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Retrospective Analysis of the Epidemiological Profile of Patients Submitted to Breast Reconstruction at a Public Hospital in the Northeast

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ABSTRACT

Introduction: Breast reconstruction is a right assured by the public health system to patients submitted to mastectomy. However, there are factors that delay the performance of this procedure. Objectives: To understand the epidemiological profile of women with breast cancer who underwent breast reconstruction in a reference hospital in the state of Pernambuco. **Methods:** This is an observational, retrospective research with an analytical character and descriptive approach. The data were collected through a questionnaire sociodemographic and clinical-surgical history of patients with breast carcinoma, and then analyzed by SPSS software, version 18 with the percentages of the categories evaluated by the Chi - square test, considering the significance level of 5%. The comparison of analyses was significant ($p < 0.005$), showing that the profile described is the most frequent in the group of patients evaluated. This search was submitted and approved by the Ethics and Research Committee on Human Beings of Fundação Amaury de Medeiros, CAAE: 42457420.1.0000.5193, **Results:** A non-probabilistic sample of 400 records was obtained in ten years at a tertiary hospital in Recife (PE), most of them with mean age between 46 and 59 years (45.3%), brown (61.1%), married (79.1%), with education until high school (60.7%), household professionals (45%), non-smokers (84.9%), who do not consume alcohol (94.9%) and had immediate reconstruction after mastectomy (70.3%). **Conclusion:** The findings support that patients with high educational levels are likely to undergo immediate breast reconstruction. Pointing out that the socioeconomic level significantly influences the rates of breast reconstruction after mastectomy.

Keywords: Breast Cancer Treatment, Epidemiology, Mastectomy, Breast Cancer, Breast Reconstruction.

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INTRODUCTION

Breast cancer is a relevant public health problem, widely recognized as a disease that affects more frequently the female population over forty-five years of age, with the exception of non-melanoma skin cancer, being the main cause of death from cancer in women. women from all over the world, among women in high and low income countries [1,2]. There are some factors that are linked to the emergence of this condition, including the lifestyle adopted by sufferers [3-7].

There are several methods for treating breast cancer, this being a multidisciplinary treatment. Depending on the stage of the disease, local or systemic treatments can be used with more radical and conservative attitudes. In recent decades, surgical treatment has evolved from the more Haslted radical surgery for more conservative surgeries with immediate reconstruction [8,9]. Due to the aggressiveness of the procedure, a search was initiated for new, less aggressive techniques and ways to construct a new breast for women who suffered from multilating surgeries [10,11].

The accessibility of women who underwent breast reconstruction depends on the socio-demographic profile of these patients. It is also clear that underprivileged populations and educational levels have lower rates of breast reconstruction, which demonstrates lower availability and advice for immediate or delayed reconstruction [12,13].

In 2021, the Brazilian Society of Mastology published a note stating that, in the last decade, more than 110 thousand Brazilian women underwent mastectomy through the SUS, as part of the treatment for breast cancer. However, only 25 thousand underwent breast reconstruction, with an increase in absolute numbers being observed until 2014 with a slight reduction until 2017. In 2020, with the Covid-19 pandemic, there was an even more pronounced drop in the performance of these procedures, worsening a scenario that was already unfavorable [14].

It is clear that breast reconstruction and its evolution are related to several factors: economic, social and psychological, which contributed to delaying its acceptance for several decades [15-21]. Thus, the objective of our work is to understand the epidemiological profile, socioeconomic factors, clinical pathological characteristics and the relationship between immediate and delayed breast reconstruction in a reference public health network hospital in the State of Pernambuco, with the aim of understanding the association of these factors in the best way and change the lives of these women.

METHODOLOGY

It is an observational, retrospective study with an analytical character, with a descriptive approach. 400 patients diagnosed with breast cancer undergoing breast reconstruction admitted to the Mastology and Breast Reconstruction service at Hospital Barão de Lucena (HBL) in Recife-PE were evaluated.

For data analysis, a database was built in the Microsoft Excel spreadsheet, which was exported to the SPSS software, version 18, where the analysis was carried out. To evaluate the personal and clinical profile of the evaluated patients, percentage frequencies were calculated and respective frequency distributions were constructed.

To evaluate which factors influence the histological type and classification of TNM, contingency tables were constructed and the Chi-square test for independence was applied. In cases where the prerequisites for applying the Chi-square test were violated, the Fisher's Exact test was applied. In evaluating the relationship between the molecular subtype and the type of surgery and reconstruction, the Chi-square test was applied for homogeneity; as well as evaluating the distribution of the type of reconstruction according to the molecular subtype. All conclusions were drawn considering a significance level of 5%.

The project was submitted and approved by the Human Research Ethics Committee of the Amaury de Medeiros Foundation, CAAE: 35568920.0.0000.5191. Data collection began in September 2021, after approval by the ethics committee.

RESULTS

In table 1 we have the distribution of the socio-demographic profile of the patients evaluated. It can be seen that the majority of patients are from Recife (36.0%), are between 46 and 59 years old (45.3%), are brown (61.0%), married (79.3%), studied until complete/incomplete high school (60.7%), works at home (45.0%), does not smoke (85.0%) and does not consume alcoholic beverages (95.0%).

Table 2 shows the distribution of the clinical profile of the patients evaluated. It was found that the majority of patients had a delay of more than 1 to 3 months of treatment (44.2%), ductal histological type (89.0%), TNM type II (51.0%), we performed a sectorectomy (57.7.3%), had immediate reconstruction performed in (70.3%), patients underwent CT (80.5%), radium (73.8%), and Luminal A molecular subtype (60.8 %).

Table 1. Distribution of the sociodemographic profile of the patients evaluated.

Evaluated factor	N	%	p-valor
Place of origin			
Capital	145	36,1	
Region Metropolitan	117	29,3	0,221
Other region	138	34,6	
Age			
Until 30 age	25	6,2	
31 a 45 age	129	32,3	<0,001
46 a 59 age	181	45,3	
60 age or more	65	16,2	
Color			
White	136	33,9	
Brown	245	61,1	<0,001
Black	29	5,0	
Marital state			
Married	325	79,1	
Single	53	13,3	<0,001
Widow	13	2,8	
Divorcide	19	4,8	
Level of education			
Without education	6	1,2	
Education	13	3,2	
Fundamental Compl/incompl	94	23,6	<0,001
Médio Compl/incompl	242	60,7	
Superior Compl/incompl	45	11,3	
Profession			
Unemployed	14	3,5	
Paid work	167	41,8	
Student	15	3,8	<0,001
Home	180	45,0	
Retiree	24	6,0	
SMOKE			
Yes	62	15,1	<0,001
No	338	84,9	
Alcoolism			
Yes	24	5,1	<0,001
No	376	94,9	

[1]p-value of the chi-square test for proportion comparison

Table 2. Distribution of the clinical profile of the patients evaluated.

Factor avaliable	N	%
Lag time		
Until 1 month	148	36,8
More 1 to 3 months	176	44,2
More 3 to 6 months	62	15,5
More than 6 months to 1 year	2	0,5
More 1 year	12	3,0
Histological type		
Ductal	356	89,0
Lobular	15	3,7
Others	29	7,3
TNM		
Level 0	25	6,2
Level I	107	26,8
Level II	204	51,0
Level III	60	15,0
Level IV	4	1,0
Type of surgery		
Mastectomy	169	42,3
Quadrantectomy	231	57,7
Time of reconstruction		
Imediate	281	70,3
Late	119	29,7
Chemotherapy		
Yes	322	80,5
No	78	19,5
Radiotheraphy		
Yes	295	73,8
No	105	26,2
Subtype molecular		
HER 2	34	8,4
Luminal A	243	60,8
Luminal B	65	16,3
Triple Negative	58	14,5

In table 3 we have the distribution of the type of reconstruction according to the molecular subtype. It can be seen that the most frequent type of reconstruction was oncoplastic reconstruction with flap (45.0%), followed by breast reconstruction with myocutaneous flap (GD) (23.5%) and reconstruction with prosthesis (10.3%). When

analyzing the distribution of the type of reconstruction according to the molecular subtype groups, it was observed that in patients with the HER2, Luminal A and TN molecular subtype there was a higher prevalence of the type of oncoplastic flap reconstruction (41.2%, 44.9% and 36.2%, respectively), followed by the type of breast reconstruction with myocutaneous flap (GD) (35.3%, 22.2% and 34.5%, respectively). For the group of patients with molecular subtype B, the majority of patients underwent oncoplastic flap reconstruction (55.4%), followed by prosthetic reconstruction (18.5%).

Table 3. Distribuation of type reconstruction second the subtype molecular.

Type of reconstruction	N	%	Subtype molecular			
			HER 2	Luminal A	Luminal B	TN
Mastectomy subcutaneous with implants	36	9,0	5(14,7%)	23(9,5%)	4(6,2%)	4(6,9%)
Breast reconstruction with flap myocutaneos (GD)	94	23,5	12(35,3%)	54(22,2%)	8(12,3%)	20(34,5%)
Flap with tissue autólogo: TRAM	8	2,0	0(0,0%)	7(2,9%)	0(0,0%)	1(1,7%)
Reconstruction with Expander	21	5,2	1(2,9%)	14(5,8%)	2(3,1%)	4(6,9%)
Lipofilling	20	5,0	2(5,9%)	12(4,9%)	3(4,6%)	3(5,2%)
Reconstruction with implants	41	10,3	0(0,0%)	24(9,9%)	12(18,5%)	5(8,6%)
Reconstruction oncoplastic with flap	180	45,0	14(41,2%)	109(44,9%)	36(55,4%)	21(36,2%)

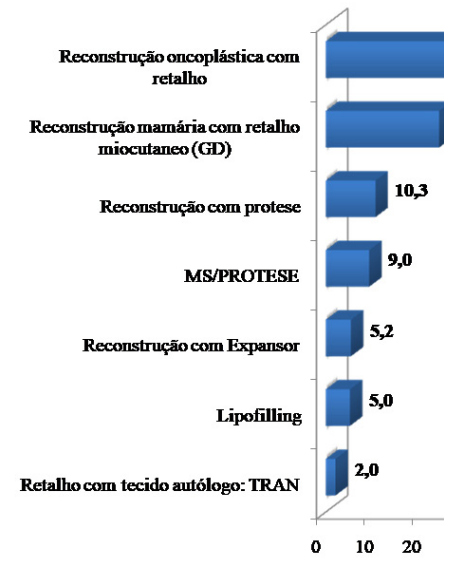

Figure 1. Distribution of patients according to type of reconstruction.

DISCUSSION

We observed that breast cancer has undergone major surgical evolution in recent years, from Halsted's mastectomy to conservative surgery and the advances in breast reconstruction that occurred in the 20th century. However, with the introduction of different oncoplasty techniques, women had a new option to improve the psychological trauma caused by the loss of the breast. Breast reconstruction surgery has been used on a large scale in the treatment of breast cancer, as it allows resections of large-volume tumors to achieve aesthetics and oncological results. Research has revealed that patients who choose breast reconstruction are motivated by body image for reasons of femininity and sexuality [22,23].

Our results from the socioeconomic, origin, educational and racial point of view, as well as age, marriage status, demonstrated in these patients that it did not have an influence on the use of breast reconstruction after conservative surgery or mastectomy, independent factors were considered for this type of procedure. Agarwal S et al found data similar to ours, together with Cristian CK in a study analyzing socioeconomic determinants in breast reconstruction [24,25]. The high level of patient satisfaction is associated with immediate reconstruction compared to mastectomy alone in psychosocial terms, sexual and physical [26,27].

The rate of patients who underwent immediate reconstruction was 70.3% and those who underwent delayed reconstruction was 29.7%. These data are positive when compared to literature data, in which 18.5% underwent immediate reconstruction while 9.5% underwent delayed reconstruction [28]. Morrow et al reported that approximately ¼ of their patients refused to undergo breast reconstruction after mastectomy, because they were afraid about the likelihood of interference with the detection of cancer recurrence [28-30].

Unlike the findings of Natalie et al, out of 866 patients, 768 did not undergo conservative surgery (88.7%) and 98 (11.3%) underwent oncoplasty surgery [31].

A Brazilian publication by Ruffo et al from 2017, on the trend of surgeries to treat breast cancer in Brazil, revealed that between January 2008 and December 2014, 193,596 surgeries were performed to treat breast cancer in the SUS, revealing a trend a reduction in the number of simple mastectomies with some stability in the numbers of BCS and radical mastectomies. In addition, there has been an increase in breast reconstructions using both implants and myocutaneous flaps. This study found a rate among patients who underwent mastectomy and reconstructive surgeries of 15% in 2008, with a significant increase in 2013 and 2014, which were 23.7% and 29.1%, respectively [32].

Another interesting fact, the majority of our patients were in clinical stage 0, I, II with 84% of patients, which allowed more conservative surgeries and immediate reconstruction than radical mastectomy. Wei Wu et al, in a survey of 47,123 in patients treated with mastectomy alone or mastectomy followed by breast reconstruction staging 0,I,II were 85%, similar to our findings. However, these data were not observed by Mansell et al. [33].

The most common histological type was Ductal and the majority of patients underwent mastectomy (43.0%). In the group of patients with the lobular histological type, the distribution of the type of surgery was homogeneous (33.3% for all types of surgery) and the time for immediate reconstruction was longer (73.3%). For other types of histological type, the majority underwent mastectomy (38.0%) and required immediate reconstruction (79.3%). The homogeneity test was not significant when comparing the distribution of the type of surgery and reconstruction time between the different histological types (p-value = 0.834 and 0.513, respectively), indicating that the distribution of the type and time of surgery is similar different histological types [34].

Regarding the molecular subtype of our patients, luminal A was the most found with 60% of cases, followed by luminal B in 16%, triple negative with 15% and HER-2 in 9%, these data are very similar by Wei Wu in the SEER survey in the United States National Cancer Institute program, where Luminal A was found in 68% of patients, with Her-2 in 6.1% and Triple negative in 13%. We observed that no difference was observed between the type of breast reconstruction with the different molecular subtypes. Patients with HER-2 and Triple negative molecular subtypes underwent less immediate breast reconstruction compared to luminal tumors, and also have a relatively higher risk of local recurrence [35].

The majority of our patients who underwent oncoplasty techniques used locoregional flaps (45%), breast implants and expanders (25%) in almost 70% of cases, leaving reconstruction with myocutaneous flaps with the large dorsal or Tram and fat grafting, for selected cases and later reconstructions. Offodile et al, in a retrospective study by the American College Of Surgeons, demonstrated that the most used reconstruction was with breast implant, and that reconstruction using flap and implant was rarer [2].

Regarding the level of education, it is clear that patients who underwent breast reconstruction had completed high school (60.7%), 11.3% had higher education. Therefore, it is noted that the higher the level of education of the patients, the greater the search for reconstruction, as in Albrecht [36].

Furthermore, it was noted that the majority of women who underwent breast reconstruction had some type of employment relationship. The study demonstrated that 41.8% of patients had some paid work. With this, we can infer that women in the job market seek more reconstruction procedures [37].

CONCLUSION

The findings support that patients with high educational levels are able to undergo immediate breast reconstruction. Also, the histological type of carcinoma and the molecular subtype did not interfere with breast reconstruction. We observed that the number of immediate breast reconstruction in patients with breast cancer had a significant increase.

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