **Conclusions:** Conditions mentioned above may justify the increase in mortality. Therefore, the relevance of screening in cancer’s pre-clinical identification still justifies its indication and implantation.



<https://doi.org/10.29289/259453942021V31S1045>

# A MULTICENTRIC STUDY ON BREAST CANCER IN ULTRA YOUNG WOMEN: I – A CLINICAL AND EPIDEMIOLOGIC PICTURE

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**Introduction:** A substantial number of young women (YW) is affected by breast cancer (BC), an important cause of death in young age. The definition of a YW in a BC context varies in the literature. Considering specific characteristics, such as reproductive factors and hereditary risk, we defined ultra young women (UYW) as women aged 30 years or less. Despite the fact that specialized centers are increasingly providing assistance to UYW with BC, important aspects of the disease in this age remain controversial. **Objective:** Evaluate clinical and epidemiological characteristics of BC in UYW in the State of São Paulo. **Methods:** We conducted a multicentric, observational, retrospective study of consecutive BC in UYW patients in nine Services. Only patients with infiltrating BC aged 30 years or less were included. The following data were collected: age, body mass index, parity, hormonal contraception use, history of breast/ovarian cancer in the family, pathological tumor category and clinical staging. Frequency parameters were estimated. The research protocol was approved by the Ethics Committee of all collaborative centers. An informed consent was waived. **Results:** The study population included 293 patients. Age varied between 19 and 30 years (mean 27.3; median 28). Considering body weight, we found that 37.1% of the patients were overweight or obese. 58.6% were current or past HC users. Nulliparity was referred in 44.4%. 246 cases reported family history of BC which was verified in first degree relatives in 37.9%, while 66 patients referred BC in any member of the family. Only 33 patients went through a multigene testing panel: pathogenic inherited variants were detected in 37.5%. Remarkably, locally advanced tumors were diagnosed in 57.1%. Tumor sizes at diagnosis were: T1-11.8%, T2-33.8%, T3-31.6% T4-19.9% and T4d-2.9%. Clinical axillary lymph nodes evaluation revealed: N0-35%, N1-42.8%, N2-18.7%, and N3-3.5%. Systemic metastases at diagnosis were observed in 29 cases, that were classified as stage IV “de novo” (9.8%). The metastases sites were multiple in 31% and the clinical staging in the diagnosis are later. **Conclusion:** An unfavorable picture was observed in UYW with BC. We found a high rate of advanced neoplasias, with adverse clinical prognostic factors. To change the present-day scenario, we need to educate the population, enhancing BC awareness and self-body attention since adolescence, besides stimulating the adoption of a healthy lifestyle.

## BIOMARKERS

<https://doi.org/10.29289/259453942021V31S1046>

# ASSOCIATION BETWEEN GATA3 AND PATHOLOGICAL AND IMMUNOHISTOCHEMICAL PREDICTIVE AND PROGNOSTIC PARAMETERS IN EARLY BREAST CANCER

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**Introduction:** GATA3 gene, at 10p14, a member of the GATA family with two GATA-type zinc-fingers, encodes the transcription factors GATA - binding protein 3 (GATA3), critical for the luminal breast epithelium development and maintenance. The GATA3 protein is a linear one, with more than 400 aminoacids, that can be recognized by immunohistochemical analysis. Mutations of the GATA3 and loss of the expression of its related protein are implicated in breast cancer development and aggressiveness. As the most frequent transcription factor in luminal tumor cells, GATA3 became an important marker of mammary differentiation in neoplasias of unknown origin, better than mammaglobin and gross cystic disease fluid protein (GCDFP). **Objectives:** In this study, we aimed at assessing pathological and immunohistochemical variables and their association with GATA3 expression, adding bases for breast carcinogenesis comprehension and BC (Breast Cancer) precision therapy. **Methods:** GATA3 was analyzed by immunohistochemistry in whole histological sections of tumors from 105 female patients with histological diagnosis of invasive breast carcinoma and at clinical stages I, II and IIIA, who underwent primary surgical treatment (protocol approval number: 1,604,792). GATA3 nuclear expression was determined in percentage of tumor cells and categorized as preserved (positive expression in more than 95% of cells) or reduced (negative or expression in up to 95% of tumor cells). GATA3 expression was analyzed according to patient's age, tumor and node pathological stage, histological type, histological and nuclear grade, lymphovascular invasion, estrogen receptor, progesterone receptor, androgen receptor, HER2 status, and Ki-67. **Results:** GATA3 expression was detected in 103/105 (98.1%) cases. Reduced expression was associated with higher histological and nuclear grade, negative hormonal receptors, HER2-positive and higher proliferative activity according to Ki-67 expression. Triple negative breast carcinomas (TNBC) and ER-negative/HER2-positive presented the highest frequency of GATA3 reduction (75%) compared to ER-positive/HER2-negative (4.1%) and ER-positive/HER2-positive (20%). Proliferative activity in TNBC tended to be higher among tumors with GATA3 reduced, irrespective of androgen receptor expression. In the group of ER-positive/HER2-negative tumors only 3 cases presented GATA3 reduction, all of them with high proliferative activity. **Conclusions:** GATA3 expression is present in almost all cases of early breast cancer. Reduction in its expression is associated with adverse prognostic factors and higher proliferative activity in all subtypes, including ER-positive/HER2-negative tumors.

<https://doi.org/10.29289/259453942021V31S1047>

# IMMUNOHISTOCHEMICAL PROFILE STRATIFIED IN AGE RANGE IN 11,326 PATIENTS FROM THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS) IN SÃO PAULO

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**Introduction:** The development of breast cancer is heterogeneous and there are variations in its morphologic and biological characteristics. Several risk factors for breast cancer have already been identified, including the age group. It is well-established that the incidence of breast cancer increases from the age of 65. Older patients are more likely to have tumors which are positive estrogen receptors (ER) and progesterone receptors (RP) and, HER2 negative, which are associated with better outcomes. In contrast, younger patients with triple-negative breast cancer and HER2 positive are associated with reduced survival and poor prognosis. **Objectives:** To evaluate immunohistochemical profiles stratified by age group in patients diagnosed with breast cancer at Pérola Byington Hospital. **Methods:** A retrospective cross-sectional study was carried out at the Referral Center for Women's Health - Hospital Pérola Byington– São Paulo (SP), Brazil. The data were removed from the collection system during the period of January 2011 to December 2018. Such women were stratified through the subtype histochemical analysis and evaluated in relation to their age at diagnosis. **Results:** We analyzed the immunohistochemical profile of 11,326 patients treated at Hospital Pérola Byington from January 2011 to December 2018. Luminal A tumors corresponded to 2,629 cases and among these 7.3% were under 40 years old, 23.1% between 40 and 50 years old and 69.6% were over 50 years old. The rate of tumors luminal B was 3,494 cases, with 10.1% in patients under 40, 24.2% between 40 and 50 years old and 65.6% over 50 years old. Acheampong et al. carried out a study on the incidence of molecular subtypes in the USA between 2010 and 2016 and concluded that from the 32,0124 women included, 72.6% were classified as luminal A, 11.2% luminal B, 4.8% overexpression of HER2 and 11.3% tumors. **Conclusions:** Based on the molecular markers, we classified the subtypes into four breast carcinomas: luminal B was the most frequent, followed by luminal A. The subtypes showed no significant difference in relation to their histological type nor age. Thus, the correlation between histological diagnosis and immunohistochemistry can improve the treatment and survival of women with breast cancer and, consequently, improve the therapeutic response of patients.

<https://doi.org/10.29289/259453942021V31S1048>

# ESTROGEN RECEPTOR $\beta$ AND AS A POSSIBLE BIOMARKER OF TAMOXIFEN RESISTANCE

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**Introduction:** Approximately two-thirds of all breast cancer patients overexpress hormonal receptors and are treated with endocrine therapy, being tamoxifen (TAM) the standard treatment. However, many of the initial responders to TAM as first-line experience relapse. Several mechanisms have been proposed to explain the occurrence of acquired TAM resistance. Previous studies showed that estrogen receptor  $\beta$  (ER $\beta$ ) expression is associated with better response to tamoxifen treatment, as the co-expression of ER $\alpha$  and ER $\beta$  is associated with TAM antiproliferative effects. Moreover, there is a growing interest about the cross talk between ERs and ErbB family in response to endocrine therapy. **Objectives:** The aim of the present study was to evaluate the expression of ER $\beta$  and the relation of ER $\beta$  with ER $\alpha$  and ErbB family in response to TAM treatment and in TAM resistant cells. **Methods:** ER $\beta$  expression was analyzed in two different databases of breast cancer patients. The mRNA levels of ER, HER receptors and PTEN and MAPK signal pathways were measured after TAM treatment, in TAM resistance cells and in cells silenced for ER genes. The cellular viability was also measured after TAM treatment, in TAM resistance cells and in cells silenced for ER genes. **Results:** Breast cancer patients presented reduced ER $\beta$  expression, and the ER $\alpha$ -positive breast cancer subtypes presented lower ER $\beta$  levels when compared to ER $\alpha$ -negative breast cancer subtypes. Cells expressing moderate levels of ER $\beta$  presented a better response to TAM treatment. Downregulation of ERs induced by TAM treatment was accompanied by an increase in ErbB2 and ErbB3, MAPK3 mRNA levels and increased PTEN levels. TAM-resistant cells expressed decreased ERs, PTEN and MAPK3 mRNA levels and increased EGFR, ErbB3 and ErbB4 levels. In accordance to the resistance finding, cells silenced for ER $\beta$  presented decreased MAPK3 and cells silenced for ER $\alpha$  showed an increased EGFR. **Conclusions:** These results provide additional data indicating the importance of ER $\beta$  as a possible biomarker of endocrine resistance and highlighted the interaction between ER $\alpha$  and EGFR as a mechanism of TAM resistance.

## GENETICS

<https://doi.org/10.29289/259453942021V31S1049>

# PREVALENCE OF VARIANTS OF UNCERTAIN SIGNIFICANCE IN TESTS REQUESTED FOR BREAST CANCER PATIENTS IN A PRIVATE SERVICE

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**Introduction:** The genetic mutations test among breast cancer (BC) patients is one of the steps for the diagnosis in the majority of the patients. To identify and manage patients with hereditary predisposition to cancer is also a competence of the breast surgeon. The development of Next Generation Sequence (NGS) has allowed the reduction of the tests' cost as well as the expansion of the analyzed genes, besides BRCA 1 and 2, and the inclusion of new genes of high and moderate penetrance. There is a concern about the impact of these results because there is not a well-established conduct for all the mutations as well as for the increase of the diagnoses of variant of uncertain significance (VUS) diagnosed in the panels, mostly in patients that did not receive a formal genetic counseling. Studies show that the larger number of analyzed genes is related to a better chance of detecting VUS, reaching 40%, but they are not conduct modifiers. The literature shows that approximately 90% of VUS are reclassified as benign. **Objectives:** To assess prevalence of VUS in multigenic panels requested by the non-geneticist physician, in private office, performed on patients with BC diagnosis. **Methods:** A retrospective cross-sectional study was conducted based in data from invasive BC patients or in situ or with high risk for neoplasia that attended a private office and were subjected to multigenic panels requested by the non-geneticist physician from January 2019 to January 2020. Statistical analysis frequency measurements were analyzed in Excel Office®. **Results:** 147 patients underwent the genetic test of 83 genes with NGS technology. Only one was a male. Among the tests performed, 48 were negative for pathogenic variants and 23 were positive for pathogenic mutations in 22 (15%) patients, the most common being in BRCA2 gene (7 cases), followed by MUTHY (6 cases). 137 VUS occurred in 77 (52.4%) patients, the most common of these being in gene POLE and RECQL4. **Conclusions:** The data found in our population match the literature, showing more than half of the patients with VUS. This demonstrates the importance of test interpretation as well as inpatient correct orientation.

<https://doi.org/10.29289/259453942021V31S1050>

# EXPRESSION OF miRNAs SUGGESTS A POTENTIAL ROLE IN BREAST CANCER

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**Introduction:** MicroRNAs (miRNAs) are regulators of gene expression in biological processes, mainly repressing translation or degrading messenger RNA (mRNA) from their target genes. Their deregulation is associated with a wide variety of diseases, including cancer. Breast cancer (BC) is the most common cancer among women worldwide. Understanding the mechanisms involved in this pathology is essential for the discovery of new diagnostic and prognostic markers. **Objectives:** Investigate the differential expression of selected miRNAs in luminal A (LA) and triple-negative breast cancer (TNBC). **Methods:** We evaluated the expression of miR-320a, miR-4433b-5p, miR-142-5p, and miR-150-5p in 31 BC samples (19 LA and 12 TNBC) and 29 adjacent non-tumor breast cancer (NT). The miRNAs were selected after in silico study. RT-qPCR was the method of choice, using RNU48 as endogenous control, and the BT-474 cell line was used as a calibrator between plates. The  $2^{-\Delta\Delta C_t}$  method was used to estimate miRNA expression level. Individual receiver operating characteristic (ROC) curves were calculated based on RQ values to investigate the diagnostic value of miRNAs. **Results:** miR-142-5p, miR-150-5p, miR-320a, and miR-4433b-5p were downregulated in BC compared to NT samples. All studied miRNAs were able to discriminate between BC and NT samples with sensitivity and sensibility (AUC – Area under curve >0.7 and  $p < 0.05$ ). A panel including all miRNAs improved the AUC to identify TNBC patients compared to NT (AUC=0.9240, sensitivity 94.44%, specificity 100%). We found no difference comparing miRNAs between LA and TNBC BC subtypes. There was no association between expression levels and prognostic parameters (age, histological grade, size of the tumor, axillary lymph node status). **Conclusions:** Our data suggest that downregulation of miR-142-5p, miR-150-5p, miR-320a, and miR-4433b-5p can be involved in BC for not repressing the expression of target genes. Functional studies will contribute to elucidate their involvement in BC.

<https://doi.org/10.29289/259453942021V31S1051>

# IN SILICO AND PROTEOMICS APPROACHES SUGGEST UPREGULATION OF miR-146a-5p IN TNBC AND MODULATION OF CRITICAL PROTEINS

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**Introduction:** Breast cancer (BC) is the most common type of cancer after non-melanoma skin tumors among Brazilian women, with 61.61 cases estimated for 100 thousand women in 2020. New biomarkers, such as miRNAs and selected proteins, are essential in personalized medicine. **Objectives:** To evaluate the expression and possible role of miR-146a-5p in subtypes of BC. **Methods:** miRNAs selection was performed using in silico analysis from the TCGA (The Cancer Genome Atlas) database. Data from the miRNAs expression of 1,085 patients were accessed and compared among BC subtypes. After normalization, the Bayesian Student t-test evaluated differential expression (DE) analysis via the limma R package. Lists with DE miRNAs were divided between up and down-regulated status ( $FC = \pm 2$ ). A second approach was to submit the data obtained from BC samples' mass spectrometry to IPA software to predict the activation/inhibition of upstream regulators in DE proteins lists in the tumor (T) versus contralateral tissue (CT). **Results:** A total of 206 upstream regulators were discovered at  $p < 0.05$ ; 12.6% of them were predicted with z-score values. In a TCGA analysis, miR-146a-5p was found up-regulated in triple-negative (TNBC) in comparison to other subtypes as a hormonal receptor (HR)+, HER2+, and non-TNBC (HR+ plus HER2+). The same was observed in TNBC cell lines by RT-qPCR. This miRNA was also predicted as an indirect regulator of CAT, LTF, CFH, and PGLYRP2 proteins in an IPA analysis. The proteomic analysis also demonstrated these molecules' relation with cancer hallmarks such as invasion, inflammation, and immune response. **Conclusions:** The results suggest that miR-146a-5p deregulation has a role in BC, mainly in TNBC, via the regulation of essential proteins. A better understanding of these molecules in BC is critical to define new biomarkers.

<https://doi.org/10.29289/259453942021V31S1052>

# TLNC-UC.147, A NOVEL LONG RNA (lncRNA) FROM AN ULTRACONSERVED REGION AS POTENTIAL BIOMARKER IN LUMINAL A BREAST CANCER

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**Introduction:** Long RNAs are non-coding RNAs with more than 200 nucleotides in length, with essential regulatory roles in several biological processes, including in breast cancer (BC). The human genome contains 481 ultraconserved regions, which are genomic stretches of over 200 base pairs conserved among humans, rats, and mice. Most of these regions are transcriptionally active (T-UCRs), and several are differentially expressed in tumors. Some T-UCRs have been functionally characterized, but few have been associated with BC. **Objectives:** In this study, we aimed to expand the knowledge of T-UCRs in BC and characterize the lnc-uc.147, a long RNA transcribed from an ultraconserved region. **Methods:** We evaluated the expression level of 481 T-UCRs and their association with clinical parameters from TCGA data. For confirmation, 102 Brazilian BC samples were analyzed by RT-qPCR. Cytosolic and nuclear cell fractions and RT-qPCRs were done to determine the cell compartment of the transcript. Northern blotting and RACE were performed to determine the sequence and precise size of lnc-uc.147. Using two luminal cell lines (CAMA and BT474), a siRNA-based approach was applied to investigate the effects of lnc-uc.147 knockdown in cell viability, colony formation, and apoptosis level. To understand the interactions of lnc-uc.147 and proteins, we performed a pull-down assay. **Results:** Using TCGA (The Cancer Genome Atlas) data, we found 302 T-UCRs related to clinical features in BC: 43% were associated with molecular subtypes, 36% with estrogen-receptor positivity, 17% with HER2 expression, 12% with stage, and 10% with overall survival. We found that uc.147 is highly expressed in luminal A and B patients, which was also confirmed in Brazilian samples. For luminal A, a subtype usually associated with better prognosis, high uc.147 expression was associated with a poor prognosis and suggested as an independent prognostic factor. The lncRNA from uc.147 (lnc-uc.147) is in the nucleus. Northern blotting results show that uc.147 is a 2,8 kb monoexonic transcript. The silencing of uc.147 increases apoptosis, arrests the cell cycle and reduces cell viability and colony formation in luminal BC cell lines. Additionally, we identified 19 proteins that interact with uc.147 through mass spectrometry. These proteins are mainly involved in cytoskeletal and centrosome organization as well as in epithelial-mesenchymal transition. **Conclusions:** We show herein evidence that neoplastic BC cells exhibit a unique expression profile of T-UCRs. This study characterized the lnc-uc.147, a transcript that has never been described before. Indeed, lnc-uc.147 has an oncogenic effect in the luminal BC cell line and can interact with proteins. Furthermore, uc.147 has the potential as a BC prognostic marker in luminal patients.



## PREDICTIVE BIOMARKERS

<https://doi.org/10.29289/259453942021V31S1053>

# ANALYSIS OF CD80 AND CD86-EXPRESSING B LYMPHOCYTE LEVELS IN THE BLOOD OF WOMEN WITH LOCALLY ADVANCED TRIPLE NEGATIVE BREAST CANCER

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**Introduction:** Breast Cancer was the second most common malignant neoplasm and the leading cause of cancer-related deaths in women worldwide in 2018; it can be classified according to the immunohistochemical pattern in four main tumor subtypes, with triple negative breast cancer (TNBC) being the most aggressive subtype with the worst prognosis, representing a public health problem. With the advancement of knowledge about the biology of tumors, the importance of understanding the interactions between the tumor, the tumor microenvironment and immune system cells has come to light, especially the role of CD80 and CD86 co-stimulator molecules in the activation of TCD4+ lymphocytes, cytokine production and proliferation of these cells against tumor antigens. **Objectives:** To assess the levels of CD80 and CD86-expressing B lymphocytes in the blood of women with locally advanced triple negative breast cancer. **Methods:** This is a prospective and exploratory cohort study of 30 women with triple negative breast cancer and 30 healthy controls, conducted in 2018–2019. Peripheral blood collection was performed prior to chemotherapy. Immunophenotyping of B lymphocytes and CD80 and CD86 molecules was performed by flow cytometry. Women were evaluated for the degree of pathological response to chemotherapy, and were divided into groups with full (RC) or partial (RP) pathological response. Nonparametric Mann-Whitney tests were used for comparison between the two groups. Values of  $p < 0.05$  were considered significant. Analyses were performed using Graphpad v7.0 software. **Results:** We analyzed 30 patients with locally advanced triple-negative breast cancer. The age of the patients ranged from 27 to 59 years, median age was 44.5 years (35.5–51.7), most patients were in the age group  $\leq 50$  years (43.3%). Regarding menopausal status, 62.1% were premenopausal and 37.9% postmenopausal. Regarding the nuclear grade, 63% of the tumors were grade 3, followed by 27% grade 2. In relation to clinical stage, 30% were in stage IIIA, 63.4% stage IIIB and 6.6% stage IIIC. In the evaluation of response to neoadjuvant treatment, 56.7% of patients had complete pathological response, and 43.3% partial response. TNBC patients had high levels of CD86 + B lymphocytes when compared to controls ( $p < 0.0001$ ). Regarding total B and CD80 + B levels - no significant differences were observed between the groups. In the analysis of CD86 and CD80 expression and total B cell levels, no significant differences were observed between the RC and RP groups. **Conclusions:** This study showed that the immune system of patients with triple negative breast cancer is able to regulate costimulatory molecules in circulating B.

<https://doi.org/10.29289/259453942021V31S1054>

# PREDICTIVE VARIABLES OF PATHOLOGIC COMPLETE RESPONSE (PCR) IN INVASIVE DUCTAL CARCINOMA

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**Introduction:** Achieving a pCR after neoadjuvant chemotherapy is generally associated with better outcomes. Identifying modifiable and non-modifiable variables that correlate with a complete response is important to treatment. **Objectives:** The aim of this study was to identify clinical and immunohistochemical variables that correlate with pCR, in a public and a private breast cancer unit in the city of Curitiba, state of Paraná, Brazil. **Methods:** A retrospective analysis was carried out through medical records at Hospital de Clínicas- UFPR and Centro de Doenças da Mama- Hospital Nossa Senhora das Graças. Patients who underwent surgical treatment after neoadjuvant chemotherapy, in the period from January 1, 2017 to December 31, 2020, due to an invasive ductal carcinoma were selected. Clinical and immunohistochemical variables were correlated to the presence of pCR. Ethical committee approval n. 4,295,049. **Results:** In 240 cases included, 66 (27.5%) reached pCR. There was a significant correlation between pCR and the negativity of the hormonal receptors ( $p=0.002$ ), HER2 positivity ( $p=0.002$ ), Ki67 expression ( $p=0.012$ ) and molecular subtypes ( $p=0.001$ ). A ROC (receiver operating characteristic) curve analysis identified a 50% percentage as the best cut-off value to predict complete response. On the other hand, it was not observed a significant correlation between pCR and body mass index, or physical activity. **Conclusions:** There is a strong correlation between immunohistochemical parameters and pCR. Further studies are needed to determine the correlation between modifiable variables.

## PROGNOSIS FACTORS

<https://doi.org/10.29289/259453942021V31S1055>

# RECURRENCE PROFILE AND PROGNOSIS IN A NEGATIVE SENTINEL LYMPH NODE BREAST CANCER PATIENTS COHORT TREATED AT HOSPITAL DO SERVIDOR ESTADUAL DE SÃO PAULO

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**Introduction:** Breast cancer is the main cause of death by cancer among Brazilian women and its incidence increases annually. Due to screening and new technologies, diagnosis without axillary metastasis is increasing. **Objectives:** This study aimed at evaluating locoregional recurrences, distant metastasis, prognostic factors associated to those outcomes and its impact on deaths among breast cancer patients treated in a public hospital of São Paulo. **Methods:** It is a retrospective cohort study that included 342 T1-3N0 breast cancer patients with negative sentinel lymph node biopsy submitted to primary surgery between March 2014 and March 2019 at Hospital do Servidor Público Estadual (HSPE). Primary outcomes were locoregional recurrence rate, distant metastasis rate, mortality, disease free survival and overall survival. Secondary outcomes were the association between primary outcomes and prognostic factors established in the literature. **Results:** During 1.5 to 6.4 years of follow-up (median time 3.3 years), there was 3.8% locoregional recurrence cases, 4.1% distant metastasis and 3.8% deaths. Locoregional recurrence free survival in three years was 94.4% and metastasis free survival was 95.6%. Overall survival in three years was 97.2%. It was observed an association between locoregional recurrence histological subtype and hormonal therapy, distant metastasis, histological subtype and tumor grade, deaths and tumor grade. The results evidence that locoregional recurrences increase distant metastasis, but do not reduce overall survival. On the other hand, distant metastasis decreases overall survival. **Conclusions:** This study showed that breast cancer patients without axillary metastasis treated at HSPE presented consistent locoregional recurrence, metastasis and mortality patterns in the literature. Further studies with more participants and longer follow-up are necessary to evaluate the relative risk of each prognostic factor included in the present research.

**TUMOR CELL, MOLECULAR BIOLOGY,  
PREDICTIVE AND PROGNOSTIC FACTORS - OTHER**

<https://doi.org/10.29289/259453942021V31S1056>

# 5-YEAR SURVIVAL ACCORDING TO THE MOLECULAR SUBTYPE OF 9,516 BREAST CANCER PATIENTS TREATED IN A REFERENCE CENTER

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**Introduction:** Breast cancer in Brazil has a high mortality rate due to the large number of patients diagnosed and treated in advanced stages, due to lack of an organized screening program and the long time from diagnosis to initiation of treatment in the Unified Health System (SUS). For the 2020–2022 triennium, the National Cancer Institute (INCA) estimated 66 thousand new cases of breast cancer among Brazilian women. In the city of São Paulo, 5,350 new cases were estimated, with a gross rate of 80.81/100,000. The biomarkers (RE, RP, Her2 and Ki-67) in breast carcinomas allowed for division into four subgroups: luminal A, luminal B, overexpression of HER2 and triple-negatives and greatly contributed to the specificity therapy with an impact on patient survival. The data about survival in SUS is scarce in the literature. **Objectives:** To assess 5-year survival in different molecular subtypes in 9,516 patients treated for breast cancer from January 2011 to December 2019 at Pérola Byington Hospital (PBH). **Methods:** The official database of PBH from January 2011 to December 2019 included 11,373 cases of breast cancer. Based on that, we proposed an observational, cross-sectional and retrospective study and we could include 9,516 patients treated for invasive breast cancer which had data available to analyze overall survival according to the molecular type of the tumor, regardless of the tumor clinical stage. **Discussion:** The luminal molecular subtype A (present in 24.7%) had better survival (92% in five years), the luminal subtype B was the most frequent, (32.8%) and the slightly lower survival, 88%. The ones that had the shortest survival, especially in the first two years, were the HER-2 subtypes present in 17.5% and the triple-negative ones (25.1% of the patients). There are few data in Brazil evaluating the molecular subtypes and survival. The great number of triple-negative tumors is probably due to the fact that it was a population of untraceable women under the age of 50. **Conclusions:** The molecular subtypes of breast cancer are important to guide therapeutic measures and to predict the prognosis of patients. With data obtained at Hospital Pérola Byington, it can be concluded that the Luminal A subtypes are the ones with the best prognosis, while the Triple negative and Her 2 positive had higher mortality, especially over the first two years.

<https://doi.org/10.29289/259453942021V31S1057>

# COMPLETE PATHOLOGICAL RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY IN BREAST CANCER PATIENTS: ANALYSIS OF 83 PATIENTS TREATED AT A FEDERAL PUBLIC SERVICE

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**Introduction:** Neoadjuvant chemotherapy is performed before surgical treatment and aims to make a locally advanced tumor operable, provide conservative treatment, demonstrate tumor sensitivity in vivo and evaluate the pathological response (PR) to treatment. PR is an important prognostic factor, and several studies have demonstrated a correlation between the biological factors of the tumor and its response rate. Patients with a pathologic complete response (PCR) present a longer survival rate compared to those with residual disease. **Objectives:** The main objective was to assess PCR in patients with breast cancer undergoing neoadjuvant chemotherapy. As secondary objectives, we identified clinical-pathological variables related to PCR and correlated the pathologic response in the breast with the axillary response after chemotherapy. **Methods:** Four hundred and forty-four medical records of patients seen in the Mastology sector were reviewed between January 2016 and July 2019. Eighty-three patients were selected, with 361 cases that did not meet the inclusion criteria being excluded. The exclusion criteria were benign disease, neoadjuvant hormone therapy, neoadjuvant radiation therapy, trastuzumab associated with chemotherapy, upfront surgery and patients who did not receive surgical treatment after chemotherapy. The variables analyzed were age, tumor size, axillary involvement, histological type and grade, molecular subtype and PCR. **Results:** Most patients were over 50 years of age (62%) and had tumors larger than 5 cm (75%). Fifty of them (60%) had initial axillary involvement. Among the 83 patients, 64 (77%) did not obtain a pathologic response in the breast and armpit. Two (3%) showed a response only in the breast. PCR was observed in 17 patients (20%) and almost half of them were under 50 years of age (47%). Moderately differentiated (grade 2) and undifferentiated (grade 3) tumors, accounted for 96% of cases and had a higher rate of PCR than grade 1 tumors. In HER2 positive subtypes, PCR occurred in 36% and in negative triples in 22%, being higher than in luminous A and B subtypes (15% and 17%, respectively). **Conclusions:** The histological grade and molecular subtypes correlate with the pathologic response to neoadjuvant chemotherapy. More undifferentiated tumors and the triple negative and HER 2 positive molecular subtypes have a higher PCR rate. Despite the small sample, the results of this study were similar to those in the medical literature. A higher number of cases is necessary to corroborate the data obtained, as well as a longer follow-up time to demonstrate the relationship between PCR and survival.

<https://doi.org/10.29289/259453942021V31S1058>

# TIN VITRO BREAST CANCER CHEMORESISTANCE TEST

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**Introduction:** Tumor resistance is the main cause of treatment failure leading to cancer progression and is classified into intrinsic and acquired resistance. Intrinsic resistance is related to a preexisting condition and acquired resistance is induced by a drug. Some methods are already available worldwide to assess drug resistance, however, in Brazil no in vitro chemoresistance test for cancer is validated for clinic use. **Objectives:** The aim of our study was to validate the in vitro chemoresistance test Chemobiogram for the drugs used in breast cancer (BC) treatment. An incomplete response to neoadjuvant treatment was used to validate the results at a short-term follow-up and treatment after primary BC will be used to validate the test in a long-term follow-up. **Methods:** Patients with invasive breast cancer were included in this initial report. Fresh tumor samples were collected during surgery and subsequently dissociated to obtain tumor cells. The tumor cells were cultured in a 96 well plate with the several drugs used for BC treatment, including cytotoxic, hormonal, anti-HER2, and target therapies, and after 72 hours, cell viability was evaluated. The test result is defined based on cell viability as low (<40%), medium (40%–60%), and high (>60%) resistance. The test result is compared to the patient's response to the treatment. **Results:** To validate the dissociation and BC primary culture techniques we collected samples from six patients with in situ and invasive tumors. These samples were not tested in Chemobiogram. Samples from five BC patients undergoing neoadjuvant treatment and from three patients with primary BC were tested in the Chemobiogram. Of the five patients who underwent neoadjuvant treatment, two performed hormone therapy and three underwent chemotherapy. Four patients presented incomplete response to the treatment and one patient who underwent neoadjuvant chemotherapy presented disease progression during treatment. The chemoresistance test was able to demonstrate medium to high resistance for the drugs used in the neoadjuvant treatments (acquired resistance). The three patients with primary BC were diagnosed with Luminal tumors-HER2 negative. In the chemoresistance test all samples presented medium to high resistance to anti-HER2 drugs (intrinsic resistance) and low to medium resistance to cytotoxic drugs. These patients will be followed in the long term to compare patient outcomes with the test results. **Conclusions:** The primary culture of breast tumors was efficiently established and the preliminary result of the chemoresistance test was in accordance with the outcomes from five patients who underwent neoadjuvant treatment. This preliminary finding showed the capacity of the Chemobiogram to demonstrate drug resistance in accordance with the clinic and highlighted the importance of the in vitro chemoresistance test to avoid the use of inefficient drugs, improving and personalizing breast cancer treatment.

<https://doi.org/10.29289/259453942021V31S1059>

# CORRELATION OF CLINICAL-PATHOLOGICAL VARIABLES WITH THE PATHOLOGIC COMPLETE RESPONSE AFTER NEOADJUVANT CHEMOTHERAPY IN TRIPLE-NEGATIVE BREAST CANCER

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**Introduction:** The triple-negative breast cancer (TNBC) is one of the most aggressive types of breast cancer, corresponding to about 15% to 20% of invasive breast tumors. They are those tumors that in immunohistochemistry do not express hormone receptors and epidermal growth factor type 2 (cerbB2). This tumor phenotype does not yield many treatment options, beyond standard chemotherapy, and within this context, the evidence of some markers of this type of tumor may contribute to the discovery of more effective types of treatment. **Case report and Objectives:** The aim of this study was to define predictive and prognostic factors in TNBC that could be related with a pathologic complete response after neoadjuvant chemotherapy treatment. **Methods:** A descriptive and retrospective study, a case series type, in women with TNBC who had undergone neoadjuvant chemotherapy and surgery at the Mastology Service of Maternidade Escola Assis Chateaubriand – Brazil - from May 2015 to June 2020. A statistical analysis was performed considering the 5% significance level. **Results:** From 108 women, only 47 were included in the study, with median age of 49 years (+14 years); about 30 (42.6%) had a family history of breast cancer in first or second-degree relatives. About 44 (93.6%) cases were classified as invasive ductal tumor and grade II or III; the value of Ki67 greater than 14% was evidenced in 46 (97.9%) women and 26 (55.3%) had clinical stage III. Pathologic complete response to chemotherapy was evidenced in 16 (34%) cases, partial response in 13 (27.7%) and no response in 18 (38.3%) cases. The latter cases corresponded to those who had stable or progression of disease. There was recurrence in 13 (27.7%) women, about 8 distant metastases, with the lungs as the most frequent site of metastasis followed by the brain. Eleven patients, about 23.4%, died. In the survival analysis of the studied population, the overall survival was 5.6 months and disease-free survival was 19.4 months. No association was observed in the study between the outcome of pathologic complete response to neoadjuvant chemotherapy and anatomopathological characteristics of the tumor. **Conclusion:** The results of this study did not show statistical significance to determine the possible predictive and prognostic factors for obtaining a complete clinical response to TNBC in a public reference service for the treatment of breast cancer, where there is no genetic signature, PDL1 status or access to differentiated treatment for such a heterogeneous tumor profile. This shows a need for further studies in order to understand this disease and for greater accessibility to high-cost exams and more effective treatments.

<https://doi.org/10.29289/259453942021V31S1060>

# IMPACT OF LOCAL RECURRENCE ON PATIENTS WITH BREAST CANCER DIAGNOSIS SUBMITTED TO CONSERVATIVE SURGERY AT HOSPITAL PÚBLICO DO SERVIDOR ESTADUAL

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**Introduction:** Breast cancer is a major cause of mortality in Brazil and worldwide. It is a heterogeneous disease with specific molecular subtypes, which are associated with different prognosis and responses to treatment. **Objectives:** The present study aimed at assessing the incidence of local recurrence in patients undergoing conservative surgery and its impact on overall survival. As a secondary outcome, there are the prognostic factors of local recurrence in addition to the relationship with systemic metastasis. **Methods:** It is a retrospective cohort including 500 patients submitted to conservative surgical treatment, from March 2014 to March 2019 at Hospital do Servidor Público Estadual de São Paulo. **Results:** The results are compatible with the literature, with local recurrence in 4% of patients and more relapses with triple-negative subtype; 367 patients had hormonal treatment: five (1.4%) relapsed and 51 patients did not use hormonal treatment, four (7.8%) relapsed. This shows a higher percentage of recurrence in the group without adjuvant hormone therapy when compared to the group that underwent treatment ( $p=0.016$ ); 7.4% of patients developed metastasis, which was more prevalent in patients diagnosed with triple-negative subtype cancer and pure Her. This group had an estimated probability of survival significantly lower (72.3%) than the group without metastases (98%) ( $p<0.001$ ). In this cohort, disease-free survival was 93.4% and overall survival was 96% over a median of three years of follow-up. Other prognostic factors, established in the literature, such as age, lymph node involvement, tumor size, in addition to systemic treatment and radiotherapy had no significant difference between patients who did or did not relapse. **Conclusion:** In this cohort, patients diagnosed with breast cancer and who underwent conservative surgery, evolving with local recurrence, did not present a higher risk of death, and we found tumor biology as a risk factor for locoregional recurrences. Patients who evolved with systemic metastases showed a reduction in the overall survival rate.



<https://doi.org/10.29289/259453942021V31S1061>

# CORRELATION BETWEEN THE PRESENCE OF ANDROGENIC RECEPTORS AND MOLECULAR AND HISTOPATHOLOGICAL VARIABLES IN BREAST CANCER

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**Introduction:** The expression of androgenic receptors (AR) is a new predictive marker of response and prognosis in invasive breast carcinoma (BC). It emerges as a potential therapeutic target. **Objectives:** To evaluate the frequency of AR positivity and its correlation with molecular and histopathological parameters in infiltrative BC. **Methods:** Retrospective cohort study, analyzing 119 cases of non-metastatic invasive BC, seen at a private clinic. Hormonal receptors were screened by immunohistochemical reaction, and AR were considered positive when present in at least 10% of cells, ER and PR from 1%. This finding was correlated with pathological staging, histological grade (HG), vascular-lymphatic invasion (VLI), estrogen receptors (ER), progesterone receptors (PR), HER2 and Ki 67. **Results:** AR were positive in 96 cases (80.6%). The correlation with the surveyed parameters can be seen in the table. **Conclusions:** AR positivity is associated with more differentiated hormone-dependent tumors and with a lower proliferation rate.

<https://doi.org/10.29289/259453942021V31S1062>

# A MULTICENTRIC STUDY ON BREAST CANCER IN ULTRA YOUNG WOMEN: II – HISTOPATHOLOGIC AND MOLECULAR DATA

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**Introduction:** Ultra young women (UYW) is defined as women aged up to 30 years. UYW with BC share some unfavorable biological tumor characteristics as larger size at diagnosis, higher loca-regional recurrence rate and lower survival, and have been merited specialized care. **Objectives:** We aimed to determine histopathological and molecular characteristics of BC in UYW. **Methods:** We carried out a multicentric, observational, retrospective study of consecutive UYW patients with BC. Only patients with infiltrating BC were included. Nine Mastology Centers located in the State of São Paulo took part in the research. The follow data were recorded: pathological tumor histology, number of positive lymph nodes multicentricity/multifocality, presence or absence of peritumoral vascular invasion (PVI), histologic grade (HG), pT category, estrogen receptor (ER), progesterone receptor (PR), HER2 and Ki67. We classified the neoplasias into five molecular subtypes by immunohistochemistry, based on modified recommendations of St. Gallen Consensus (2013): Luminal A-like, Luminal B-like HER2-, Luminal B-like HER2+, HER2 overexpressed (HER2+) non luminal and Triple-Negative. The frequency of the analysed parameters were calculated. The research protocol was approved by the Ethics Committee of all Collaborative Centers. Individual informed consent was waived. **Results:** Invasive carcinoma of no special type (NST) was observed in 243 patients (88%), and infiltrative lobular tumor was extremely rare, being found in 1.1%. The tumor size in surgical specimens was above 20 mm in 54% (in 10% there was no more evidence of tumor after neoadjuvant treatment). We found 52.6% of patients without invasion in lymph nodes (LN) whereas in 22.2% there was more than four LNs involved. Multifocality was seen in 12.4%. HG was 2 or 3 in 98.3%. In 67.5% the tumors expressed ER, 59.4% gR, and 25.1% were HER2+. In 61.5% Ki67 was higher than 20%. Tumor molecular subtypes were classified in 16.6% Luminal A-like, 35.9% Luminal B-like HER2-, 15.1% Luminal B-like HER2+, 9.3% HER2+ non-luminal and in 22.9% Basal-like. **Conclusions:** Our data from UYW with BC revealed unfavorable characteristics, with frequent adverse pathological and molecular prognostic factors.

## DCIS

<https://doi.org/10.29289/259453942021V31S1063>

# CLINICAL, IMAGING AND THERAPEUTIC CHARACTERISTICS OF 332 PATIENTS WITH DUCTAL CARCINOMA IN SITU (DCIS): A SINGLE-CENTER ANALYSIS

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**Introduction:** Organized mammographic screening led to an increase in the diagnosis of DCIS. In countries with adequate mammographic coverage, the percentage of DCIS reaches 20%. In Brazil, most of the states only perform occasional mammographic screening, and data about DCIS incidence is scarce. **Objectives:** Analyze and describe clinical, diagnostic, imaging and therapeutic characteristics of patients diagnosed with DCIS and treated at Pérola Byington Hospital (PBH), Brazil. **Methods:** The official database of PBH from January 2011 to December 2019 showed 11,373 cases of breast cancer, and 812 (7.4%) of them were DCIS. We analyzed retrospectively the medical record of 332 patients who underwent biopsy, vacuum assisted biopsy guided by mammography or ultrasound whose diagnosis was DCIS, and they were treated at the hospital. Patients with previous breast cancer or lobular neoplasia were excluded. We divided the analysis into two groups, based on the type of surgery they underwent, conservative or radical surgery. Some patients have been submitted to the sentinel lymph node biopsy (SLNB) at surgery and the blue technique stained by H&E (hematoxylin and eosin) was used. **Results:** Most patients underwent conservative surgical treatment (73.5%), with a SLNB in 34.5%. Mastectomy was performed in 26.5% of cases and in this group 93.2% there was also axillary surgery. None of the sentinel nodes was involved. In the conservative surgery group, the mammographic alterations were the main cause for the diagnosis in 80.3% of the cases, with calcifications being the most common alteration in 73.9% of the cases, followed by the palpable lesion in 18.5% of them. Mammography was also the main diagnostic test in the group of patients who underwent mastectomy (73.9%) and calcifications appeared in 67% of cases, followed by palpable lesions in 28.1%. When assessing local recurrence, a percentage of 6.4% was found in conservative surgery (ten in situ and five invasive) and 4.5% in mastectomy (one in situ and four invasive). **Conclusions:** The 7.4% incidence of DCIS shows that even though lower than in countries that have organized screening, it is a growing demand, especially for the public health system where stereotactic biopsy is not available in many centers. Despite the fact that most of the cases were non palpable, we found that mastectomy was indicated in 23.5% of them, probably because of the extension and multicentricity of the DCIS. The absence of metastases in SNB made us rethink the real need for its indication.

<https://doi.org/10.29289/259453942021V31S1064>

# NIPPLE-SPARING MASTECTOMY WITH IMMEDIATE IMPLANT-BASED RECONSTRUCTION FOR PATIENTS WITH PURE DUCTAL CARCINOMA IN SITU

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**Introduction:** The presence of extensive intraductal component is strongly associated to the increasing risk of nipple-areola complex (NAC) relapse. Most of the studies focusing on the outcomes of patients diagnosed with pure ductal carcinoma in situ (DCIS) who underwent nipple-sparing mastectomy (NSM) available in the literature performed immediate breast reconstruction using prosthetic implants (saline-filled implant or tissue expander) and autologous tissue flap.

**Objectives:** The aim of our study was to evaluate the outcomes of patients diagnosed with DCIS who underwent NSM with immediate implant-based breast reconstruction. **Methods:** We retrospectively analyzed complication rates and oncological safety of 67 breast cancer patients diagnosed with pure DCIS who underwent NSM with immediate implant-based breast reconstruction between 2004 and 2018. Patients who underwent risk reduction NSM with accidental finding of DCIS were included in the study, and all patients were operated by the lead author. Tumor-nipple distance and tumor size were not exclusion criteria. **Results:** The indications of NSM were risk reduction breast surgery with accidental finding of DCIS (n=4, 6%), multifocal disease (n=16, 23.9%), compromised margins after breast-conserving surgery (n=11, 16.4%), tumors > 40 mm (n=16, 23.9%) and unfavorable relationships between tumor size and breast size or patient preference (n=20, 29.8%). The mean age of the patients was 46.8 years (range 30–75). Of the 69 procedures performed for DCIS, a total of three complications occurred, including two hematomas (2.9%) and one partial nipple necrosis (1.4%). After a mean follow-up of 60 months (range 3–183 months) the local recurrence rate was 8.9%. We observed a tendency of tumor multifocality being a risk factor for local relapse. The disease-free survival (DFS) rate was 90% and none of the patients died during the follow-up. **Conclusions:** Despite the local recurrence rate, we showed that NSM with immediate breast reconstruction using prosthetic implant is a feasible surgical approach with low complication rates and good disease-free and overall survival rates for patients with pure DCIS when BCS is not an option.

## SURGERY AND RECONSTRUCTION

<https://doi.org/10.29289/259453942021V31S1065>

# SIZE OF METASTATIC INFILTRATION IN THE SENTINEL NODE AS A PREDICTOR OF NON-SENTINEL NODES INVOLVEMENT

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**Introduction:** The broad acceptance of sentinel lymph node biopsy (SLNB) led to an analysis for finding out the anatomopathological characteristics that can help predict the involvement of other axillary lymph nodes (LN) in positive sentinel lymph node (SLN) cases. Currently, it is very appropriate to investigate the cases that enable the omission of complete axillary dissection (CAD), even considering the involvement of the SLN. Some important studies on this theme were published, e.g., ACOSOG Z0011, and AMAROS. However, their results were not accepted uniformly enough because of methodological inconsistencies. **Objectives:** We aimed at providing a complementary basis for a pragmatic analysis of CAD after a positive SLNB in breast cancer. **Methods:** This is a cross-sectional study. Clinical and anatomopathological data were collected in patients with early-infiltrating breast cancer that were treated with SLNB, followed by CAD. Statistical analyses were performed using binary logistic regression and multiple logistic regression. **Results:** Out of 129 patients evaluated, compromise of non-sentinel additional lymph nodes was observed in 47 (36.4%) patients. According to an univariate analysis, the parameters related to non-SLN compromise were the tumor size in anatomopathological exam, histological grade III, the presence of peritumoral vascular embolism in focal area, compromise of more than one SLN, LN compromise rate of 100%, the presence of extracapsular neoplastic extension, perilymphnodal vascular involvement, perilymphatic fat compromise, and twenty or more dissected non-SNLs. The variables that increased the chance of compromise of non-SNL in the multivariate analysis were presented in following table with an accuracy of 81% (Figure). **Conclusions:** The tumor size on a clinical examination of the T2 category, the presence of two or more neoplastic foci in the SNL, and the size of the metastasis > 4.0 mm are the parameters that favor complete axillary lymphadenectomy.

<https://doi.org/10.29289/259453942021V31S1066>

# TYPES OF SURGERY AND BREAST RECONSTRUCTIONS PERFORMED ON PATIENTS TREATED BY THE BRAZILIAN UNIFIED HEALTH SYSTEM AT PÉROLA BYINGTON HOSPITAL

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**Introduction:** Breast cancer is the most frequent cause of cancer death in women, also haunting them because surgical treatment can vary from expanded resection to mastectomy, causing aesthetic, functional, psychological and social damage. In Brazil, where 70% of the population is treated through the Unified Health System (SUS) and about 55% of cases are treated in advanced stages, most patients undergo mastectomy without immediate reconstruction. However, occasional mammographic screening carried out in some large cities has led to an increase in the number of diagnoses in the initial stages and, thus, a decrease in mortality from breast cancer, in addition to the possibility of less radical surgical treatments. Due to the scarcity of data in this population, we decided to perform an observational study at our institution. **Objectives:** This work aims at characterizing the types of surgical treatment that patients with breast cancer were submitted to at the Women's Health Reference Center (CRSM) at Hospital Pérola Byington in São Paulo, SP, from 2015 to 2019 and the breast reconstructions carried out from January 2015 to December 2019. **Methods:** This is a retrospective, descriptive, observational study performed through the review of medical records of patients followed up at our service. Inclusion criteria were female patients diagnosed with malignant breast cancer treated with conservative and radical surgery, with or without immediate and late reconstruction in this 5-year period. **Results:** At CRSM, from 2015 to 2019, 9,097 surgical procedures were performed for the treatment of breast cancer. Radical surgeries represented 53.5%, with 2% of adenectomies. Regarding conservative surgeries, there were 4,222 procedures, 43.4% of which were quadrantectomies. From January 2015 to December 2019, 4,902 breast reconstructions were performed, 17.8% of which were immediate. **Conclusions:** Our data also showed 51.5% of patients underwent mastectomy due to the predominance of tumors in stages II and III. However, about 47% of patients were treated conservatively for their efforts to reduce the time to diagnosis, palpable lesions and the occasional screening performed in the city of São Paulo, resulting in a proportion of 46.5% of the patients who underwent conservative surgery. Breast reconstruction was performed in 46.8% of mastectomies, with only 82.4% being in a late stage.

<https://doi.org/10.29289/259453942021V31S1067>

# BREAST-CONSERVING SURGERY AFTER NEOADJUVANT CHEMOTHERAPY IN PATIENTS WITH STAGE II AND III TREATED IN THE PUBLIC HEALTH SYSTEM

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**Introduction:** Over the last few decades, neoadjuvant chemotherapy (NCT) has played an increasing role in the management of breast cancer. It allows for an evaluation of the tumour reponse in vivo and may afford a de-escalation of surgeries. Despite advances in neoadjuvant treatment, evidence shows that rates of breast-conserving surgeries (BCT) after NCT are low (51%–68%) even when a patient is eligible for a less aggressive surgery. **Objectives:** To analyze the surgical treatment performed in patients who underwent NCT in clinical stages (CS) II or III within a public health service in Brazil. **Methods:** A cross-sectional study was conducted with statistical analysis of the database of a public hospital in São Paulo with 11,073 patients treated from January 2009 to December 2020. **Results:** A total of 11,073 patients with breast cancer were treated in this period and 9,526 surgeries were performed, from which 4,613 (48.4%) were BCS and 4,913 (51.6%) were mastectomies. Among these procedures, 2,231 patients underwent NCT before surgical treatment, 275 (12%) were submitted to BCS and 1,956 (88%) to mastectomy. When compared by clinical stages: 641 were in CS II, BCS was performed in 143 (22.3%) and mastectomy in 498 (77.7%), and 1,590 were in CS III, from which 132 (8.3%) were submitted to BCS and 1,458 (91.7%) to mastectomy after neoadjuvant treatment. **Conclusions:** We observed that the rate of BCS after NCT in patients in CS II or III in our service was even lower than that found in the international literature. Some of the factors that may have influenced this result are: patient preference, anatomical extension of the tumor with skin ulceration (T4b), physician insecurity in performing a less aggressive treatment or difficulty accessing radiotherapy for patients from distant cities. This suggests that the potential surgical benefits of NCT are not being fully understood or explored. There is a need to resolve the uncertainties that are holding back surgical teams from adopting more conservative surgeries.

<https://doi.org/10.29289/259453942021V31S1068>

# RELATIONSHIP BETWEEN BODY MASS INDEX (BMI) AND SURGICAL COMPLICATIONS AFTER BREAST ONCOLOGICAL SURGERY

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**Introduction:** Obesity is a multifactorial chronic disease that can predispose to several comorbidities, including breast cancer. The Department of Health estimates the number of overweight people in Brazil is 65%. The relationship between weight and height (BMI, Body Mass Index) has been used by WHO to assess the degree of obesity in the population. Breast cancer is responsible for more than 8,000 deaths each year in Brazil. Despite advances in systemic treatment, surgery is one of the main treatments used, and obesity is a relevant factor that worsens the oncological prognosis and is predictive of perioperative complications. **Objectives:** The aim of this study is to assess the relationship between obesity and surgical complications in 5,657 breast cancer patients undergoing surgical treatment (conservative or radical) at Pérola Byington Hospital. **Methods:** A retrospective, cross-sectional study was carried out with 5,657 patients undergoing surgical treatment (conservative or radical) by the Brazilian Unified Health System (SUS) at the Women's Health Reference Center at Hospital Pérola Byington from January 2011 to December 2019. Data were collected from the medical records of the institution. The patients were divided into six groups according to BMI=W/H<sup>2</sup> (<18.5 underweight, between 18.5 and 24.9 normal, 25 to 29.9 overweight, between 30 and 34.9 obese, 35 to 39.9 severe obesity and over 40 morbid obesity) and evaluated in relation to different types of postoperative complications. **Results:** According to the data obtained in our series, the most common surgical complication was dehiscence of the surgical scar, occurring in 80.5% of overweight women (BMI>25), followed by hematoma, diagnosed in 72 patients, 59.7% overweight women. The third most common complication was infection of the surgical site in only 19 patients (0.3%), with 78.9% in overweight women. This fact can be explained by inadequate perfusion, deficiency of macro and micronutrients and hypoxia that impairs collagen synthesis, resulting in poor healing, causing dehiscence. From these data presented, it is possible to infer that complications such as seroma, hematoma, infection of the surgical wound, dehiscence, and even loss of the surgical flap are strongly associated with increased body weight. **Conclusions:** We came to the conclusion that the increase in body weight, especially in patients with a BMI > 25, is an unfavorable factor for the occurrence of surgical complications in patients with breast cancer, and it is essential to provide guidance on the risks of complications in the preoperative evaluation for adjusting the best surgical procedure and mainly for considering late reconstruction.



<https://doi.org/10.29289/259453942021V31S1069>

# THE USE OF BREAST MOLDS IN PREOPERATIVE MARKINGS FOR ONCOPLASTIC SURGERIES

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**Introduction:** Breast cancer (BC) is a major public health problem worldwide, with a high incidence in young women in Brazil. In this context, treatment with oncoplastic surgery represents a major advance, through the combination of plastic and oncological surgery techniques, maintaining the breast contour and reducing the psychological impact of radical surgeries. Preoperative marking plays an important role in the aesthetic result and reference points are marked freehand in order to guide the incisions. **Objectives:** To present an efficient and low-cost option, through a mold, to perform preoperative marking in oncoplastic surgeries with pedicle. **Methods:** Between March and December 2020, ten oncoplastic surgeries (with pedicle technique) were performed in women with BC and moderate to large volume ptotic breasts at Clínica Arte de Cuidar, Santa Casa de Misericórdia de Sobral and Grupo de Educação e Estudos Oncológicos. A personalized acrylic mold with two holes was used in the preoperative marking. The distance between hole n.1 to the top edge is 2 cm and from to the bottom edge 3 cm. Once the A point of the breast is defined – (the site of the future papillary areola complex), the hole n.1 of the mold is placed right at point A of the breast. Then we settle the hole n. 2 of the mold in the line drawn from the nipple to the breast groove and mark the superior part. In the process, we use the side of the mold - that measures 6.5 cm - or a measuring tape to determine the amount of tissue and skin to be removed. The distance from the inferior border of the areola to the infra-mammary groove is usually 5–6 cm. In the end, all patients were followed up with regular medical consultations and with pre and postoperative photographs. **Results:** With subjective assessment of shape, volume and symmetry, all patients were satisfied with the procedure performed. In most cases the areolas remained rounded. And, most importantly, there were no complications in between - such as skin necrosis or papillary areola complex, important asymmetries and moderate or large dehiscences. **Conclusions:** The creation and use of a breast mold is still a challenge due to the variety of breasts, so, in that way, oncoplastic surgery must always be individualized. The preoperative marking with a mold can contribute to reduction of the surgery duration and increase the satisfaction with the aesthetic

<https://doi.org/10.29289/259453942021V31S1070>

# RECONSTRUCTION OF THE THORACIC WALL WITH EPIPLOON AND DERMO-CUT ABDOMINAL LOWER NEO FLAP IN BREAST ANGIOSARCOMA - CASE REPORT

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**Introduction:** Breast angiosarcoma is very rare and highly aggressive. It has an incidence of 0.5% to 1% of cases and its presentation is typically in women between 14 and 82 years of age with an average age that revolves around 35 years. Breast angiosarcoma presents clinically as a unilateral, softened tumor with ill-defined borders and skin thickening, with a variable growth rate. However, if compared to epithelial breast cancer, angiosarcoma has a faster growth rate. The second is known as stromal sarcoma, fibrosarcoma, leiomyosarcoma, histiocytoma, and giant cell sarcoma. Regarding adjuvant therapy, chemotherapy and radiotherapy, they present an ineffective response. The effective treatment to offer a chance of healing is a broad surgical approach. **Case report:** Female patient U.S., 35, from Paulo Afonso, state of Pernambuco, complaining of a left breast nodule. She had a tumorectomy in her city, due to fibroadenoma and phyllodes tumors with atypia and mitosis. In our service, she underwent a series of tests, where mammogram/ultrasonography confirmed the presence of a 1.5 cm nodule in the left breast. She underwent a new segmental resection surgery, whose histopathology confirmed a low-grade malignant cystosarcoma phyllodes and exiguous margins. A new surgical proposal was discussed with the patient – a simple mastectomy with immediate reconstruction with silicone breast implant and latissimus dorsi flap. The surgery was performed and the histopathological result was the absence of residual neoplastic tissue, with an area of scar fibrosis and usual ductal hyperplasia. After her recovery, the patient was referred to clinical oncology and radiotherapy, but both had no indication for adjuvant therapy. After one year, the patient returned to undergo symmetrization of the opposite breast and reconstruction of the nipple-areolar complex. After two years, the patient returned with a breast US, which demonstrated a nodular image of 1.5 cm adjacent to the breast prosthesis and an MRI suggested the same image. A core biopsy was performed, which confirmed a malignant variant recurrent tumor. The tumor evolved very quickly and the surgery was performed with an enlarged resection of the entire pectoralis large and small and skin inclusion. To correct the deformity, we used the rotation of the great epiploon with the lower abdominal dermocutaneous flap.

<https://doi.org/10.29289/259453942021V31S1071>

# EVALUATION OF IMMEDIATE AND LATE COMPLICATIONS IN BREAST RECONSTRUCTION WITH IMPLANTS IN PATIENTS WITH BREAST CANCER TREATED IN A TERTIARY SERVICE IN CEARÁ

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**Introduction:** The technique of breast reconstruction using silicone implants is the predominant way for breast reconstruction worldwide. Over the last years there has been a growing interest in performing immediate reconstruction with single stage implantation after mastectomy as an attempt to simplify the reconstruction procedure and improve psychosocial morbidity, as well reducing costs. The reconstruction with single stage suggests a slightly higher complication rate related to implant loss. **Objectives:** To evaluate the immediate complications (up to 30 days after surgery) and late complications (30 days to two years after surgery) resulting from immediate breast reconstruction with implants in patients with breast cancer treated at a tertiary hospital in Ceará. **Methods:** Analytical observational study of a retrospective cohort, from the review of medical records of patients undergoing immediate breast reconstruction with prosthesis or temporary extensor after mastectomy for breast cancer, at Maternidade Escola Assis de Chateaubriand, from 2015 to 2019. Establishing the prevalence among the common characteristics related both to the surgical procedure to which they were submitted, and to the clinical-epidemiological profile of the patients. **Results:** The study was made with 63 women who underwent immediate breast reconstruction with a mean age of 47 years. It was observed that immediate and one-time breast reconstruction was the most prevalent, contributing with 77.7% of the cases analyzed. In 19 cases (30.1%), we observed some type of surgical complication, with surgical wound dehiscence being the most frequent (42.1%). Other complications detected were infection and implant loss (21.1%), capsular contracture (15.8%), seroma (10%), cellulitis (5.3%), and rupture of the expander (5.3%). Surgical complications were assessed according to the type of implant (prosthesis or temporary expander), use of radiotherapy and clinical conditions of patients. No statistical significance was found for these variables with surgical complications. Only the type of mastectomy performed was statistically significant, with radical mastectomy associated with half of the complications ( $p=0.045$ ). **Conclusions:** Immediate breast reconstruction with single-time implant was the most used technique in our service, with a postoperative complication rate of around 30%. However, the biggest complication was the dehiscence of the surgical wound, but the infection of the implant did not cause the loss of reconstruction. Radiotherapy was not related to complications until two years after surgery.

<https://doi.org/10.29289/259453942021V31S1072>

# HEREDITARY MULTIPLE EXOSTOSIS: THE ROLE OF THE MASTOLOGIST IN AN INTERDISCIPLINARY APPROACH

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**Introduction:** Hereditary Multiple Exostosis (HME) is a disorder of the bone metaphysis, transmitted in an autosomal dominant manner, which is genetically heterogeneous and has incomplete penetration in females, characterized by the presence of multiple exostoses (osteochondromas). It can lead to anatomical and functional impairments for the patient that will remain throughout his life, requiring periodic screening of the lesions to identify and treat them early. Although it can be asymptomatic, a wide spectrum of clinical manifestations are found in pediatric patients with this disorder; the therapeutic approach is substantially surgical, while the clinic is still on an experimental level. The questionable pathophysiological aspects of HME remain a subject of study and controversy in the conduct of therapy and treatment. The diagnosis requires regular screening of the lesions through imaging tests, as well as clinical findings such as: pain, which is the main surgical indication; limitation of movement (for example, forearm rotation may be limited by exostoses between the radius and ulna or maximum knee flexion may be limited by exostosis in the popliteal region) and growth disorders. In this work, we will present a case of osteochondroma in rib with invasion of the left breast in a patient with HME, while emphasizing the role of mastology to prevent compromises and preserve breast aesthetics. **Case report:** A 14-year-old patient, seen at a tertiary hospital in São Luís, with complaints of pain and hardened tumor lesion in the left breast, diagnosed with osteochondroma. The treatment required the performance of a team composed of a thoracic surgeon and a mastologist to obtain results without functional and aesthetic compromise for the patient. The patient had as main complaint the limitation of movement, dyspnea and pain in the region of the lesion. She underwent a surgical procedure that consisted of an incision through the infra-mammary fold, detachment of the gland by the subfascial plane, opening of the pectoralis major muscle, approach of the rib and resection of the lesion without opening the pleura by the thoracic surgeon. The reconstruction of the breast defect was made with local flaps and closed by planes maintaining an adequate cosmetic and functional breast result. In clinical evaluation after the procedure, she had no complaints and no apparent lesions on CT scan. Malignancy of the disease is an important and feared complication, although tumors usually present with low grade, there are clinical signs of malignancy that should be monitored in these patients, such as the growth of exostosis after bone maturity, neuropraxia and symptoms associated with organ pressure close to injuries.

<https://doi.org/10.29289/259453942021V31S1073>

# THORACIC DUCT INJURY AFTER MASTECTOMY - CASE REPORT AND LITERATURE REVIEW

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**Introduction:** In adults, the thoracic duct carries about four liters of lymph per day, and its injury can lead to rapid accumulation in the pleural cavity, causing acute and chronic changes in lung dynamics. Thoracic duct injuries are uncommon and occur during surgical procedures in the thoracic region and trauma, such as esophagectomy, mediastinal and pleuro-pulmonary surgical procedures. Surgical injuries have been described after almost all types of thoracic surgical procedures, especially those performed in the upper left thoracic strait. The clinical diagnosis is based most often on the high output of the introduced chest drain, accompanied by a milky aspect. In addition, computed tomography, lymphoscintigraphy and lymphangiography are possible methods for diagnosis. Clinical series on duct injuries after thoracic surgery report that in approximately 25% to 50% of cases spontaneous closure of the fistula occurs with conservative measures, after the introduction of parenteral nutrition or enteral diet with medium chain triglycerides. The other cases needed clinical and surgical treatment. Operative treatment consists of performing videothoracoscopy or right thoracotomy with identification of the lymphatic duct, followed by ligation. **Case report:** A 48-year-old woman, born in Santana do Parnaíba, state of São Paulo, with a diagnosis of breast cancer on the left, histological type of invasive breast carcinoma Luminal B, who underwent a modified radical mastectomy (Madden technique) on the left with immediate breast reconstruction. In the intraoperative period, important involvement of the left axillary lymph nodes was evidenced, which may have distorted lymphatic vessels and ducts. It evolved in the late postoperative period with high milky drainage in a suction drain in the left axillary region. Then, a hypothesis of thoracic duct injury was raised as a post-surgical complication. Biochemical analysis of milky secretion showed a high concentration of triglycerides and cytology describes the presence of proteinaceous material and macrophages. A conservative approach was adopted with adjustment of a hyperproteic, hypoglycemic and rich in medium chain triglyceride parenteral diet. The patient underwent lymphoscintigraphy, twenty days after the diagnostic hypothesis, but the fistula was not detected. Progressed with a decrease in the flow gradually until the drain was removed and she was discharged from the hospital in good condition. At the moment, the patient is undergoing adjuvant treatment for breast cancer.

<https://doi.org/10.29289/259453942021V31S1074>

# IS NIPPLE-SPARING MASTECTOMY AN OPTION FOR PATIENTS WITH IPSILATERAL BREAST CANCER RECURRENCE?

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**Introduction:** Nipple-sparing mastectomy (NSM) is a conservative mastectomy approach for breast cancer with oncological safety and good aesthetic satisfaction. The initial indications of NSM excluded patients with previous radiation, ptosis, high body mass index (BMI) and macromastia, although these contraindications have been challenged. Different authors expanded the classic indications of NSM for patients with previous breast surgery/irradiation, neoadjuvant chemotherapy, and short tumor-nipple distance and showed safety and low complication rates. However, there are few data about the suitability of performing NSM with immediate reconstruction for the treatment of recurrent disease. **Objectives:** The aim of this study was to analyze the complication and local recurrence rates of 24 patients with indication of mastectomy, however with no skin or nipple involvement, who opted to undergo NSMs with immediate reconstruction for the treatment of ipsilateral breast tumor recurrence (IBTR). **Methods:** Between January 2001 and December 2018, we evaluated 24 patients that underwent NSMs for the treatment of IBTR after a previous BCS (breast cancer surgery) followed by radiotherapy. All patients were operated by the same surgeon, the data were retrospectively evaluated by the medical chart and the patient's follow-up was updated during the appointments. **Results:** The patient's mean age in the salvage surgery was 49 years. The majority of patients (70.8%) underwent bilateral procedures, one (5.9%) patient due to the diagnosis of invasive cancer in both breasts, one (5.9%) DCIS in both breasts, and 15 (88.2%) patients without disease in the contralateral breast, most of them for prophylactic or aesthetic reasons to avoid asymmetry and to reach a better aesthetic result. Breast reconstruction was performed using silicone prosthetic implants for 22 (91.7%) patients and with tissue expander for only two (8.3%) patients. Patients were followed for a mean time of 132 months since the first surgery. In the mean follow-up of 40 months after the NSM surgery, five (20.8%) patients were diagnosed with local recurrence and only one patient died from the progression of the disease. Patients presented 4.8% of partial and 2.4% of total nipple necrosis. No infection and no implant loss was observed. **Conclusions:** In the long-term follow-up since the first surgery, we observed low complication rates and a good survival rate, although associated with high local recurrence in patients diagnosed with IBTR undergoing NSM as salvage surgery. We demonstrated that NSM may be considered after IBTR for patients with indication of mastectomy, with no skin or NAC (nipple-areola complex) involvement, who did not want to undergo total mastectomy with resection of the skin and NAC.

<https://doi.org/10.29289/259453942021V31S1075>

# 3D TATTOO OF THE NIPPLE-AREOLA COMPLEX AS A COMPLETION OF BREAST RECONSTRUCTION: CASE REPORT

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**Introduction:** Reconstruction of the nipple-areola complex (NAC) is the last step in breast reconstruction after a radical mastectomy. There are several techniques to perform NAC reconstruction and the most common described involve local flaps and skin grafts. However, they depend on good vascularization at the receptor site, which is often impaired in mastectomies with prosthetic reconstruction, often associated with an irradiated tissue, increasing risk of ischemia and necrosis of the new NAC. Tattooing of the NAC is an alternative to the surgical procedures and has gained space over the years, due to its ease, rapid recovery, and low rate of complications. A tattoo consists in placing pigments in the dermis, through perforations in the skin by different combinations of needles, called cartridges. Such pigments are currently synthetic, based on iron oxides and titanium dioxides dispersed in a suspended gel, offering safety with rare adverse events.

**Case report:** Female, 62 years old, who had a modified radical mastectomy in 2008 for treatment of invasive breast cancer in another institution. In 2012, she started her follow-up at Santa Casa de Misericórdia de Belo Horizonte and had a reconstruction using a latissimus dorsi myocutaneous flap with a prosthesis, associated with skin grafting for reconstruction of the areola and papilla and a reduction mammoplasty on the left. After discussing options and understanding patients' expectations, an oval areola on the right was planned, similar to the left one. Lidocaine based topical anesthetics was applied, followed by a complete tattoo of the right NAC, using a 3D technique for the papilla. The machine used was TH PRO NeonPEN Slim<sup>®</sup> and needle cartridges 1RL, 3RL, 5RS and 7RM from the same brand. Dressing was performed with La Roche Cicaplast<sup>®</sup> ointment, covered with a plastic film, which was changed daily by the patient for 15 days, according to medical advice. After 40 days the bilateral oval shape. However, the patient was not satisfied, so we planned to transform it into a round areola. Tattooing of the round areola and retouching of details for the right papilla were performed, in addition to the left areola pigmentation, to symmetrize color and shape. Figure 3 illustrates the results 15 days after the second and last session, with similarity between color and areolar shape, as well as an effect of depth and projection on the right papilla. A subjective evaluation of outcome was carried out, with the patient claiming satisfaction with the procedure and feeling better about her breasts.

<https://doi.org/10.29289/259453942021V31S1076>

# USE OF LATERAL INTERCOSTAL PERFURATED FLAPS (LICAP) IN TUMORS OF THE UPPER EXTERNAL QUADRANT OF THE BREAST

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**Introduction:** In the surgical treatment of breast cancer we have two great options: mastectomy and conservation surgery. The second one has been increasing over the last 30 years, since the safety of tumor resection with margins added to radiation therapy was demonstrated. Currently with the use of neoadjuvant therapy in advanced and early stages, the challenge for surgeons is not only to offer to preserve breast tissue, but also to ensure oncological safety with increasingly better aesthetic results. Most of the breast volume is concentrated in the upper external quadrant, therefore the removal of tumors in this location represents a significant loss in breast volume, causing asymmetries, affecting the contour of the breast and causing visible scars in most cases. On the other hand, in many patients with small breasts, the breast and tumor ratio is often unfavorable, leading to mastectomies. However, by using flaps for immediate reconstruction, this could change favorably for this group of patients. The use of techniques that involve lateral flaps, such as the lateral intercostal artery perforator flap (LICAP), could solve these problems, allowing for an adequate replacement of the resected volume. In this series of cases, considerable volumes have been removed, which have been replaced by LICAP, successfully achieving the treatment of tumors of the upper external quadrant of the breast. The use of this technique through a lateral incision guarantees, in addition to a wide resection in the breast, a practical and simple axillary approach, minimizing visible scars and optimizing the cosmetic result in these patients. **Case report:** Three cases were reported from two institutions (Casa da Saúde Nossa Senhora de Fátima, in Rio de Janeiro, and Oncosalud -Auna, in Peru). The patients were middle-aged women, all of them with tumors located in the upper external quadrant of the breast, one of the patients having received neoadjuvant therapy. In one of the cases, the breast volume was small, having an unfavorable breast / tumor ratio. By using LICAP, a favorable immediate reconstruction was achieved and a mastectomy was avoided. In one of the cases, an axillary dissection was performed and the other two underwent sentinel node biopsy; the three cases had a single lateral approach, by which a tumor resection of the breast and axillary surgery were performed. During the evolution of the patients, there were no complications, initiating treatment with radiotherapy in due time. The cosmetic result was optimal in terms of volume replacement, minimal scarring and breast symmetry.



## MALE BREAST CANCER

<https://doi.org/10.29289/259453942021V31S1077>

## MALE BILATERAL BREAST CANCER: CASE REPORT

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**Introduction:** Breast cancer occurring bilaterally in men is extremely rare. Breast cancer represents 1% of all cancers, while bilateral cancer represents 5% of a total number of patients with breast cancer, which may be synchronous or metachronic. Many cases of breast cancer in men are detected between 60 and 70 years, with an average of 67 years of age. In men there is a tendency for late diagnosis at a more advanced stage than in women. **Case report:** A male patient, JSS, 68 years old, from Afogados da Ingazeira, state of Pernambuco, was seen with breast tumoration in June 2016. He arrived at the service with an existing diagnosis of breast cancer through core-biopsy examination. The physical exam presented bulging in the left retroareolar region and a hardened tumoration in palpation. Radical mastectomy was performed. The histopathological results confirmed an invasive mucinous carcinoma with histological grade I, nuclear grade II and mitotic grade I. Free margins. The most frequent histological type in men is ductal (85%–90%), followed by papillary in 4.5% and mucinous in 2.8% of the cases. Nineteen free axillary lymph nodes were dissected, with Estrogen and Progesterone + receptors, Her-2, negative and with Ki-67 of 5%. Breast cancers in men present with more positivity for hormone receptors and low expression for Her-2. The pathological staging was classified as II a. The patient was being followed by the clinical oncology department, where he was chosen not to do chemotherapy and only hormone therapy, with Tamoxifen 20 mg. However, over a period of six months he noticed the presence of a tumoration in the right breast. An image examination was performed with MG/USG, which confirmed the presence of a tumor in the right retro-areolar region (Birads IV). A core-biopsy of the lesion was requested, which confirmed an invasive breast cancer. The patient underwent right radical mastectomy, whose result confirmed an invasive ductal carcinoma with pathological staging II a. **Conclusion:** This pathology is extremely rare in men and the evaluation of the contralateral breast is of fundamental importance. Early diagnosis and compliance with treatment will reduce tumor recurrence and provide a better prognosis for these patients.

<https://doi.org/10.29289/259453942021V31S1078>

## POROCARCINOMA IN MALE BREAST

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**Introduction:** Porocarcinoma (PC) is a malignant neoplasm of the eccrine sweat glands, corresponding to 0.005% to 0.001% of skin tumors. There are reports of only two cases with primary localization on the breast from a total of 206 cases of porocarcinoma according to a systematic review conducted by Nazeemi et al. (2018), from 1963 to 2017. The most common anatomical locations are the lower limbs, the head and the neck. This pathology affects elderly individuals and has a similar incidence among genders. This malignant neoplasm usually presents as a single nodule or a plaque with a verrucous or ulcerated surface, sometimes there is a long history of evolution. The most common site of metastases is regional lymph nodes. The pathogenesis of PC is uncertain. This neoplasm originates from the terminal cells of the intradermal segment of the sweat gland called acrosyringium. In the histological study, the porocacinoma cells may be restricted in the epidermis or infiltrate the entire dermis, the epithelial proliferation of intradermal tumor cells in nests causes acanthosis of the epidermis and hyperkeratosis, cords and polygonal tumor cells proliferate in the dermis with figures of mitosis and areas of necrosis, often ductal differentiation with intracytoplasmic lumina. Immunohistochemical shows positivity for carcinoembryonic antigen (CEA), cytokeratin (CK), pancytokeratin and CK5/6, epithelial membrane antigen (EMA), p53, p63 and CD117. The main treatment is local resection with margins. Sentinel lymph node biopsy can be considered for patients without palpable ganglion, and the performing axillary lymphadenectomy in the context of regional lymphadenopathy. Adjuvant chemotherapy and radiotherapy can be performed in cases of metastatic PC and local recurrence.

**Case report:** An 82-year-old man presenting with a skin lesion on his right breast with progressive growth, associated with local discomfort and bleeding over two years. He presented a large vegetative, hyperchromic, ulcerated bleeding and painless tumor in the right breast, with an extension beyond the inframammary fold, measuring about 8 cm in diameter and ipsilateral axillary lymphadenopathy. No evidence of metastasis on chest and in abdominal tomography. The incisional biopsy showed porocarcinoma, the surgical treatment performed was mastectomy and axillary lymphadenectomy. The histological study revealed an undifferentiated keratinizing carcinoma of the skin, infiltrating the mammary parenchyma, associated with angiolymphatic infiltration and the presence of necrosis and ulceration with free margins, in addition to two metastatic axillary lymph nodes. An immunohistochemical analysis revealed positive cells for EMA, p63, CKAE1AE3 and a K167 proliferation index of 60% confirming the diagnosis of porocarcinoma. Local treatment was supplemented with adjuvant radiotherapy.

## PREGNANCY-ASSOCIATED BREAST CANCER

<https://doi.org/10.29289/259453942021V31S1079>

# BREAST CANCER DIAGNOSIS IN PREGNANCY DURING THE COVID-19 PANDEMIC: A CASE REPORT

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**Introduction:** Paget's disease is a rare condition occurring in the papillary-areolar complex, and it is associated with carcinoma, representing 0.5%–5% of all types of Breast Cancer (BC). The uniqueness of the case is related by the BC diagnosis during pregnancy, besides the COVID-19 pandemic context and its consequences. **Case report:** A 37-year-old woman identified a first-trimester pregnancy during preoperative exams of a nipple biopsy, which confirmed Paget's disease. Due to the pregnancy and considering the COVID-19 pandemic, an expectant conduct follow-up was settled. After eight weeks, the patient at 26-week gestational age referred a breast lump, and a core biopsy confirmed invasive ductal carcinoma. She started treatment with neoadjuvant chemotherapy. After three cycles, the therapy was interrupted because she presented clinically local progression. The interruption of treatment and the pregnancy resolution was made at 36 gestational weeks. Posteriorly, the surgical approach involved mastectomy and axillary lymph nodes dissection, followed by adjuvant chemotherapy.

<https://doi.org/10.29289/259453942021V31S1080>

# RECURRENT INFILTRATING DUCTAL CARCINOMA IN LEFT MASTECTOMY PLASTRON DURING PREGNANCY: A CASE REPORT

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**Introduction:** Breast cancer has the highest incidence, prevalence, and mortality rate among malignant neoplasms in women worldwide (excluding non-melanoma skin cancer). Although there are well-defined treatments, they are still controversial during pregnancy: surgery seems safe and chemotherapy (CT) poses no harm to the fetus, especially if applied late in pregnancy. Hormone therapy (HT) and radiation therapy (RT) are prone to cause fetal damage. In patients diagnosed with pregnancy during treatment, there are no clear procedures about terminating the pregnancy or ceasing CT and RT. In these cases, it is necessary to monitor the patient and the fetus taking into account the woman's will - especially if the tumor has estrogen and progesterone receptors, increasing the chance of relapsing or stop responding to CT. This study reports a case in which the hormones of pregnancy influenced a major recurrence of breast cancer, which diminished shortly after the birth. **Case report:** A 35-year-old woman, diagnosed with infiltrating ductal carcinoma in the left breast, underwent sectorectomy, axillary lymph nodes excision, and RT with an insufficient response. Subsequently, left tumor recurrence arose and mastectomy was performed. In the follow-up, she underwent CT and RT, with poor response. In the interim, it was discovered that the patient was pregnant, thus referred from oncology to gynecology for the interruption, since there was a considerable recurrence in the left breast plastron. Sixth -times pregnant, with five vaginal deliveries, the latest one six years before, all pregnancies without complications. She was advised to terminate pregnancy but remained adamant in maintaining the pregnancy. She underwent an obstetric ultrasound showing a viable fetus of six weeks and six days of gestational age (GA). At 22 weeks of pregnancy, she was referred to the hospital by the oncologist for the interruption, as the plastron on the left breast was growing, with CT failure. The patient acknowledged that, with this GA, the fetus's chance of survival was low. Yet, she opted for pregnancy continuation. Later she was sent by the prenatal care to the maternity hospital at 32 weeks of GA, aiming at delivery and a new CT protocol afterwards. She started corticosteroids for pulmonary development of the conceptus and endured cesarean delivery with bilateral adnexectomy. Female newborn, 1.830g, 8/9 APGAR score and 32 weeks and 5 days Capurro, transferred to the neonatal ICU (intensive care unit) due to prematurity. The patient was evaluated few months after delivery: great spontaneous resolution of the plastron in the left breast, with no effect of pregnancy hormones and responsive to CT. Follow-up in the oncology department.

## PHYLLODES TUMORS AND SARCOMAS

<https://doi.org/10.29289/259453942021V31S1081>

# MALIGNANT PHYLLODES TUMOR IN A 14 YEAR-OLD PATIENT: A CASE REPORT

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**Introduction:** Phyllodes tumor of the breast (PT) is a rare neoplasm, characterized by stromal and epithelial elements, and accounts for approximately 1% of breast cancer in women. There are three subtypes, according to the World Health Organization, based on histological features: benign, borderline and malignant. Pathogenesis, prognostic and biologic characteristics are unknown, thus the difficulty in assessing the recurrence risk of the tumor. In general, the treatment approach is breast conserving surgery, with a margin >1 mm, in order to prevent recurrence. There is currently a great concern with the increase of breast cancer cases in young women, which represents a significant burden in developing countries such as Brazil. The mean age of presentation of malignant PT is 40 years old, and there are rare cases reported in very young adults, 18 and 23 years old. There is one case series in the literature of benign PT in 14 to 16 years old adolescents. However, we did not find any report of malignant PT in this age group. Given the rarity of the case and the current importance of breast cancer in young women, we report a rare case of malignant PT in a patient with only 14 years of age. **Case report:** A 14-year-old female came to a visit due to an abnormal growth of the breast over the last nine months. She had no other complaints or comorbidities. In her family history, she has one aunt that had breast cancer. On physical examination, the patient presented gigantomastia and stretch marks stretch with a reddish appearance. It was identified a nodule of 5.0 cm located in the upper inner quadrant of the right breast, and the axillary region showed no abnormalities. On the ultrasound, the nodule measured 5.7 cm. The patient underwent a segmentary resection of the lesion. The anatomopathological study revealed a malignant PT with a low differentiation grade, measuring 7.0 cm in its largest dimension and free margins, however exiguous. Immunohistochemistry of the lesion revealed the expression of Ki-67, p-63 protein, cytokeratin-14, Bcl-2 and vimentin. On the magnetic resonance imaging, only surgical alterations were observed with no macroscopic residual tumor and the armpit was negative. In order to extend the surgical margins, a second approach was performed, associated with a reduction mammoplasty. The anatomopathological study then showed no residual neoplasm and free margins. The patient had good postoperative recovery and was satisfied with the esthetic results. After consultation with the oncologist, no adjuvant treatment was indicated.

<https://doi.org/10.29289/259453942021V31S1082>

# DIAGNOSTIC CHALLENGE OF A LOCALLY ADVANCED LESION: CASE REPORT OF PRIMARY BREAST ANGIOSARCOMA

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**Introduction:** Primary angiosarcoma of the breast (PAOB) is a class of extremely rare sarcomas, with an incidence rate of 1/2,000 cases of breast cancer worldwide. It is more frequent in 20- and 50-year-old women without history of previous cancer and commonly described in the left breast. Clinical presentation can be the same as usual breast cancer and histology can mimic poorly differentiated ductal carcinoma, which is why immunohistochemistry should be performed. Swelling, a feeling of fullness and exponential growth within the breast are frequent complaints, as noted by Kunkiel et al. in their series of case reports. The natural history of PAOB is only partly understood, suggesting that the lesion begins within the mammary parenchyma and then infiltrates skin and subcutaneous tissue nearby. The predominant management has been mastectomy, mainly, or sectorectomy with clear margins in cases of conservative breast surgery. Adjuvant therapies are not associated with improved survival, except for adjuvant chemotherapy in localized tumors of 5 cm or more. **Case report:** S.O.S., a 32-year-old woman, identified breast asymmetry in 2017, during the lactation period, presence of mild pain and swelling in the left breast. She was admitted to the breast cancer and benign lesions outpatient clinic at Professor Alberto Antunes University Hospital in February 2019. She held a BI-RADS 4 breast magnetic resonance imaging (MRI) in January 2019, which suggested an irregular mass in the left breast, probably of vasculolymphatic nature; also showed core biopsy in February 2019: low-grade PAOB. In April 2019, she underwent a modified radical mastectomy of the left breast with ipsilateral lymphadenectomy. Due to the large extent of the lesion, an entire cutaneous area of left anterior hemithorax was resected, and thoracoepigastric flap was used to close the left hemithorax. An anatomopathological report diagnosed PAOB grade I. In July 2019, immunohistochemistry corroborated the diagnosis of PAOB with CD31 positive; positive von Willebrand factor (Factor VIII - polyclonal Rabbit) and ki67 positive for 25% of neoplastic cells. In the fourth month after the surgery, the patient started adjuvant radiotherapy, concluding it in October 2019. In post-treatment follow-up, in January 2021, she was referred to the breast reconstruction program, awaiting the procedure until this report was made.

## MASTITIS

<https://doi.org/10.29289/259453942021V31S1083>

# PUERPERAL MASTITIS COMPLICATED WITH MYIASIS: A CASE REPORT

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**Introduction:** Puerperal mastitis is an inflammatory process of the mammary gland that affects women during lactation, due to stasis in the mammary ducts. The clinical findings vary from focal inflammation to abscesses when not treated early. Additional complications may arise, such as tissue loss by necrosis, leading to the appearance of opportunistic diseases. Myiasis consists of appearance of fly larvae in these tissues, a rare condition in humans. When in cutaneomucosal area, there are complaints of intense pruritus and local pain. The authors sought to correlate the clinical aspects of puerperal mastitis with breast involvement by myiasis, aiming at the importance of early management and treatment of these pathologies. **Case report:** A 23-year-old patient, GIV PIII, was admitted to a maternity hospital in Paraná, Brazil, with mastitis. The day after the admission, under treatment with Oxacillin, she evolved to natural birth. During the immediate puerperium, abscedation was observed, and surgical drainage was indicated. The patient refused to be submitted to the procedure and evaded the hospital. One week later, she returned with an engorged, edematous and hyperemic right breast, with fluctuation point at 2h and spontaneous drainage of purulent secretion, in addition to a subareolar hematoma. The patient was submitted to drainage, surgical debridement, removal of the myiasis larvae noticed in the mammary tissue, and placement of a drain. Material sent for culture demonstrated growth of *Staphylococcus epidermidis*; de-escalating broad-spectrum antibiotic regimen started empirically when she was admitted, associated with Ivermectin and Cabergoline. She presented a satisfactory response of the inflammatory process, though dehiscence of the surgical wound occurred, and she was submitted to reconstruction with breast flap during reoperation. The diagnosis of mastitis is based on breast tenderness, local flogistic signs, decreased lactopoiesis, associated with fever and fatigue, and among its serious complications is the breast abscess. The patient presented a unilateral mastitis complaining of pain, edema, local heat and hyperemia, in addition to periareolar purulent discharge and abscedation, suggesting complicated puerperal mastitis. However, because the case was not immediately resolved, the clinical situation deteriorated, with perimammary necrosis and myiasis. The necrosed tissue facilitated the penetration of larvae, a determining factor for this co-infection. It is prevalent in developing countries with poor sanitary conditions, and open wounds or necrosis are more favorable for the growth of larvae. It is necessary to emphasize the importance of good personal hygiene and adequate clothes' washing, especially in endemic areas of myiasis, to avoid this complication and its late diagnosis.

## TREATMENT – OTHER

<https://doi.org/10.29289/259453942021V31S1084>

# RELAPSING AXILLARY LYMPHANGIOMA IN AN ELDERLY PATIENT: CASE REPORT AND LITERATURE REVIEW

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**Introduction:** Lymphangioma or cystic hygroma is a rare and benign lesion usually found in children or newborns, hardly described after two years of age. It is characterized by congenital obstruction of the lymphatic vessels, which causes dilation and accumulation of lymph inside it. In adults, it can be secondary to trauma and can occur in the neck, head and, more rarely, in the breast and armpit<sup>3</sup>. In this study we present an atypical case of recurrent axillary lymphangioma in an elderly patient. **Case report:** Female patient, 71 years old, with no history of neoplasms, was referred to the breast surgery center in December 2019 due to bulging in the right axillary region over the past three months, with progressive increase in size. She was submitted to a puncture with complete emptying of the lesion, however, she developed a recurrence of the condition. On initial physical examination, she had bulging in the right axillary region, painless on palpation, softened, measuring about 10.0 cm. Investigation continued with mammography and ultrasound, which did not show any breast changes, but showed a cystic lesion in the right axillary extension of 9.0 cm. The patient returned in March 2020 with recurrence of the condition after another relief puncture, presenting a lesion of about 18 cm, in the same topography and with the same aspect of the previous lesion on physical examination. Initially, it was opted for resection of axillary cyst, however, due to the COVID-19 pandemic, the patient's age and probable benign etiology of the lesion, clinical control was chosen. In August 2020, she presented worsening of the axillary bulging condition, with a lesion measuring about 20.0 cm. We proceeded with the definitive surgical approach with the excision of an axillary cyst with resection of a skin spindle in August 2020. The procedure occurred without complications. The final anatomopathological result showed in cytology the presence of proteinaceous material and mature lymphocytes, corroborating the definitive diagnosis of lymphangioma. During the postoperative period, the patient presented recurrence of the axillary bulging condition, with the need for relief drainage, due to local discomfort. We opted for a new surgical approach to drainage. During the operation, it was possible to observe remnants of the lymphangioma capsule completely adhered to the pectoralis major muscle. We proceeded with vacuum drain and excision of samples from the lesion attached to the muscle was continued. The findings confirmed the diagnosis of lymphangioma. The patient recovered well, with a drain removed on the 10<sup>th</sup> post operation day. In view of the current situation of the COVID-19 pandemic, it was decided to maintain the clinical follow-up of the patient and she has not had recurrence of the condition so far (five months of follow-up).



<https://doi.org/10.29289/259453942021V31S1085>

# PLASMOBLASTIC LYMPHOMA WITH MAMMARY MANIFESTATION: A CASE REPORT

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**Introduction:** Plasmoblastic lymphoma (PBL) is a rare entity of non-Hodgkin lymphoma that usually occurs in the oral cavity in immunosuppressed patients. The involvement of other organs has rarely been reported. The breast can be the site of the initial manifestation of many diseases and in cases like this report, lymphomas should be considered as differential diagnoses. **Case report:** D.S., female, 28 years old, quality reviewer, married, two children. Carrier of human immunodeficiency virus (HIV) with recent treatment. Intern for investigation of liver, duodenal and breast abnormalities. She had nodules in both breasts, with progressive growth for about two months, in addition she presented nausea, vomiting, episodes of diarrhea and weight loss. On physical examination of the breasts, presence of apparent vascularization and asymmetric breast – right breast about two times the size of the contralateral. On palpation, the right breast presented with multiple hard and mobile nodules in a single left nodulation in an inferolateral quadrant measuring about 4 cm, with the same characteristics as the previous ones. No axillary lymph node enlargement, supraclavicular or infraclavicular fossae were noticed. Core biopsy was performed on both breasts with the result of undifferentiated malignancy, with a diffuse standard and numerous foci of apoptosis (compatible with high-grade non-Hodgkin's lymphoma). In the immunohistochemical study, there was positivity for LCA, MUM 1, CD10, EMA, CMYC, CD30, CD3 and Ki-67 with a proliferative index of 95% in neoplasia. Histopathological aspects and immunohistochemical profile were compatible with plasmoblastic lymphoma. During hospitalization, the patient underwent a myelogram that showed slightly hypercellular bone marrow, hematopoiesis was present and was megaloblastic. There was moderate diffuse and a focal irregular infiltration by pleomorphic and dysmorphic plasma cells, suggesting spinal cord involvement by plasmoblastic lymphoma. In addition, oncological PET/CT was performed which showed a metabolic increase in nodular formations in the right breast and thickening of gastroduodenal transition compatible with the clinical information of lymphoproliferative disease. The patient underwent six cycles of the EPOCH polychemotherapy scheme (etoposide, prednisone, oncovin, cyclophosphamide and ydroxideunorubicin), associated with four cycles of methotrexate at high doses, with remission of breast lesions and is currently being followed up.

<https://doi.org/10.29289/259453942021V31S1086>

# NEOAJUVANT ENDOCRINE THERAPY IN BREAST CANCER: THE FIRST RESULTS OF 59 PATIENTS

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**Introduction:** Luminal breast cancer cases, those with positive hormone receptors and human epidermal growth factor (HER 2) negative range around 70% of cases and it is known to be more frequent in older patients. Out of the neoadjuvant therapies, neoadjuvant endocrine therapy (NET) has been gaining more ground due to fewer side effects and tumor downstaging, making it possible for advanced breast cancer tumor patients to undergo breast conservation surgery (BCS).

**Objectives:** To evaluate clinical and pathological response in women that underwent NET with Anastrozole (ANAS) at Pérola Byington Hospital (CRSM), a breast cancer reference center in São Paulo, Brazil. To determine the BCS (breast-conserving surgery) rate after NET and the rate of disease progression during treatment. **Methods:** CRSM patients from 2018 to 2019 that underwent NET for luminal breast cancer with HER 2 negative were identified and data were reviewed.

**Results:** 59 patients were identified, among which only 34 patients underwent breast surgery. All patients were treated with ANAS 1mg/daily. The median age was 63.5 years and average time on treatment was 203.5 days (approximately 6.78 months). Clinical stage at presentation was 3% Stage I, 6% Stage IIA, 32% stage IIB, 43% stage IIIA and 18% stage IIIB. After NET we found pathologic complete response (pCR) in 3% of the cases. and pathological downstage in different stages: Stage I 15%, Stage IIA 24%, Stage IIB 26%, stage IIB 26%, Stage IIIA 29% and stage IIIB 3%. During treatment 6.78% patients progressed, and all of them received chemotherapy. After NET 71% were submitted to adjuvant chemotherapy. The change for BCS was 19.35%. During surgical treatment patients 74% were submitted to axillary dissection and 26% had sentinel node biopsy (SNB). The average number of SNB removed was 5.33. No patients had to stop the medication due to toxicity. **Conclusions:** NET is still underutilized, having its optimal period of drug administration range around 8 to 12 months. It has been very important in aiding patients obtain better outcomes allowing for BCS while having fewer side effects when compared to neoadjuvant chemotherapy.

<https://doi.org/10.29289/259453942021V31S1087>

# PATHOLOGICAL COMPLETE RESPONSE IN 2,141 PATIENTS SUBMITTED TO NEOADJUVANT CHEMOTHERAPY IN A BREAST CANCER REFERENCE CENTER

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**Introduction:** The pathologic complete response (pCR) definition after neoadjuvant chemotherapy (NAC) for breast cancer is better defined as the absence of residual invasive cancer, although it allows the presence of ductal carcinoma in situ (DCIS). In the past, the presence of positive axillary lymph node was allowed; nowadays studies have shown that any positive lymph node should be not considered as pCR. In Brazil, the proportion of advanced cases varies between 30% to 55% of patients treated by the public health system (SUS). NAC has been recommended more frequently, especially for triple negative tumors and overexpressed Her 2 tumors because you can possibly change the adjuvant treatment, and it is an excellent predictor of prognosis. There is little data on pCR in the therapeutic regimens used in SUS. **Objectives:** Evaluate data on pathologic complete response in patients subjected to neoadjuvant chemotherapy in SUS schemes. **Methods:** We performed a retrospective study in Pérola Byington Hospital official database from January 2011 to December 2018 and 2,141 patients that underwent neoadjuvant chemotherapy (NAC) were included. Chemotherapy regimens varied during this period according to institutional protocols and availability of new drugs. The pCR was considered after a histopathological study of the surgical specimen in four molecular subtypes (luminal A and B, triple negative and HER-2 enriched). **Results:** We included 494 patients in Stage IIB and 1,645 patients in Stage III, most of them were luminal (1,077/50.3%), followed by triple negative (766/35.8%) and Her2 (298/13.9%). The pCR rate varied across the subtypes: luminal 78 (7.2%), triple negative 163 (21.3%) and Her2 69 (23.1%). **Conclusions:** NAC is an important treatment for breast cancer and is gradually obtaining more indications. Most of the indications for NAC are: To allow surgical approaches (advanced cases); To allow / increase rate of conservative surgery; To allow conservative approach to the axilla and recently select some cases for specific treatment (adjuvant TDM1 and capecitabine). The pCR rate varies through the studies: Cortazar et al. found 16% in Luminal; 33% in triple negative; 50% in Her2 when trastuzumab was used and 30,2% when it was not used. When platin is used for triple negative it is possible to achieve up to 50% of pCR. When double blockage for Her2 is used we can expect between 50%-70% in pCR. In our data most of our patients were stage III and we only had access to neoadjuvant trastuzumab after 2016; this directly impacted our results. The NAC protocols varied during this period and nowadays we have included platin compounds for triple negative.

<https://doi.org/10.29289/259453942021V31S1088>

# ASSESSMENT OF CHANGES IN BLEEDING PATTERNS AFTER CHEMOTHERAPY IN WOMEN WITH BREAST CANCER USING CONTRACEPTIVES

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**Introduction:** The evolution regarding chemotherapy treatment through new medications and new regimens in women with a history of breast cancer over time allowed better therapeutic responses to the disease. One of the consequences of chemotherapy concerns the impairment of the follicular reserve and its hormonal production. **Objectives:** To assess the importance of the bleeding pattern in women with a history of breast cancer who underwent chemotherapy and the impact on the follicular population in determining ovarian failure. **Methods:** Between August and December 2020, 419 women were seen at the Family Planning outpatient clinic of the Women's Health Reference Center (Hospital Pérola Byington), São Paulo, with 109 women having a history of breast cancer and undergoing a cross-sectional study, regarding the epidemiological characteristics of the care, the consequences to the bleeding pattern after chemotherapy treatment and the need for safe contraception. **Results:** The average age of women was 42.0 years, and the brown color was more prevalent in 49 women (45.0%). The mean age at diagnosis of breast cancer was 37.9 years, with 104 women (95.4%) presenting with invasive carcinoma and five cases (4.6%) with carcinoma in situ. Among the types of invasive carcinoma, luminal type B was present in 42 women (40.4%), HER2 in 25 (24.0%), triple negative in 19 (18.3%) and luminal A in 18 (17.3%). 91 women (83.5%) underwent chemotherapy, and 82 other underwent hormonal treatment (75.2%), with 78 of them (95.1%) using tamoxifen. Obesity was present in 39 women (35.8%). Regarding the menstrual pattern, 38 women (34.9%) had amenorrhea after chemotherapy, but only six (15.8%) had confirmed laboratory menopause. Contraception through the copper intrauterine device (IUD) was performed in 82 of them (75.2%). **Conclusions:** Amenorrhea as a bleeding pattern after chemotherapy can be caused by impairment in the follicular population, causing ovarian failure and difficulty in pregnancy. On the other hand, contraception through a safe method such as copper IUDs until laboratory confirmation of menopausal status must be adopted. New studies should be carried out to better clarify this situation.

<https://doi.org/10.29289/259453942021V31S1089>

# EFFECT OF THE COVID-19 PANDEMIC IN A MASTOLOGY SERVICE AT A TERTIARY HOSPITAL

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**Introduction:** The measures of social isolation and campaigns to combat the COVID-19 pandemic released after March 2020 and the risk of severe respiratory disease in the population older than 65 years determined a decrease in the performance of preventive tests and demand to outpatient clinics, as well as the removal of professionals in risk groups reducing the supply of care. The delay in diagnosis and initiation of treatment is considered a problem in health systems worldwide, directly impacting mortality from the disease. In force since 2012, Law 12732 of the Brazilian Department of Health establishes that the first cancer treatment for SUS (Brazilian Unified Health System) patients must begin within a maximum of 60 days from the signature of the pathological report that confirms malignant neoplasia. **Objectives:** To evaluate the effects of the pandemic in a mastology service at a tertiary hospital of the Unified Health System (SUS) from the measurement of the interval between diagnosis and initiation of treatment, first proposed oncological, surgical (CT) or systemic (TS) treatment and the justifications pointed out when the beginning of treatment occurred in a period of more than sixty days. **Methods:** Cross-sectional cohort study of patients diagnosed with breast cancer between March 2019 and January 2021, divided into two groups – prepandemic and pandemic from the evaluation of data in the hospital management system (Stratec) and comparison of information between the two groups. **Results:** In group 1, prepandemic, from March 2019 to March 2020, 82 patients admitted, mean of 6.3 patients per month, 62 started treatment before 60 days (59TC and 3TS) and 20 after (13TC and 7TS). In group 2, pandemic, from April 2020 to January 2021, 65 patients, mean of 7.2 patients per month, 51 started treatment before 60 days (37TC and 14TS) and 14 after (11TC and 3TS), 32.3 and 27.5%, respectively. Regarding the indication of initial treatment, surgical treatment predominated in both groups, however there was an increase in the indication of systemic treatment in group 2 (17/65 vs 10/82). Among the main justifications for delay in the beginning of treatment, we identified clinical conditions of the patients, the need for a plastic surgery team and unavailability of a vacancy in the operating room in the first group, and clinical conditions of the patients and indecision to accept the therapeutic proposal in the second group. **Conclusions:** The reception by the nursing team to the patients at the time of diagnosis guiding the performance of preoperative examinations and consultations, availability of the operating room exclusively for emergencies, cardiac or oncological surgeries and replacement of professionals when the absence was necessary were effective measures in the maintenance of care and quality of service.

<https://doi.org/10.29289/259453942021V31S1090>

# A CASE REPORT OF BREAST CANCER TREATMENT IN TRANSGENDER MEN WITH BILATERAL SUBCUTANEOUS MASTECTOMY

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**Introduction:** The risk of breast cancer in transgender men is similar to that of cisgender women. The average age at diagnosis is 44 years, suggesting an early incidence with greater tumor aggressiveness. It commonly presents as a palpable mass, years after masculinizing mastectomy, and has a histological subtype of invasive ductal carcinoma and luminal molecular subtype. Although there are no screening and treatment protocols for these cases, similar follow-up to CIS is recommended, including mastectomy, hormone therapy, radiotherapy and chemotherapy. **Case report:** Patient, 42 years old, woman, transgender, nulliparous, no use of hormones, presented to an appointment asking for aesthetic mastectomy. She reported a family history of aunt and two cousins with breast cancer and a 32 year-old sister with atypical ductal hyperplasia. She identified a mass in the superolateral quadrant of the left breast through self-examination of the breasts. The mammography showed dense breasts, BIRADS 0. Breast ultrasound resulted in a solid, hypoechoic nodule, irregularly contoured, microlobulated, measuring 1.1x0.6 cm, between 2h and 3h, and about 3 cm from the areola of the left breast and BIRADS 5. Resonance imaging showed this hypointense nodule with lobulated contours measuring 1.3 x 0.6 cm, 3.3 cm from the nipple and 1.7 cm from the pectoral muscles. USG-guided thick needle biopsy diagnosed IDC (Invasive ductal carcinoma), histological grade 2, nuclear grade 3, with moderate stromal fibrosis, severe stromal elastosis, mild lymphocytic inflammatory infiltratation and vascular invasion present. It was 100% positive estrogen receptor and 50% positive progesterone receptor, with 12% Ki67 and negative HER-2, luminal molecular subtype A at immunohistochemistry. A bilateral skin and papillary areolar complex saving mastectomy was performed with sentinel node biopsy on the left. Anatomopathological examination showed absence of metastatic neoplasia in the lymph nodes and left breast with IDC in the retroareolar region, with the same characteristics as the previous biopsy. Pathological staging was T1N0M0 and anatomical staging and pathological prognosis was Ia. Oncotype DX Recurrence Score test was equal to 26. The patient was subjected to six cycles of Taxotere plus Cyclophosphamide and is using Tamoxifen and hormone with Androgeol. We report a case of subcutaneous mastectomy used in an innovative way with preservation of the areola-papillary complex (APC), with an aesthetic contour of the chest wall and adjustment of the APC, allowing greater satisfaction in the experience of the genus. The same breast pathology that occurs in women should be expected in transgender women. So, we must consider that the focus on the aesthetic result may result in less precaution with the thickness of the remaining dermogreasy flap, with residual breast glandular tissue, and a higher risk of breast cancer.

<https://doi.org/10.29289/259453942021V31S1091>

# A MULTICENTRIC STUDY ON BREAST CANCER IN ULTRA YOUNG WOMEN: III – THERAPEUTIC ASPECTS AND ONCOLOGICAL OUTCOMES

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**Introduction:** We have originally introduced the concept of ultra young women (UYW), defined as age  $\leq 30$  years old. It is generally accepted that UYW patients with breast cancer (BC) share some unfavorable outcomes and the patients are faced with family and professional problems, and unique quality of life issues, including loss of fertility, contraception, pregnancy, sexuality, cancer during pregnancy, body image and emotional distress, that complicate treatment decisions making. **Objectives:** Study the type of surgical and systemic treatment and oncologic outcomes in UYW with BC. **Methods:** We conducted a multicentric, observational, retrospective study of consecutive BC UYW patients. Only patients with infiltrating BC were included. Nine Mastology Centers located in the State of São Paulo participated. The following data were recorded: type of surgery, chemotherapy, endocrinotherapy, and radiotherapy. Individual oncologic evolution was analyzed and the patients were classified as alive without disease (AWD), alive with local recurrence (ALR), alive with systemic recurrence (ASR), died from BC (DBC) or died from another cause (DOC). The research protocol was approved by the Ethics Committee of all Collaborative Centers. **Results:** Sixteen percent of UYW with BC underwent mastectomies, 10% nipple-sparing mastectomies and 16% breast conservative surgeries. About 50% had immediated breast reconstruction. Sentinel node biopsy was performed in 24%. 18% had more than four compromised LNs, 8% with extracapsular leak. 37% received adjuvant or palliative chemotherapy. 61% were submitted to irradiation. 54% had adjuvant hormonotherapy. The mean time of follow-up was 41.5 months (1.5-207). It was observed that 59% were AWD, 1% ALR, 7% ASR and 23% DBC, unfortunately standing out the elevated contingent of BC-related deaths. **Conclusions:** BC therapy in UYW were tailored according to individual characteristics, but the oncological outcomes in this age range at the moment could be considered unfavorable.

## QUALITY OF LIFE

<https://doi.org/10.29289/259453942021V31S1092>

# A PROSPECTIVE EVALUATION OF BREAST SATISFACTION AND EXPECTATION IN PREOPERATIVE BREAST RECONSTRUCTION PATIENTS

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**Introduction:** There is a consensus that breast reconstruction makes an important positive contribution to the quality of life of breast cancer patients. However, a large proportion of breast cancer survivors have unmet expectations surrounding reconstruction after mastectomy, particularly in relation to appearance. Approximately 40% of women who underwent breast reconstruction after mastectomy reported their reconstruction to be worse than expected. There is little consensus about what impact specific factors have on women's satisfaction with breast reconstruction process and outcomes. **Objectives:** To delineate factors affecting preoperative native breast satisfaction and expectation with the surgery using the BREAST-Q in patients prior to oncological breast surgery following breast reconstruction. **Methods:** A prospective cross-sectional trial with breast cancer patients enrolled from November 2019 to December 2020 at Hospital Nossa Senhora das Graças Breast Unit in Curitiba, Brazil. Two independent groups were studied. The first group included patients who underwent mastectomy following immediate breast reconstruction (IBR) with implant. The second group underwent breast-conserving therapy (BCT) following level 2 oncoplastic techniques. This study was approved by the Internal Review Board of Positivo University, Curitiba, Brazil. All patients were invited to complete a patient-reported outcome (BREAST-Q) Expectations Module and Pre-operative Breast reconstruction module prior to surgery. **Results:** Overall, seventy-nine patients with breast cancer completed the preoperative BREAST-Q. Patients were divided into BCT following oncoplastic surgery (n=49) and mastectomy following IBR with implant (n=30) groups. The mastectomy with IBR implants group had better satisfaction with their native breast than BCT oncoplastic group. Comparing Breast-Q expectations rate, women in BCT following oncoplastic group had higher expectations for breast appearance when clothed than the group of mastectomy with IBR implant. Previous aesthetic breast surgery and neoadjuvant chemotherapy were significant predictors of preoperative physical well-being. Younger age was significantly correlated with pain expectation in the surgery. Patients who were fifty years old or more and had a university or higher education level expected that the breast appearance would match almost as well as the same ten years after. **Conclusions:** This study results highlight the need to improve education and informed decision-making about breast reconstruction. Patients demonstrated to have high expectations for breast appearance after reconstruction and expect not to change over time. Understanding which factors affect patient's satisfaction with native breasts and their expectation with the surgery in the preoperative set could improve preoperative counseling and the management of patient's expectations of subsequent breast reconstruction.



<https://doi.org/10.29289/259453942021V31S1093>

# IMPACT OF THE COVID-19 PANDEMIC ON LIFESTYLE AND ANXIETY LEVELS IN WOMEN WITH BREAST CANCER

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**Introduction:** The COVID-19 pandemic, which led to an attempt to reduce infection rates, also led to radical changes in our daily lives and forced the world population to isolation and distance. As result, our lifestyle habits and mood have also changed. Whether due to the fear of performing physical activity during treatment, or the lack of information regarding the benefits associated with it, the number of sedentary cancer patients remains high. With the pandemic, the challenge of introducing and maintaining the practice of physical activity during cancer treatment as a “standard of care” became even greater. **Objectives:** To assess changes in physical activity levels, time spent sitting and self-reported levels of anxiety in women diagnosed with breast cancer, in the face of the COVID19 pandemic. **Methods:** An online questionnaire was applied to cancer patients, evaluating 57 women diagnosed with breast cancer, aged between 20 and 75 years. The questionnaire was sent via text message and on spontaneous demand on social networks. **Results:** As main results, we found out that 46 women (80.7%) were practicing regular physical exercises before the pandemic, while 40 (70.1%) of them managed to maintain this habit. The averages of weekly time (minutes) spent in physical exercise, subjective effort intensity, time (hours/day) spent watching TV, and anxiety level before and during the pandemic were 90.5 vs. 69.4 ( $p<0.03$ ); 2.3 vs. 1.9; 2.3 vs. 3.2 ( $p<0.007$ ); 2.6 vs. 3.3 ( $p<0.003$ ). Regarding the percentage analyses, it was noted that even in the pre-pandemic period, only 24.5% of the sample performed more than 150 minutes of weekly physical activity, as recommended by the World Health Organization (WHO). As for the level of anxiety, when comparing the number of women who rated themselves between very anxious and exaggeratedly anxious, an increase of 110.4% was noted during the pandemic. **Conclusions:** Even though exercise protocols for cancer patients are well established, we observed in the present study that most patients do not meet the minimum necessary WHO recommendations. Furthermore, the increase in hours spent watching television may be a factor that contributed to increase the level of anxiety, decreasing the quality of life of these participants.

## SURVIVORSHIP RESEARCH

<https://doi.org/10.29289/259453942021V31S1094>

# FUNCTIONAL SEQUELAE IN THE LIMBS ASSOCIATED WITH BREAST CANCER. CAN QUALITY OF LIFE QUESTIONNAIRES REPLACE OBJECTIVE CLINICAL MEASUREMENTS?

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**Introduction:** Assessing limb functionality is difficult in the mastologist's office. The growing incidence of breast cancer and consequently of cancer treatment and patient survival justifies the search for reliable quantitative evaluation methods to diagnose and correlate treatment-related chronic functional sequelae. In addition, many clinical limitations are not associated with the absolute values of strength and mobility of the upper limb. **Objectives:** To verify if the EORTC-BR23, SPADI and BCTOS questionnaires are able to differentiate known groups in relation to functionality. **Methods:** Study approved by the Ethics Committee under number 782/2014. Observational cross-sectional, non-randomized study. 48 patients treated with conservative surgery associated with radiotherapy were selected through a non-probabilistic sample for convenience and divided into two groups: G1 composed of 24 women with a minimum of two functional deficits diagnosed by goniometry and dynamometry; and G2 - women without deficits and functional complaints. Sequelae were considered a 10-degree reduction in abduction or flexion, or a 12% difference in loss of strength in the limb homolateral to breast cancer. All patients answered the SPADI, BCTOS and EORTC-BR 23 questionnaires. They sought to assess the domains of the questionnaires that would be able to separate the groups. The Man-Whitney test was used to compare the groups. If the questionnaires were able to distinguish the groups, a potential cut-off point was identified by the ROC curve. Grant by FAPESP project n. 2014 08197-0. **Results:** Regarding groups G1 and G2, a difference was observed in all domains of the SPADI questionnaires [pain ( $p < 0.001$ ) and disability ( $p < 0.001$ )] and BCTOS [(functional ( $p = 0.04$ ), cosmesis ( $p = 0.025$ ), breast pain ( $p = 0.053$ ) and edema ( $p = 0.007$ )), and in EORTC-BR 23 only in the "Symptoms of the Arm" domain ( $p = 0.01$ ). SPADI pain (area = 0.808,  $p < 0.001$ ) and disability (area = 0.885,  $p < 0.001$ ) were the questionnaires that better separated the groups, with cutoff points for SPADI pain  $\leq 38$  (sensitivity 66.7%, specificity 79.17%) and SPADI disability  $\leq 41.25$  (sensitivity 88.3%, specificity 91.7%). **Conclusions:** In patients undergoing conservative treatment and radiotherapy, it was possible to use SPADI and BCTOS to diagnose functional sequelae, since they were able to differentiate the previously known groups in all assessment domains, and SPADI was able to better identify the groups. This fact facilitates the use of these questionnaires in clinical practice, aiming at assessing the sequelae associated with treatment.

## QUALITY OF LIFE AND EDUCATIONAL ASPECTS - OTHER

<https://doi.org/10.29289/259453942021V31S1095>

# INFLUENCE OF PHYSICAL ACTIVITY ON QUALITY OF LIFE OF BREAST CANCER PATIENTS

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**Introduction:** Breast cancer is the most common neoplasm among women. As a consequence of the increased number of cancer diagnoses, and concomitant mortality reductions for most types of cancer many patients live with physical and psychosocial problems associated with the disease and its treatment that may compromise their quality of life (QoL). Exercise has been recommended as part of standard care for patients with cancer to help prevent and manage physical and psychosocial problems and improve QoL. **Objectives:** The objective of the current study was to compare the impact of physical activity practice in women with breast cancer, through indicators of quality of life. **Methods:** This is a randomized study with breast cancer patients in a large general hospital in southeastern Brazil. The questionnaires were applied regarding function and quality of life (EORTC QLQ-C30 and BR-23). Patients were randomly allocated into two groups: control, without intervention and treatment group, with the practice of physical exercises and nutritional orientation. Physical activity was performed for three hours/week through active-assisted exercises of flexion, abduction, extension, and rotation of upper limbs and treadmill walking at a speed tolerated by the patient. After six months of participation, all patients were reassessed, with blindness of the investigator. **Results:** The study did not reveal statistical difference in the constructs cited ( $p>0.05$ ) between the control group and the treatment group regarding “Global Health Status” “Functional Scale” and “Scale of Symptoms”, however the patients in physical activity presented better mood and confidence being more adapted to face the challenge of the disease. **Conclusions:** The practice of physical activity showed no benefit in improving quality of life and functional capacity in patients with breast cancer in the evaluation by questionnaires in a short period established, however, showed favorable trends for improvement in successive evaluations.

