Original Article

Comparative analysis of mastectomies and breast reconstructions performed in the Brazilian Unified Health System in the last 5 years

Análise comparativa das mastectomias e reconstruções de mama realizadas no sistema único de saúde do Brasil nos últimos 5 anos

CAROLINE SILVA COSTA DE ALMEIDA[1]*
RAFAEL XIMENES BANDEIRA DE MORAIS[2]
IGOR RABELO DE FRANÇA[1]
KYLDERY WENDELL MOURA CAVALCANTE[1]
ANDRÉ LUIZ BELÉM NEGROMONTE DOS SANTOS[2]
BEATRIZ XIMENES BANDEIRA DE MORAIS[3]
IGOR CHAVES GOMES LUNA[1]
RAFAEL ANLICOARA[1]

Institution: Hospital das Clinicas de Pernambuco, Recife, PE, Brazil.

Article received: October 14, 2020.
Article accepted: January 10, 2021.

Conflicts of interest: none

DOI: 10.5935/2177-1235.2021RBCP0039

ABSTRACT

Introduction: Breast cancer is the second most common malignant neoplasm in women in Brazil. A great challenge for health professionals and to reconcile the waiting line for both oncological and reconstructive surgeries. The objective is to evaluate the last 5 years of breast cancer surgeries compared to the number of reconstructive surgeries performed in the same period. **Methods:** This is a descriptive study with a transversal and retrospective approach on mastectomies, segmentectomies and breast reconstructions performed at SUS, between the years 2015 and 2020. According to the procedures and codes chosen and tabulated in the Microsoft Excel 365 software, the data were collected in the SUS data transfer service. **Results:** 204,569 breast cancer surgeries were performed, with 57% segmentectomies/quadrantectomies and 43% mastectomies. In the same period, 17,927 reconstructive plastic breast surgeries were performed with implants after mastectomy, with only 20.52% of mastectomized women undergoing immediate reconstruction with implants. **Conclusion:** The number of reconstructive breast surgeries in Brazil is below the ideal level, leaving most women mastectomized with sequelae for a long time.

Keywords: Mastectomy; Cancer; Breast. Reconstruction; Brazil.

[1] Hospital das Clinicas de Pernambuco, Department of Plastic Surgery, Recife, PE, Brazil.
[2] University of Pernambuco, Faculty of Medical Sciences, Recife, PE, Brazil.
[3] Pernambuco Health College, Recife, PE, Brazil.

■ **RESUMO**

Introdução: O câncer de mama é a segunda neoplasia maligna mais comum em mulheres no Brasil. O grande desafio para os profissionais de saúde é conciliar a fila de espera tanto para as cirurgias oncológicas quanto para as reconstrutivas. O objetivo é avaliar o cenário dos últimos 5 anos das cirurgias de câncer de mama em comparação ao número de cirurgias reconstrutivas realizadas no mesmo período. **Métodos:** Trata-se de um estudo descritivo com abordagem transversal e retrospectiva sobre mastectomias, segmentectomias e reconstruções mamárias realizadas no SUS, entre os anos de 2015 e 2020. Os dados foram coletados no serviço de transferência de dados do SUS, segundo os procedimentos e códigos escolhidos e tabulados no software Microsoft Excel 365. **Resultados:** Foram realizadas 204.569 cirurgias de câncer de mama, sendo 57% segmentectomias/quadrantectomias e 43% mastectomias. No mesmo período, foram realizadas 17.927 cirurgias plásticas reconstrutivas de mama com implantes após mastectomia, sendo que apenas 20,52% das mulheres mastectomizadas foram submetidas à reconstrução imediata com implantes. **Conclusão:** O número de cirurgias reconstrutivas de mama no Brasil está bem abaixo do ideal, deixando a maioria das mulheres mastectomizadas com sequelas por um longo período de tempo.

Descritores: Mastectomia; Câncer; Mama; Reconstrução; Brasil.

INTRODUCTION

Breast cancer is a problem relevant to public health. It is the second most prevalent malignancy in women in Brazil, behind only nonmelanoma skin cancer. Its treatment may vary according to some factors, such as: degree of staging, tumor characteristics, clinical condition of the patient and may include local treatments (surgeries, radiotherapy) and systemic therapy (chemotherapy, hormone therapy and biological therapy). Surgical procedures can be of 2 types: conservative, in which the complex skin and nipple-areola are preserved; or may be radical, with total mastectomy and dissection of axillary lymph nodes followed by immediate or late breast reconstruction[1,2].

According to data from the National Cancer Institute (INCA), about 66,280 new cases of breast cancer are expected in 2020. These data are alarming due to the disparity observed between the number of mammary resections and mammary reconstructions being performed. According to data released by the Brazilian Society of Mastology (SBM), in 2018, only 10% of women in Brazil who underwent a mastectomy had their breasts reconstructed after receiving cancer treatment by the Unified Health System called SUS (*Sistema Único de Saúde*). In the current scenario, characterized by poor infrastructure and the lack of qualified professionals, the number of breast reconstruction procedures simply cannot keep up with the number of mastectomies and segmentectomy performed[3,4].

According to Brazilian Law No. 9,797, of May 1999, a woman who suffered total or partial mutilation of the breast, for cancer treatment, is entitled to reconstructive plastic surgery by the SUS. On the other hand, immediate breast reconstruction followed by mastectomy only became a direct guarantee once that Law No. 12,802 was approved in 2013. However, even after 7 years of the passage of this law, access to reconstructive surgery is much lower than necessary. Although some patients may not have clinical indication for reconstruction in the same surgical procedure, at least 74,000 women with adequate clinical condition to undergo breast reconstruction surgery are still mutilated by mastectomy, according to SBM[3].

It is noteworthy that immediate reconstructions increase the time spent in the operating room and, consequently, decreases the number of women who, theoretically, could receive surgical treatment for cancer. Moreover, in most cases, mammary reconstruction procedures require multiple approaches to improve outcomes, thus leading to an even greater imbalance between procedures and a longer waiting list[5].

OBJECTIVE

Thus, this study aims to quantitatively illustrate the current Brazilian scenario concerning the disparity

between breast reconstructions and the number of mastectomies and segmentectomy performed in the SUS between 2015 and 2020.

METHODS

This is a retrospective, cross-sectional descriptive study conducted in Health Centers linked to the Unified Health System, which includes collecting data on the number of mastectomies, segmentectomies, and reconstructive breast surgeries performed in Brazil. As the Hospital Information System (SIH) records all Hospital Admission Authorizations (AIHs) for patients hospitalized for breast cancer surgery who perform procedures by SUS, the data were extracted from DATASUS (SUS data transfer service). Thus, the number of surgeries performed between May 2015 and April 2020 were extracted from SIH, considering the codes related to SUS's surgical procedures (the data supporting the findings of this study are openly available in DATASUS at: http://tabnet.datasus.gov.br/cgi/deftohtm.exe?SIH/cnv/qiuf.def. The surgical codes and surgical procedures analyzed are presented in Chart 1.

Chart 1. Procedure codes analyzed in this study according to the table of procedures of the computer science department of the single health system.

0410010057	Radical mastectomy with lymph node dissection
0410010065	Simple mastectomy
0416120024	Radical mastectomy with axillary lymphadenectomy in oncology
0416120032	Simple mastectomy in oncology
0410010090	Post-mastectomy reconstructive breast plastic with prosthesis implantation
0416080081	Reconstruction with myocutaneous flap
0410010073	Non-aesthetic female breast reconstruction
0410010111	Sectorectomy/quadrantectomy
0410010120	Sectorectomy/quadrantectomy with ganglion emptying
0416120059	Segmentectomy/quadrantectomy/sectorectomy in oncology
0702080012	Tissue expander

After selection, the data files were tabulated using *Microsoft Excel 365*. We chose to use absolute values, arithmetic mean and percentage, to prepare graphs and tables.

RESULTS

According to data from DATASUS, 51,047 radical mastectomies with axillary lymphadenectomy in oncology were registered in Brazil from 2015 to 2020; 5,542 radical mastectomies with lymphadenectomy/25,302 simple mastectomies in oncology; 5,432 simple mastectomies and 117,246 segmentectomies/quadrantectomies/sectorectomies with or without lymph node dissection (Table 1).

Therefore, we found 204,569 breast cancer surgeries. Segmentectomies, quadrantectomies or sectorectomies corresponded to approximately 57% of all procedures, while mastectomies accounted for 43% of the total. We also noticed that the Southeast was the region that had the largest number of surgeries, 89,680 (43.83%); followed by the Northeast, 56,820 (27.77%); while the North region was the one that presented the least number of procedures, 9,747 (4.76%) as shown in Table 2.

During this period, 17,927 (10.42%) breast reconstruction surgeries after mastectomy with breast implants were performed; 115,330 (67.09%) reconstructions with myocutaneous flaps/any part; and 38,643 (22.47%) plastic surgery of the non-aesthetic female breast (Table 3).

According to data, the Southeast region also had the largest number of reconstructive surgeries performed, taking into account plastic surgery for breast reconstruction after mastectomy with breast implants, with 11,257 (62.79%), again followed by the Northeast with 2,187 surgeries (12, 19%) and the region that recorded the least number of reconstructive procedures was the North, with 321 (1.79%). Regarding the types of reconstructive surgery, it was noticed that the Northeast region was responsible for 55.29% (63,769) of all oncological reconstructions with myocutaneous flaps performed in Brazil, representing the majority of these procedures, followed by the states of the Southeast that represented 22.64% (26,118).

Thus, in the last 5 years, the average of mastectomies performed annually in the country was 17,464 procedures, 10,209 of which were radical mastectomies with axillary lymphadenectomy in oncology, 1,108 radical mastectomies with lymphadenectomy, 5,060 simple mastectomies in oncology, 1,086 simple mastectomies in oncology and 1,086 mastectomies in oncology and 1,086 mastectomies in oncology and 1,086 mastectomies simple. Segmentectomies/quadrantectomies/ sectorectomies were the most performed procedures annually, with an average of 23,449 per year. Regarding reconstructive surgery in the last 5 years, we had an average of 23,066 oncological reconstructions with myocutaneous flaps (anywhere), 3,585 post-mastectomy breast reconstruction surgeries with breast implants and 7,728 non-aesthetic female breast plastic surgeries. Therefore, we can conclude, from the data collected, that only 20.52% of Brazilian women underwent immediate breast reconstruction surgery with breast implants after mastectomy (Figure 1).

Table 1. Total number of breast cancer surgeries performed by the Unified Health System in the last five years.

Types of surgery/year	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Radical mastectomy with lymph node dissection	1.141	1.209	1.191	987	1.014	5.542
Simple mastectomy	1.340	1.100	980	1.037	975	5.432
Radical mastectomy with axillary lymphadenectomy in oncology	10.185	10.292	10.286	10.266	10.018	51.047
Simple mastectomy in oncology	4.336	4.584	5.114	5.263	6.005	25.302
Post-mastectomy reconstructive breast plastic with prosthesis implants	3.224	3.584	3.637	3.671	3.811	17.927
Reconstruction with myocutaneous flap	19.616	21.671	24.582	25.124	24.337	115.330
Non-aesthetic female mamhernanic plastic	7.445	7.900	7.920	7.964	7.414	38.643
Sectorectomy/quadrantectomy	15.021	14.817	15.079	15.439	14.904	75.260
Sectorectomy/quadrantectomy with ganglion emptying	1.532	1.460	1.288	1.119	1.152	6.551
Segmentectomy / quadrantectomy / breast sectorectomy in oncology	6.929	7.384	7.408	6.881	6.833	35.435

Table 2. Distribution of breast cancer-related surgeries performed by the Unified Health System between 2015 and 2020 by region of Brazil.

Region	Radical mastectomy with lymphadenectomy in oncology	Radical mastectomy with lymphadenectomy	Simple mastectomy in oncology	Simple mastectomy	Segmentectomies	total
Southeast	22679	2691	13349	2554	48407	89.680 43,83%
Northeast	13427	1296	6837	1409	33851	56.820 27,77%
South	9395	713	3769	783	19393	34.053 16,64%
Midwest	3025	457	876	279	9632	14.269 7,0%
North	2521	385	471	407	5963	9.747 4,76%
Total	51.047	5.542	25.302	5.432	117.246	204.569

Table 3. Number of surgeries related to breast reconstruction performed by the Unified Health System between 2015 and 2020, by region in Brazil.

region	Non-aesthetic female breast plastic	Reconstructive breast plastic with prosthesis implant	Reconstruction with myocutaneous flap in oncology	Total
Southeast	22500	11257	26118	59.875 34.83%
Northeast	6918	2187	63769	72.874 42.39%
South	5374	3334	19401	28.109 16.35%
Midwest	2849	828	5292	8.969 5.21%
North	1002	321	750	2.073 1.20%
Total	38.643 22.47%	17.927 10.42%	115.330 67.09%	171.900

The code "tissue expander" available at DATASUS, was used to collect information about breast reconstruction with an expander, but there was no record of this procedure being performed in the last 5 years.

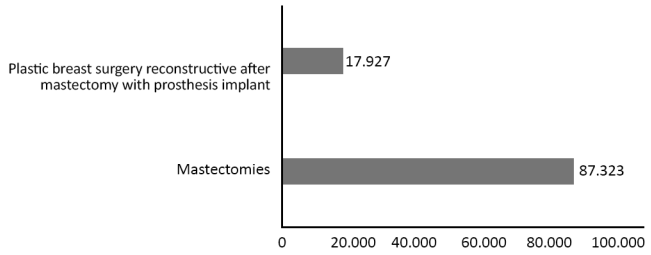

Figure 1. Graphic representation in total numbers of mastectomies and breast reconstructions with implant performed in the SUS between 2015-2020

DISCUSSION

In this study, about 20% of Brazilian mastectomized women had access to breast plastic surgery with breast implants after mastectomy. Data from the Brazilian Society of Mastology (SBM) stated that only 10% of mastectomized patients in Brazil had access to immediate breast reconstruction by SUS in 2018[6], which leads us to infer that there has been an increase in the use of the immediate reconstruction technique with an implant in Brazil in the last two years.

The large number of women who have not undergone breast reconstruction surgery is mostly the result of a few qualified professionals to perform this type of surgery and a lack of adequate infrastructure to meet the demand, in addition to not all women having clinical conditions to undergo immediate breast reconstruction after a mastectomy. Thus, breast reconstruction must be postponed, which leads to a longer waiting list every year[3,7,8].

In addition, it was observed in this study that the procedures and the code table of SUS exhibit a great flaw concerning statistical means, since both a breast reconstruction with latissimus dorsi muscle in oncology and a reconstruction of the head and neck with myocutaneous flaps in oncology fall under the same procedure code[9]. Likewise, the code "plastic surgery for non-aesthetic breast" may include different surgeries, such as surgery for breast symmetrization after cancer treatment, as well as for the treatment of congenital deformities, such as, for example, the correction of Polland's syndrome. Thus, the database analyzes the number of breast reconstructions performed in Brazil, whether immediate or late, questionable and compromises the authenticity of all the information found in DATASUS to develop a study, as it includes different procedures under the same code.

Considering these particularities, the total sum of 171,900 reconstructions collected in this study, through DATASUS, is overestimated, as it comprises breast reconstructions, as well as reconstructions performed in different parts of the body. However, it is still one of the only platforms that provide quick and universal access, being supplied by health service providers to SUS, through which funds are transferred to pay for these services, minimizing the underreporting of treatments performed.

The Brazilian Classification of Medical Procedures (CBHPM), on the other hand, has codes that are in accordance with the procedure performed, for example, "breast reconstruction with unilateral muscle or myocutaneous flaps," "breast reconstruction with breast implants and/or expander," "Partial breast reconstruction after quadrantectomy," among others; however, there is no online platform available to allow access to information on procedures performed through the supplementary health system (private sector, philanthropic institutions and health insurance) [10].

Another source of data concerning these numbers is the latest census on the current condition of plastic surgery in Brazil, carried out by the Brazilian Society of Plastic Surgery (SBCP), which shows that breast reconstruction accounted for only 6.1% of all 691,916 reparative surgeries performed in 2018. However, it was an analysis based on the complete conclusion of an electronic formulation sent to the e-mail of only 503 members of the society (equivalent to 8.25% of the members). In comparison, breast reconstruction accounted for 9.9% of the 633,147 repaired surgeries performed in 2016, according to statistics collected from 1,218 members of the SBCP (21.3% of the members) [11,12].

Besides, INCA data to assess the relative risk of developing breast cancer in 2020 and the mortality estimate by region in Brazil (data from 2018) showed that the Southeast region had the highest rates in both cases, 81.06 per 100,000 inhabitants about the relative risk and 14.76 per 100,000 when it came to the mortality rate, followed by the South region with 71.16 per 100,000 and 14.64 per 100,000. In this sense, according to data from the last 5 years found in this study, the Southeast has the largest number of surgeries for breast cancer treatment and reconstruction after mastectomy, which is in accordance with the high rates of relative risk and mortality per inhabitant. Of all regions, the North had the lowest estimated risk rates of 21.34 per 100,000 and the lowest number of breast cancer treatment and repair procedures after mastectomy[6,13].

When it comes to American data, after the approval of the Women's Health and Cancer Rights Act (Janet's Law) in the United States of America (USA) in 1998, there was a significant improvement

in the reconstruction number index, but it was not yet enough to contemplate all women, as it is in Brazil. In a study published in October 2018 that assessed the US trend, after the law, between 1998 and 2014, 11.4% of women underwent breast reconstruction surgery in 1998; in 2014, that number rose to 38.3%. However, in general terms, of the 346,418 women who underwent oncological surgical surgery and participated in the study, only 21.8% underwent breast reconstruction[14]. Besides, in the last census of the American Society of Plastic Surgery, released in 2019, there was a 5% increase in breast reconstruction surgeries between 2018 and 2019. Thus, even if it was not among the five most performed reparative surgeries, it was still classified as the 7th most common reparative surgery performed in the USA[15]. A study published by Panchal and Matros in 2017[2] showed a change in the trend of techniques used in American patients' treatment. This resulted from the increase in the number of contralateral prophylactic mastectomies, which led to an inversion in the type of reconstruction most commonly performed, with implant reconstructions becoming more common than autologous reconstruction techniques (implant reconstructions increased by 11% between 1998 and 2008). However, it was only possible to verify these statements because there is a better statistical definition available in the American health database, the opposite of the Brazilian data situation.

Thus, from this compiled information, it is possible to infer, even overestimating and/or making use of underreported data, that the Brazilian indices of breast reconstruction are below expected, requiring greater attention from the SUS both for the surgical issue of care for women undergoing breast cancer treatment, as well as in relation to the sources of data made available, through improvement in the specification of the procedures codes and participation of health insurance in the dissemination of their quantified ones.

CONCLUSION

Reconstructing the breast allows the mastectomized woman a chance to mitigate the impact caused by cancer, but the number of breast reconstruction surgeries is still far below what is necessary, leaving most Brazilian women with sequelae of mastectomy for a long time. Moreover, obtaining statistical information in Brazil is still a complex and debatable task, since they do not represent the true situation in which breast reconstruction is found in this panorama, and the data are overestimated and still below ideal. Thus, as long as there are no changes in the table of procedures of the Unified Health System and the codes are used for the main purpose of passing funds through the SUS, we will be faced with falsified data.

COLLABORATIONS

CSCA	Análise e/ou interpretação dos dados, Análise estatística, Aprovação final do manuscrito, Coleta de Dados, Concepção e desenho do estudo, Gerenciamento do Projeto, Metodologia, Redação - Preparação do original, Supervisão
RXBM	Analysis and/or data interpretation, Data Curation, Formal Analysis, Investigation, Methodology, Writing - Original Draft Preparation, Writing - Review & Editing
IRF	Analysis and/or data interpretation, Data Curation, Formal Analysis, Methodology, Writing - Original Draft Preparation, Writing - Review & Editing
KWMC	Analysis and/or data interpretation, Data Curation, Formal Analysis, Methodology, Writing - Original Draft Preparation
ALBNS	Analysis and/or data interpretation, Data Curation, Formal Analysis, Methodology, Writing - Original Draft Preparation, Writing - Review & Editing
BXBM	Analysis and/or data interpretation, Data Curation, Methodology, Writing - Review & Editing
ICGL	Final manuscript approval, Methodology, Project Administration, Supervision, Writing - Review & Editing
RA	Final manuscript approval, Project Administration, Supervision, Writing - Review & Editing

REFERENCES

1. Ministério da Saúde (BR). Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA). Câncer de mama [Internet]. Rio de Janeiro (RJ): Ministério da Saúde/INCA; 2020; [acesso em 2020 Jun 02]. Disponível em: https://www.inca.gov.br/tipos-de-cancer/cancer-de-mama
2. Panchal H, Matros E. Current Trends in Postmastectomy Breast Reconstruction. Plast Reconstr Surg. 2017;140(5S):7S-13S.
3. Ministério da Saúde (BR). Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA). Assistência: novos construtores de autoestima [Internet]. Rio de Janeiro (RJ): Ministério da Saúde/INCA; 2020; [acesso em 2020 Jun 02]. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//rrc-27-assistencia-novos-construtores-de-autoestima.pdf

4. Freitas-Júnior R, Siqueira LB, Carrijo ENA, Lacerda RP, Paulinelli RR, Rahal RM, et al. Variação temporal do tratamento cirúrgico do câncer de mama em um hospital universitário na região Centro-Oeste do Brasil. Rev Col Bras Cir. 2012;40(3):180-5.
5. Sociedade Brasileira de Mastologia (SBM). Apenas 20% das mulheres tiveram suas mamas reconstruídas no Brasil entre 2008 e 2015 [Internet]. Rio de Janeiro (RJ): SBM; 2018; [acesso em 2020 Jun 15]. Disponível em: https://www.sbmastologia.com.br/releases/apenas-20-das-mulheres-tiveram-suas-mamas-reconstruidas-no-brasil-entre-2008-e-2015/
6. Bray F, Ferlay J, Soerjomataram I, Siegel R, Torre L, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018 Nov;68(6):394-424.
7. Freitas-Júnior R, Gagliato D, Moura Filho J, Gouveia P, Rahal R, Paulinelli R, et al. Trends in breast cancer surgery at Brazil's public health system. J Surg Oncol. 2017;115(5):544□9.
8. Urban C, Freitas-Junior R, Zucca-Matthes G, Biazús JB, Brenelli FP, Pires DM, et al. Cirurgia oncoplástica e reconstrutiva da mama: reunião de Consenso da Sociedade Brasileira de Mastologia. Rev Bras Mastol. 2015;25(4):118-24.
9. Ministério da Saúde (BR). Secretaria de Atenção Especializada à Saúde. Departamento de Regulação, Avaliação e Controle. Coordenação-Geral dos Sistemas de Informação. Manual de bases técnicas da oncologia. SIA/SUS - sistema de informações ambulatoriais [Internet]. Brasília (DF): Ministério da Saúde; 2019; [acesso em 2020 Jul 10]. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//manual-oncologia-26a-edicao.pdf
10. Sistema de Gerenciamento da Tabela de Procedimentos, Medicamentos e OPM do SUS (SIGTAP). Notícias [Internet]. Brasília (DF): SIGTAP; 2020; [acesso em 2020 Jun 02]. Disponível em: http://sigtap.datasus.gov.br/tabela-unificada/app/sec/procedimento/exibir/0416080081/06/2020
11. Sociedade Brasileira de Cirurgia Plástica (SBCP). Censo 2016. Situação da Cirurgia Plástica no Brasil [Internet]. São Paulo (SP): SBCP; 2017; [acesso em 2020 Jun 04]. Disponível em: http://www2.cirurgiaplastica.org.br/wp-content/uploads/2017/12/CENSO-2017.pdf
12. Sociedade Brasileira de Cirurgia Plástica (SBCP). Censo 2018. Situação da Cirurgia Plástica no Brasil [Internet]. São Paulo (SP): SBCP; 2018; [acesso em 2020 Jun 04]. Disponível em: http://www2.cirurgiaplastica.org.br/wp-content/uploads/2019/08/Apresentac%CC%A7a%CC%83o-Censo-2018_V3.pdf
13. Ministério da Saúde (BR). Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA). Estimativa 2020 [Internet]. Brasília (DF): Ministério da Saúde/INCA; 2019; [acesso em 2020 Jul 20]. Disponível em: https://www.inca.gov.br/estimativa
14. Sergesketter AR, Thomas SM, Lane WO, Orr JP, Shammas RL, Fayanju OM, et al. Decline in racial disparities in postmastectomy breast reconstruction: a surveillance, epidemiology, and end results analysis from 1998 to 2014. Plast Reconstr Surg. 2019 Jun;143(6):1560-70.
15. American Society of Plastic Surgeons (ASPS). Plastic Surgery Statistics Report 2019. ASPS National clearinghouse of plastic surgery procedural statistics [Internet]. New York, NY: ASPS; 2020; [acesso em 2020 Jun 10]. Disponível em: https://www.plasticsurgery.org/documents/News/Statistics/2019/plastic-surgery-statistics-full-report-2019.pdf

***Corresponding author:** **Caroline Silva Costa de Almeida**
Rua Barão de Itamaracá, 78, Espinheiro, Recife, PE, Brazil.
Zip Code: 52020-070
E-mail: carol_costaalmeida@hotmail.com