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CASE REPORT
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Pleomorphic adenoma of the breast

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ABSTRACT

Pleomorphic adenoma (PA) is a common tumor of the salivary gland, but rarely occurs in the breast. PA of the breast is a benign tumor that usually presents as a periareolar nodule. Core-needle biopsies may yield misdiagnosis with complex fibroadenoma, phyllodes tumor and metaplastic breast cancer due to the mixture of stromal and epithelial elements. We present a case of PA of the breast suspected after core-needle biopsy, but confirmed after surgical excision. The importance to make a correct diagnosis consists in avoid extensive unnecessary surgery, such as mastectomy, since PA can be treated with local surgical resection.

KEYWORDS: adenoma, pleomorphic; breast neoplasms; neoplasms, glandular and epithelial.

INTRODUCTION

Pleomorphic adenoma (PA) is a benign tumor commonly found in the parotid gland, but rarely described in breasts[1]. PA is a mixed tumor, composed of epithelial and myoepithelial elements, which can occur in either breast or parotid tissues due to its common embryological ectodermal origin[2]. Accurate identification is important to avoid misdiagnosis such as a primary sarcoma, an adenomyoepithelioma, a Phyllodes tumor or metaplastic breast carcinoma that may lead to unnecessary extensive surgery[3-5]. Thus, we report a case of a PA suspected after core needle biopsy and confirmed after surgical excision.

CASE REPORT

An asymptomatic 71-year-old woman presented a lump in her right breast during breast cancer screening. Mammography and breast ultrasound showed a periareolar, irregular and hypoechoic lump in the lower internal quadrant of the right breast, measuring 9 mm (Figure 1). Core-needle biopsy demonstrated a benign biphasic neoplasm, composed of a mixture of epithelial and myoepithelial cells, with a focus of apocrine metaplasia, sclerosing adenosis, and chondromyxoid stroma (Figure 2). Immunohistochemistry revealed p63 and calponin expression in myoepithelial cells, in addition to a low Ki67 proliferation index (Figure 2). Based on histopathological findings, it was not possible to differentiate between complex fibroadenoma and PA of the breast. Consequently, the patient underwent surgical excision of the nodule. Examination of the surgical specimen showed a well-defined lesion with clear margins, and characteristic epithelial and myoepithelial elements without atypia, embedded into a chondromyxoid stroma, with foci of chondroid metaplasia (Figure 3). Final pathological report confirmed PA of the breast.

This study was approved by the Ethics and Research Committee of the A.C. Camargo Cancer Center (number 4.213.207) and was conducted following the Helsinki Declaration principles. All information and images were de-identified.

DISCUSSION

PA of the breast was first reported in 1906[6]. Since then, less than a hundred cases have been reported worldwide, including one from Brazil[3,7-12]. PA typically occurs in females between 23 to 85 years of age[7] and is usually located in the periareolar region and in the right breast[13]. PA presents clinically as a breast nodule with an average size of 2 cm, which can be palpable and difficult to differentiate from breast cancer[11,14].

There are no specific imaging findings of PA[11]. Although PA is often reported as a well-circumscribed lump, it may demonstrate irregular contours on breast ultrasound and can appear as a lump without microcalcifications on mammography[3]. On pathological examination, PA appears as a circumscribed lesion that is clearly demarcated from the surrounding tissue, and is characterized by a mixture of epithelial and mesenchymal components such as glandular ducts, myoepithelial cells, myxomatous stroma, and cartilaginous

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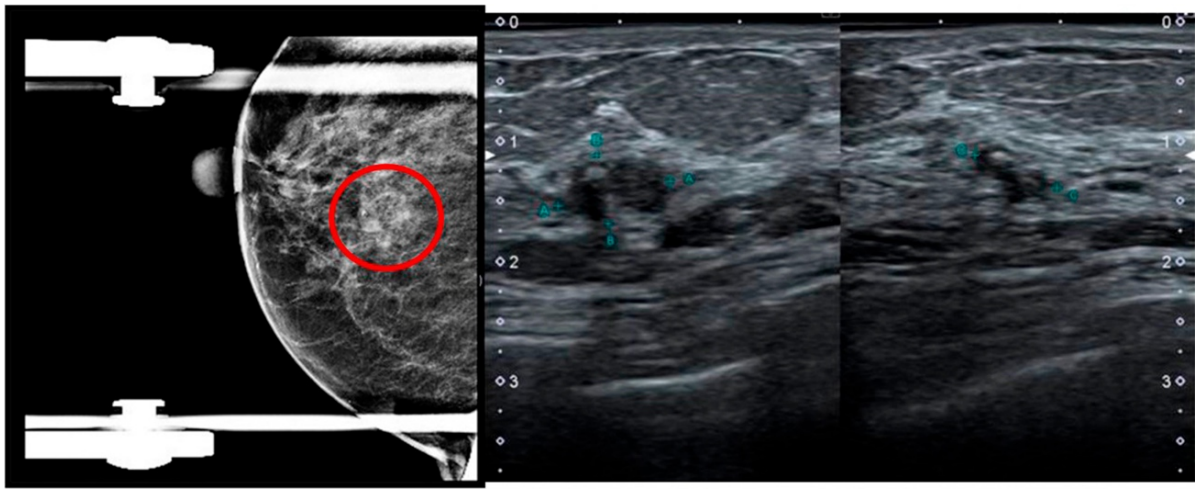

Figure 1. Mammography (left) and ultrasound (right) demonstrating a 9 mm hypoechoic and irregular nodule in the lower internal quadrant of the right breast.

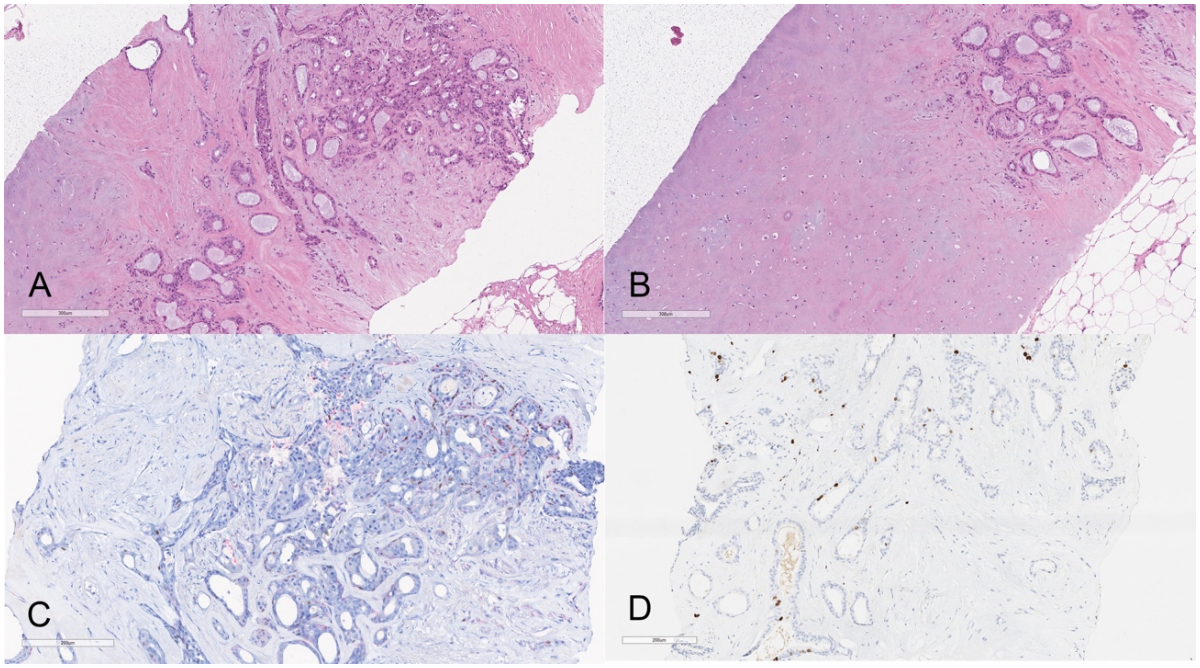

Figure 2. Hematoxylin-eosin stain (100x) of core-needle biopsy specimen of (A) the right breast lump showing glands surrounded by epithelial and myoepithelial cells and (B) focus of chondromyxoid stroma. Immunohistochemical (100x) of core-needle biopsy specimen of the right breast lump showing positivity for p63 (nuclear) and (C) calponin (cytoplasmatic) expression in myoepithelial cells and (D) low Ki67 proliferation rate.

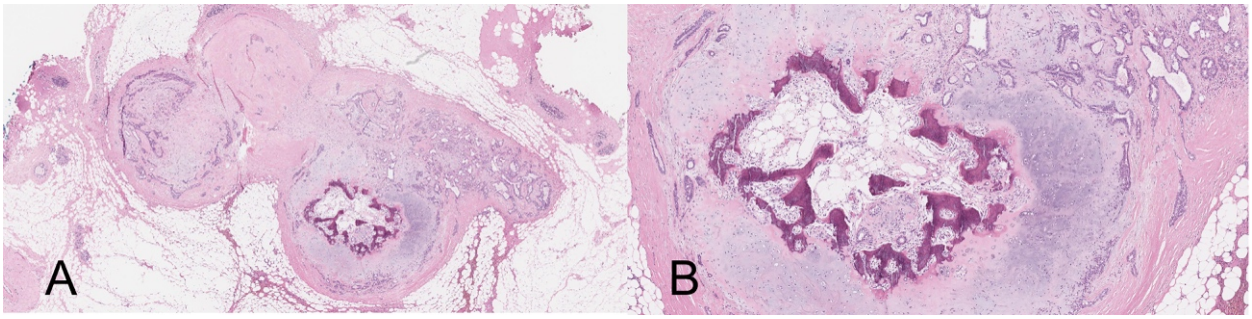

Figure 3. (A) Hematoxylin-eosin stain of surgical specimen showing a well-defined lesion under low-power magnification (40x) and (B) a high-power magnification (200x) of pleomorphic adenoma with glandular elements in chondromyxoid stroma with cartilaginous and osseous metaplasia.

components. PA diagnosis can be difficult in core biopsy specimens because it must be differentiated from complex fibroadenoma or phyllodes tumor[1,3,4,15]. In addition, two case reports have described misdiagnoses of breast PA identified as matrix-producing metaplastic breast cancer in core-needle biopsy specimens[4,15].

Recommended treatment is local resection with 3 mm of clear margins to avoid disruption of the tumor capsule[2,4]. PA is an indolent tumor, but recurrences have been reported[2,13]. Recurrence is usually in the adjacent subareolar area, with an average postoperative recurrence interval of 4 years[2,4].

CONCLUSIONS

Breast PA is a rare tumor that presents clinically as a periareolar nodule. Despite its being a benign tumor, the diagnosis from core-needle biopsy specimens is difficult due to the mixture of stromal and epithelial elements that can raise a differential diagnosis of complex fibroadenoma, phyllodes tumor, and metaplastic breast cancer. This case illustrates a presentation of a breast lump in an elderly patient for whom breast cancer was the primary diagnostic consideration. Diagnostic accuracy is essential to avoid extensive surgical overtreatment such as mastectomy, as PA can be cured by local surgical resection.

ACKNOWLEDGMENTS

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AUTHORS' CONTRIBUTIONS

M.S.: Conceptualization, Project administration, Writing — original draft, Writing — review & editing.
G.T.L.F.: Writing — original draft.
T.A.D.: Writing — original draft, Writing — review & editing.
V.F.C.: Writing — original draft, Writing — review & editing.
S.M.T.C.: Writing — review & editing.
C.A.B.T.O.: Writing — review & editing,
F.B.A.M.: Supervision, Writing — review & editing.

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CASE REPORT
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Minimally invasive treatment of gynecomastia by ultrasound-guided vacuum-assisted excision: report of a case series

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ABSTRACT

Introduction: Gynecomastia (GM) is a benign proliferation of glandular breast tissue in men. Some cases need surgical intervention. Traditional open surgery by semicircular inferior periareolar incision is the most common surgical approach. In order to obtain better esthetic results, some alternatives to open surgery have been proposed, such as liposuction, endoscopic mastectomy, and vacuum-assisted excision (VAE). **Objective:** To describe the technical surgical approach of ultrasound-guided VAE of GM and its results from a case series. **Method:** This is an evaluation of seven GM cases submitted to ultrasound-guided VAE with a 10G needle using the ENCOR® BD whole circumference automated breast biopsy system in Redimasto – Redimama, a Brazilian breast center. The result was considered good or satisfactory when it showed minimal remaining gland, good symmetry, no retraction, necrosis, hypertrophic scar, or displacement of the nipple-areola complex. All patients answered a questionnaire to evaluate their satisfaction and perception of the procedure. **Results:** Seven (7) patients with Simon grade 1 and 2 bilateral GM underwent ultrasound-guided VAE. No case of displacement, necrosis, or retraction of the nipple-areola complex, post-procedure bleeding, infection, skin necrosis, or asymmetry was detected. No patient reported decrease or change in nipple sensation or erection. All patients had bruises and hematomas that spontaneously resolved within 30 days. All results were considered good or excellent by patients and surgeons. **Conclusion:** Minimally invasive ultrasound-guided VAE is an excellent alternative for the treatment of GM. It is better indicated for Simon grade 1 and 2 GM, with good and excellent esthetic results, small scar, and low rates of nipple and areolar complications. It allows an outpatient procedure with low morbidity (local anesthesia) and fast recovery.

KEYWORDS: gynecomastia; mammary ultrasonography; interventional ultrasound; needle bipsy.

INTRODUCTION

Gynecomastia (GM) is a benign proliferation of glandular breast tissue in men[1]. It is the most common male breast disorder, accounting for nearly 60% of them. It can be unilateral or, most often, bilateral. GM is a common condition with a prevalence of 32% to 65%, depending on age, and can affect up to 70% of all pubescent boys[2]. A man's lifespan has three peaks: the first occurs during infancy, the second during puberty, and the third in middle-aged and older men[1,2]. GM in infancy and puberty resolves spontaneously in most cases. Proper investigation is highly recommended among adults and older adults to exclude underlying diseases[1].

GM typically results from an absolute or relative deficiency of androgen action or excessive estrogen action in the breast tissue[2]. No treatment is necessary for asymptomatic adolescents or men, but it is required when GM is progressive, painful, or causes cosmetic discomfort. It usually resolves by itself or by removing the underlying cause, such as medication, anabolic-androgenic steroid abuse, or treatment of systemic diseases[3]. Medical therapy can also be prescribed for patients with a recent diagnosis — within two years —, but is less effective for long-standing GM. Some cases need surgical intervention. According to Simon, GM can be classified into grades[4] (Table 1).

Traditional open surgery by semicircular inferior periareolar incision is the most common surgical approach, but it may cause

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significant morbidities, such as asymmetry, poor scarring, and nipple-areola complex retraction or necrosis[5-7]. In order to obtain better esthetic results, some alternatives to open surgery have been proposed, such as liposuction, endoscopic mastectomy, and vacuum-assisted excision (VAE)[7-9].

In the last few years, the use of vacuum-assisted devices, originally created to diagnose breast lesions by radiologically-guided procedures, has shown to be promising in the surgical management of GM[8-12].

OBJECTIVE

To describe the technical surgical approach of ultrasound-guided VAE of GM and its results from a case series.

METHOD

The study consists of seven GM cases evaluated from December 1, 2018, to December 1, 2019. The patients underwent ultrasound-guided VAE with a 10G needle using the ENCOR® BD whole circumference automated breast biopsy system in Redimasto — Redimama, a Brazilian breast center. Before the procedure, all patients were submitted to a clinical evaluation with full history and physical examination by a breast surgeon, as well as mammography, breast ultrasound, and blood tests. All patients signed an informed consent form for the VAE procedure. All procedures were performed by breast surgeons experts in ultrasound-guided VAE. The procedures took place in the breast center, in an outpatient approach, through a 3 mm incision in each breast, with local anesthesia, using 2% lidocaine and bupivacaine when necessary, according to the maximum dose for the patient's weight. No sedation was necessary. After the 10G needle was introduced and positioned via ultrasound, the automated vacuum device was activated (Figures 1 and 2). The number of fragments extracted from each breast varied according to the surgeon's judgment of each case, taking into account the amount of breast tissue during clinical examination, mammography, and breast ultrasound before surgery, as well as the real-time breast ultrasound evaluation during the procedure. The vacuum method for dense breasts with fine precision was used for all cases. The resection performed left a 1-cm thick gland behind the nipple, just like the standard surgical procedure. At the end of the VAE of the GM, vacuum and manual suction of the residual cavity were performed to avoid or reduce the incidence of postoperative hematomas and bruises. Only one patient had the surgical cavity marked with a metal clip. Mammographic images were obtained one and six months after VAE to evaluate the removal of the glandular tissue (Figure 3). Patients wore a thoracic compression belt for at least 30 days. Follow-up was scheduled at 7 days, 14 days, 1 month, 2 months, and 6 months after the procedure, and consisted of clinical examination, pictures, and survey of the patient's and breast surgeon's satisfaction. The result was considered good or satisfactory when it showed minimal remaining gland, good symmetry, no retraction, necrosis, hypertrophic scar, or displacement of the nipple-areola complex. All patients answered a questionnaire to evaluate their satisfaction and perception of the procedure.

Table 1. Simon grade of gynecomastia.

Grade 1	small breast without excess skin
Grade 2	moderate breast without excess skin
Grade 3	moderate breast with excess skin
Grade 4	large breast with excess skin

Figure 1. Ultrasound-guided vacuum-assisted excision of gynecomastia: surgical approach.

RESULTS

Seven patients with Simon grade 1 and 2 bilateral GM underwent ultrasound-guided VAE. One of them had undergone previous traditional open surgical treatment of GM with unsatisfactory results, and all patients expressed their wish to have an excision with less morbidity, small scars, and good esthetic outcome. The mean age was 27.5 years (ranging from 19 to 34 years). The average procedure time was 28 minutes (ranging from 23 to 54 minutes). The main complaint and indication for the procedure was the esthetic appearance of GM, followed by physical deformity. One patient had an areola fissure caused by the vacuum suction during the procedure, which was promptly sutured and did not affect the final esthetic result. At follow-up, all patients and breast surgeons reported excellent or good satisfaction (Figures 4 and 5), and at the six-month review, no patient presented recurrence or asked for another intervention or open surgery. No patient had postoperative seroma, bleeding, or hemorrhage or needed to be taken to the operating room at any time, during or after the surgical procedure and follow-up. All procedures were performed in an outpatient setting, with local anesthesia and no sedation. Histological evaluation revealed benign GM in all patients. No case of displacement, necrosis, or

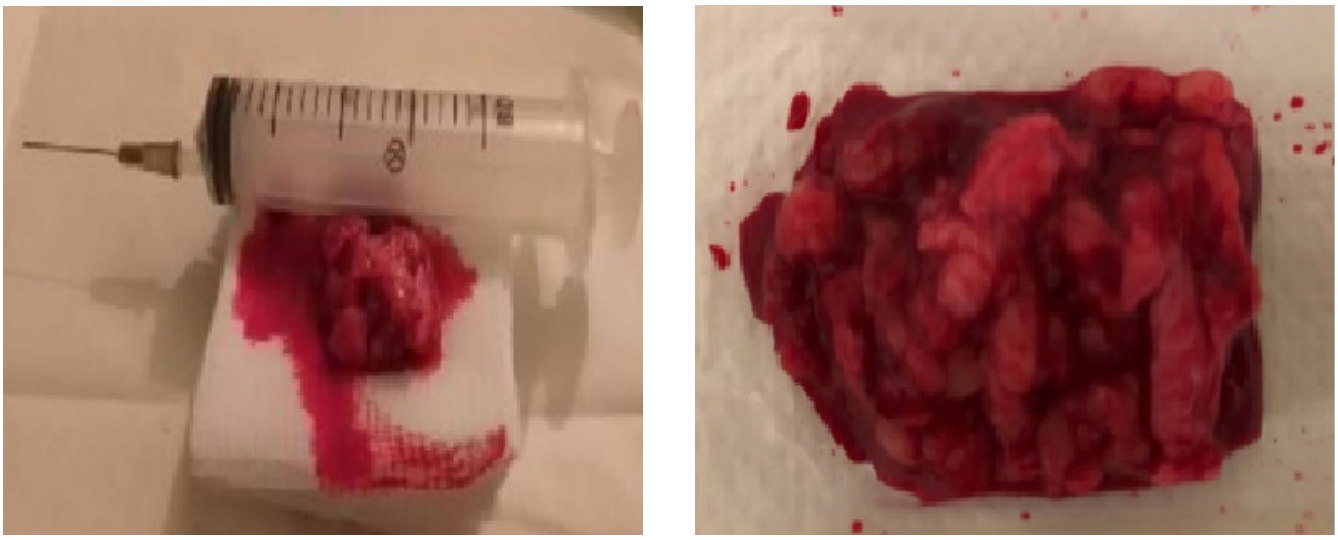

Figure 2. Ultrasound-guided vacuum-assisted excision of gynecomastia: surgical specimen.

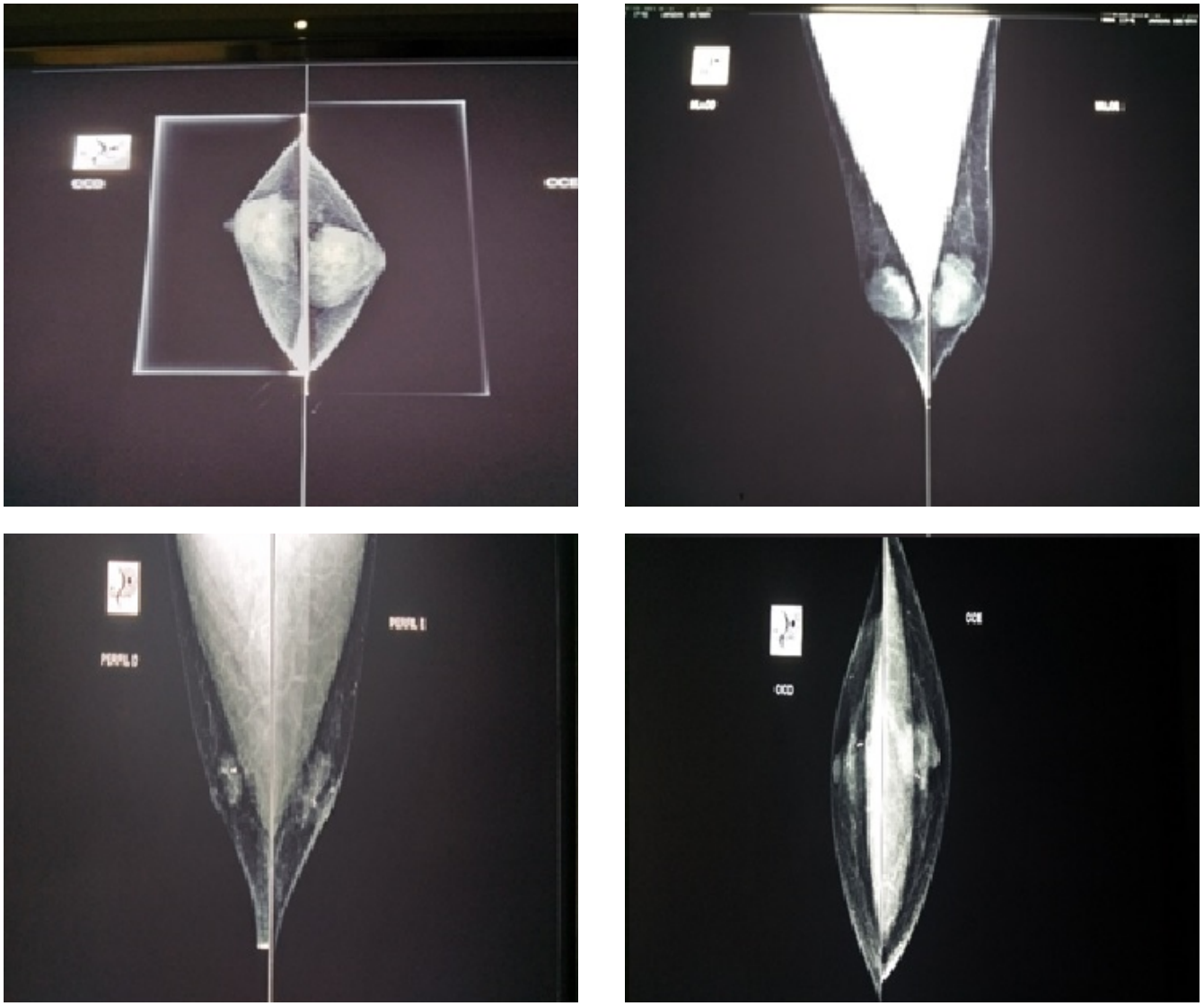

Figure 3. Mammograms before and six months after ultrasound-guided vacuum-assisted excision of gynecomastia.

retraction of the nipple-areola complex was detected. None of the individuals investigated presented postoperative bleeding, infection, skin necrosis, or asymmetry. No patient reported decrease or change in nipple sensation or erection. All patients had bruises and hematomas that spontaneously resolved within 30 days of VAE, with excellent or good cosmetic results and no skin sequelae. The individuals investigated were able to return to their life activities in 2 days and to physical work in 14 days. Physical activities were allowed two weeks after the procedure. All results were considered good or excellent by patients and surgeons (Table 2[13] and Figure 3).

DISCUSSION

The main goal of treating GM is to remove the excess of breast tissue, achieving the best symmetry with minimal scarring and good or excellent esthetic results. Different from subcutaneous mastectomy for cancer treatment, the purpose of GM surgery is not to excise all breast tissue in an oncologic fashion. GM surgery aims to remove enough breast tissue to obtain a good cosmetic result and avoid clinical recurrence. The open surgical approach is still the standard procedure for persistent GM after one or two years, especially when associated with psychological distress, unsatisfactory body image, and avoidance of activities in which the chest is exposed (sports and swimming)[4]. For years, subcutaneous mastectomy through a semicircular inferior areolar incision, associated or not with liposuction, has been the gold-standard surgical procedure for this condition. The results are usually satisfactory, but postoperative complications are common, including areola deformity or retraction; "saucer-shaped defect" (from over-resection of breast tissue); seroma; poor scarring, such as retraction, hypertrophic scar, or keloid formation; wound dehiscence; and nipple retraction, necrosis, or altered sensation. The side effects of standard surgery have been a long-standing concern. In 1987, Courtiss et al. published an article reporting that 101 out of 159 patients presented high complication rates after traditional excision for the treatment of GM, including under-resection (21.9%), "saucer-shaped defect" (18.7%), poor scarring (18.7%), hematoma (16.1%), and seroma (9.4%)[6]. In order to decrease morbidity and improve esthetic results, the GM treatment should improve with new surgical techniques and minimally invasive procedures.

More recently, some groups have described an endoscope-assisted subcutaneous mastectomy[5], with a smaller incision. However, this technique did not eliminate the potential complication of having a scar on a visible part of the chest or axillae, and the risk of nipple-areola complex complications remains[8].

In 2010, the Royal College of Surgeons of England published the first article about a vacuum-assisted biopsy device associated with liposuction to provide a minimally invasive approach for GM, with excellent results[8]. The group suggested that ultrasound guidance could be positive in those cases. One year later, the Chinese experience with a vacuum-assisted biopsy device was also published[9]. Recently, the indications

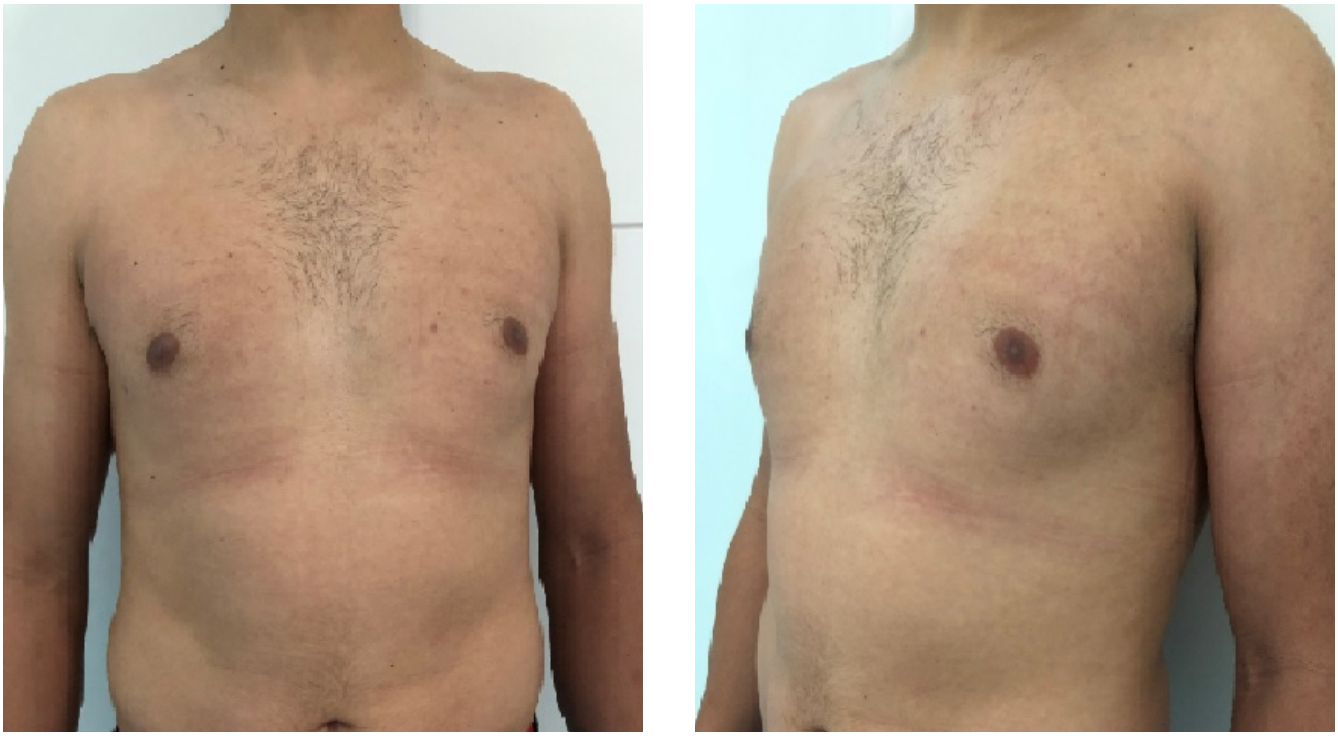

Figure 4. 34-year-old man with Simon grade 2 gynecomastia.

for VAE have expanded to more severe Simon grades of GM, with the procedure performed in the operating room under general anesthesia[10].

A recent prospective series compared VAE of GM with open traditional surgery. The VAE group had significantly smaller scar sizes (0.40 ± 0.08 cm vs. 5.34 ± 0.38 cm, p < 0.01), shorter healing time (3.67 ± 0.71 days vs. 7.90 ± 0.92 days, p < 0.01) and hospitalization (2.60 ± 0.62 vs. 7.17 ± 0.83 days, p < 0.01), as well as higher postoperative satisfaction (4.70 ± 0.60 scores vs. 3.20 ± 0.55 scores, p < 0.01). The incidence rate of bruises was significantly higher in the VAE group compared to the open surgical group (47% vs. 17%, p = 0.013 and 54% vs. 20%, p = 0.007), respectively[11].

The benefits of VAE are similar to those of minimally invasive procedures in general — reduced morbidity, better esthetic results, fewer recovery days, and no hospitalization time or cost[8]. The results from this series corroborate the findings of other series and studies. Depending on the GM grade, the VAE can be performed with local anesthesia, with or without sedation. With the evolution of vacuum-assisted devices, better vacuum aspiration, and multiple fragments collected in an automated circular approach with one-step needle insertion, it is possible to remove a considerable amount of breast tissue in a few minutes, reducing the odds of infection or complication. A study reported a median time of 50

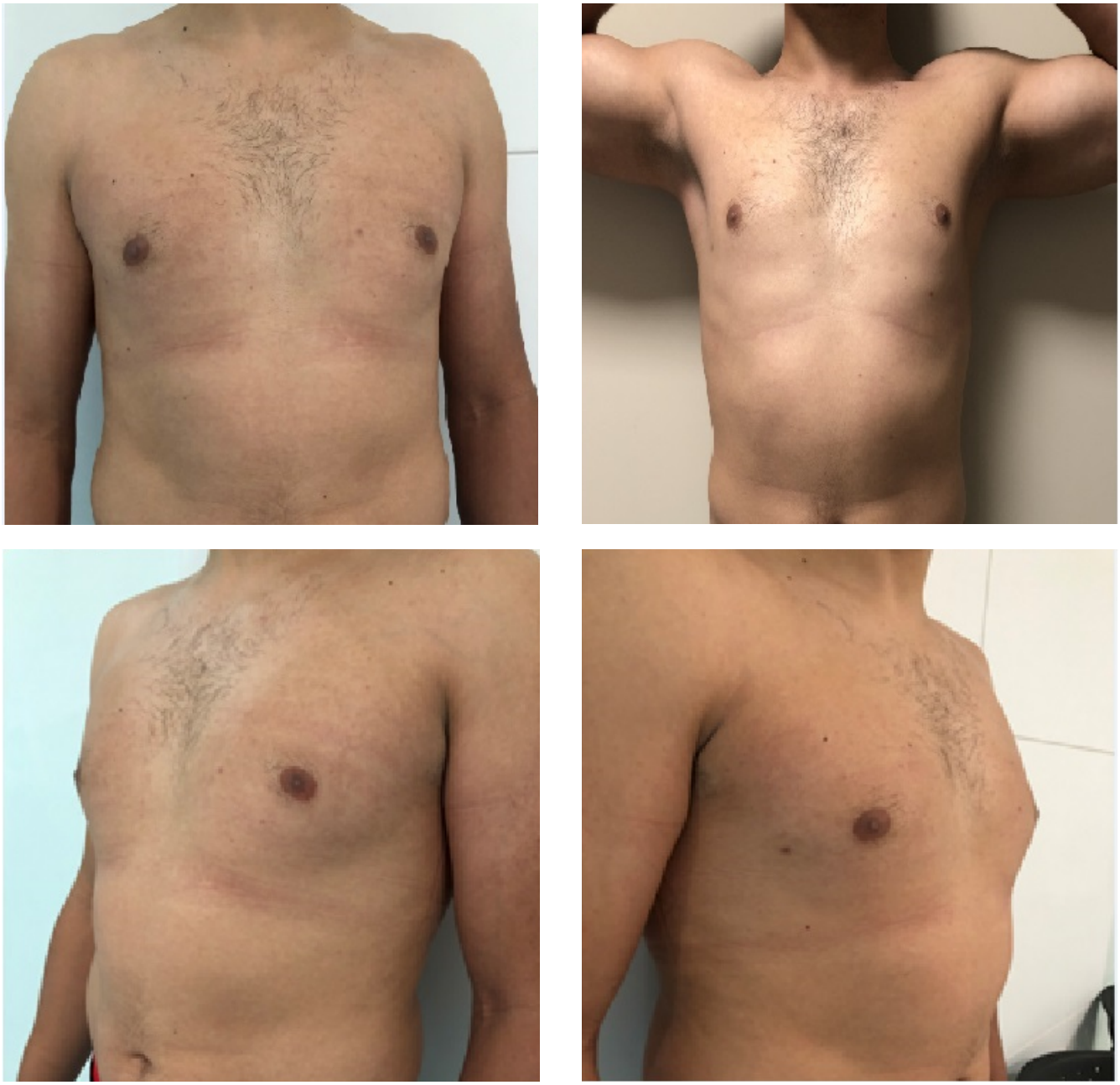

Figure 5. Same patient six months after ultrasound-guided vacuum-assisted excision of gynecomastia.

Table 2. Satisfaction evaluation: adaptation of the consultation satisfaction questionnaire.

n = 7	Esthetic discomfort	Physical deformity	Medical indication	
Patient complaint	5	2	0	
n = 7	Excellent	Good	Regular	Bad
Final esthetic result (6 months) – patient	5	2	0	0
Final esthetic result (6 months) – surgeon	4	3	0	0
n = 7	yes	no		
Would the patient repeat or recommend the procedure for someone?	7	0		
Was the procedure well tolerated?	7	0		
Complications n = 7				
Seroma	0			
Bruises	7			
Anesthesia scar	0			
Bleeding	0			
Areola fissure	1			
Displacement, necrosis, or retraction of the nipple-areola complex.	0			
Decrease or change in nipple sensation or erection	0			

Source: Mazzarone[13].

minutes using an 8G needle with a semi-automated device[8], while in this series, the median time was 25 minutes using a 10G needle with a whole circumference automated device. The patients' procedure tolerance was high, even with just local anesthesia. Automated devices allow faster, safe, and outpatient procedures that preclude hospitalization and have the potential of saving costs.

Doubts related to long-time recurrence remain and require more studies for clarification. Longer follow-up will be necessary to evaluate this issue better. Nevertheless, the amount of breast tissue excised described by the literature and this series is not different from the traditional open surgical specimen. Mammographic images gradually change over time. After six months, it is possible to estimate the amount of tissue resected, but, like in benign surgeries, the degree of architectural distortion is high, especially due to large hematomas and bruises, which fade with time. This finding indicates that the best moment for a mammographic evaluation of the amount of breast resected should probably be after one year of the procedure.

CONCLUSION

Minimally invasive ultrasound-guided VAE is an excellent alternative for the treatment of GM. It is better indicated for Simon grade 1 and 2 GM, with good and excellent esthetic results and low rates of nipple and areolar complications. It allows an outpatient procedure with low morbidity (local anesthesia) and fast recovery. Hematomas and bruises are always present due to the nature of the approach. Breast surgeons can obtain satisfactory cosmetic results with little morbidity and postoperative complications, such as nipple retraction or necrosis. Ultrasound-guided VAE has become a valuable approach for the surgical management of Simon grade 1 and 2 GM, with or without liposuction according to necessity. Trials comparing VAE of GM with open surgery should also evaluate clinically relevant recurrence throughout the years to establish the safety of these surgical approaches over time.

AUTHORS' CONTRIBUTION

C.V.: Investigation, Methodology, Project Administration, Writing — Review and Editing.
H.L.: Investigation, Methodology, Project Administration, Supervision, Validation, Writing — Review and Editing.
T.O.: Writing — Review and Editing, Formal Analysis.
P.B.: Methodology, Writing — Review and Editing.
S.F.: Data Curation, Validation, Writing — Review and Editing.
O.J.: Investigation, Visualization, Writing — Original Draft, Validation.

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SHORT COMMUNICATION
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Breast cancer staging in population-based registries: an alert to the quality of information

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ABSTRACT

Objective: To discuss the practical difficulties associated with breast cancer staging, especially in the context of population-based cancer registries (PBCR). **Methods:** This is a short communication that discusses the importance and temporal evolution of breast cancer staging, as well as the limitations and new challenges associated with this process. **Results:** This study discusses the importance and temporal evolution of breast cancer staging, as well as the limitations and new challenges associated with this process. Minimal divergences in physical examination and disagreements in imaging tests can classify the patient in a higher or lower stage of the disease. In some population-based registries, up to 20% of the information regarding the clinical stage of breast cancer may be mistaken. **Conclusion:** We highlight the necessity for continuing education and constant training for all professionals involved in the breast cancer epidemiological context. The utilization of new technologies can help standardize the information and reduce the divergences related to cancer staging registry.

KEYWORDS: breast neoplasms; neoplasm staging; registries; evidence-based practice.

INTRODUCTION

Clinical staging plays an important role in the therapeutic planning and prognostic evaluation of patients with breast cancer[1]. This staging usually follows the TNM (primary tumor [T], regional lymph nodes [N], distant metastases [M]) system of the American Joint Committee on Cancer (AJCC), whose classification criteria are periodically updated based on scientific evidence[2,3]. However, only 23% of population-based cancer registries (PBCR) that participate in the Cancer Incidence in Five Continents, Volume IX (CI5-IX) have declared to collect TNM staging for all tumor sites[4-7].

The staging process is especially important in the critical assessment of survival curves and other epidemiological variables obtained from PBCR[2,7]. Lack of standardization hinders the epidemiological analysis of different populations and can interfere in the interpretation and development of public policies related to malignant neoplasms[6,8]. As an example, we can underline a recent divergence observed in breast cancer survival rates in the city of Goiânia, Brazil. In the CONCORD-2 study, the net survival rate for patients diagnosed with breast cancer was 79.4% between 1995 and 1999, 63.9% between 2000 and 2004, and 59.2% between 2005 and 2009[9]. However, using data from the local cancer registry, the time trends in 5-year overall survival rates were very different: 57.0% survival rate between 1988 and 1990[10], 65.4% between 1990 and 1994[11], and 72.1% between 1995 and 2003[12]. According to the authors of the CONCORD-2 study, the estimates for breast cancer survival in Goiânia were less reliable than would be preferred[13]. This divergence should not be a true epidemiological event but a methodological limitation[14].

In this context, PBCR must follow international good practice recommendations to ensure satisfactory performance quality, operationalization, and data quality[8,15,16]. These parameters range from the percentage of cases collected through histopathological tests[16] to the organization of flow diagrams for each neoplasm[17,18].

Each registry is responsible for the criteria employed to verify the quality of the clinical data collected, which are usually not reported adequately. In most registries, the person responsible for gathering information is a non-medical professional, advised by a multidisciplinary team of specialists. Despite the constant personnel training, some mistakes still occur due to the increasing

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complexity of the tumor staging process. Medical staff can also make mistakes in the staging, particularly when they gather and enter the data. This scenario may justify the high rates of "incomplete data" regarding tumor staging in different international series, usually ranging from 5% to 20%[19-21].

PRACTICAL DIFFICULTIES IN BREAST CANCER STAGING

Cancer staging estimates the extension of the neoplasm within the person's body. Despite the particularities of each tumor site, a report is usually issued after a physical examination. This report could include specific complementary tests, such as biochemical tests, computed tomography, among others[22]. However, in a real-world scenario, several factors can limit or hinder this staging process[6,8].

Concerning breast cancer staging, inter-observer variation must be highlighted in tumor measurement and clinical assessment of patients. In this context, if tumor palpation changes from 5.0 cm to 5.1 cm, cancer staging also changes, along with the prognostic classification. The assessment of lymph node status often shows divergences regarding small palpable axillary lymph nodes, which could represent a reactional inflammatory state (cN0) or one isolated axillary lymph node affected (cN1). Table 1 describes some situations that result from divergences in the staging process, with some considerations and good practice recommendations.

In most developing countries, the population can experience difficulties in accessing health services, which could extend the waiting time for complementary tests[23]. In these situations, the clinical staging of the patient is only concluded after two or three medical consultations and, occasionally, after cancer treatment begins. This fact hinders the staging process, as the patient can present significant variations in physical examinations during the investigation period, generally related to the progression of the disease. Effectively, choosing the best moment to register a variable can become a subjective decision: date of the first consultation? After the completion of complementary tests? Before starting treatment? Or should we always consider the most advanced staging?

Finally, another common situation in regions with hierarchical health systems is referring patients who received treatment from other services to reference centers after a breast cancer diagnosis. In this context, the dialog between the respective assistant professionals regarding the initial physical examination of the patient can prevent the use of the terms cTx and cNx, which would render the patient's initial staging as "unknown".

TEMPORAL VARIATIONS IN BREAST CANCER STAGING

The conceptual changes in breast cancer staging implemented over time have accompanied the evolution of scientific knowledge of the disease. The introduction of new

Table 1. Examples of divergences in the process of breast cancer clinical staging, with the respective recommendations.

TNM	Diagnostic question	Specifications	Recommendations
Evaluation of the "T" status	Tumor measurement	cT1 (≤ 2.0 cm) or cT2 (> 2.0 cm) cT2 (≤ 5.0 cm) or cT3 (> 5.0 cm)	Measurement with a caliper Two or more measurements, taken by the same observer Correlation with breast imaging tests
	Presence and extension of tissue involvement (cT4)	Localized (< 1/3 of breast tissue involvement, cT4b) or diffuse (inflammatory carcinoma, cT4d)	Ambient lighting and adequate breast exposure Percentage estimation of tissue involvement Correlation with tissue evaluation in imaging tests Tissue biopsy (punch), in case of doubt
	Chest wall and pectoral muscle involvement	Chest wall involvement (cT4a or cT4c)	Correlation with chest imaging tests (computed tomography and/or magnetic resonance)
Evaluation of the "N" status	Presence and extension of axillary involvement	cN0 (reactive lymph node, free axillary lines) or cN1	Correlation with imaging tests (ultrasound) Ultrasound-guided biopsy of atypical lymph node (fine-needle or core biopsy)
	Affected lymph nodes in the internal mammary, supraclavicular, or infraclavicular chain	cN2 or cN3, depending on the grade	Correlation with imaging tests (ultrasound, magnetic resonance, positron emission tomography-computed tomography – PET-CT) Ultrasound-guided biopsy of atypical lymph node (fine-needle or core biopsy)
Evaluation of the "M" status	Distant metastasis	cM0 or cM1	Correlation with laboratory and/or imaging tests (computed tomography, magnetic resonance, PET-CT) Cytological or histological evaluation (collection of material guided by imaging methods or surgically)

perspectives related to pathologic diagnoses, such as the identification of micrometastasis and isolated tumor cells in axillary lymph nodes, has also forced new concepts to be considered throughout time[24].

In January 2003, with the publication of the 6th edition of the cancer staging manual elaborated by AJCC, patients with affected lymph nodes in the supraclavicular chain were classified as cN3c staging and removed from the cM1 group[3]. Thus, statistics related to metastatic disease collected during this transition phase must be analyzed with caution due to the possibility of selection bias[25].

More recently, in 2018, the 8th edition of the manual removed lobular carcinoma *in situ* from the T*is* staging[26,27], which should affect the incidence curves of the disease in the next years. Reducing the number of T*is* patients might increase the proportion of diagnosed cases in stages II, III, and IV; however, this scenario could reflect an untrue epidemiological event.

Lastly, the situation of patients who achieved complete pathological response (pCR; ypT0ypN0cM0) after neoadjuvant therapies and of those with tumor cells circulating in peripheral blood [cM0(i+)] must be considered. According to the 8th edition of the cancer staging manual, the identification of circulating tumor cells does not classify the patient as cM1 in the absence of other signs of metastatic disease. Similarly, patients with pCR do not constitute a new specific group and remain in the group assigned at the moment of diagnosis. Nevertheless, with advances in the understanding of tumor biology and prognostic stratification of these patients[27,28], new concepts involving pCR and molecular techniques for cancer research might be incorporated into the next editions of breast cancer staging.

BREAST CANCER STAGING: 8TH EDITION

Traditionally, breast cancer staging was based on the anatomical extension of the disease and did not consider tumor biology. After 2018, the new staging (8th edition) elaborated by AJCC included biomarkers for the disease to improve the prognostic stratification of patients[26,27].

This inclusion was based on the retrospective evaluation of patients treated at the MD Anderson Cancer Center, in the USA, and posteriorly validated by the California Cancer Registry[7] and the National Cancer Database[29]. In this context, the inclusion of biomarkers resulted in better accuracy in the patient's prognostic evaluation regarding isolated anatomical staging[7,29].

Anatomical staging (AS) has also changed in relation to the 7th edition but maintains its practical value and remains an adequate instrument for the prognostic evaluation of patients. However, the main change was the creation of the clinical prognostic staging (CPS) and pathological prognostic staging (PPS), with the inclusion of tumor grade, HER2, and estrogen and progesterone receptors.

Genomic signatures can also be used in PPS as a potential modifier of staging, when available and indicated. In these situations, a low-risk genomic result indicates a similar prognosis to stage IA, which can affect the decision-making related to the adjuvant treatment of these women[30,31].

The greatest limitation of this new staging is the wide range of categories according to the combination of different criteria, with more than 1,400 possibilities of clinical staging and prognosis. In some circumstances, the combination of clinical and pathological variables can generate up to four staging classifications for the same patient, from the moment of diagnosis to the postoperative evaluation. These categories can be consulted in several specific tables available at the AJCC website (cancerstaging.org) or other platforms.

In the context of PBCR, the new version of the AJCC makes it even more difficult to collect information regarding breast cancer staging. Therefore, new studies involving this variable should state which type of staging was employed, how and when this assessment was carried out, and lastly, which instrument was used to interpret the obtained TNM. Nevertheless, we recommend caution when comparing studies conducted in different periods and geographic regions, with different or insufficiently described methodologies.

FUTURE PERSPECTIVES

An application developed by a Brazilian mastologist (TNM8 BREAST CANCER CALCULATOR®) was approved and licensed by AJCC for global use and is available at the Apple Store and Google Play at a reasonable price. This application allows the individualized inclusion of variables and automatically provides the corresponding staging[32]. In times of globalization and wide access to information, electronic instruments can help with the data collection process for population-based registries and improve the quality of information on breast cancer staging.

Finally, we emphasize the need for continuing education, along with constant training for all professionals involved in the breast cancer epidemiological context, from assistant medical doctors to the professionals responsible for gathering and registering this information. The utilization of new technologies can help standardize the information and reduce the divergences related to cancer staging registry.

AUTHORS' CONTRIBUTIONS

L.R.S.: Conceptualization, data curation, formal analysis, writing — original draft; M.P.C.: Formal analysis, writing — original draft; R.F.-J.: Formal analysis, writing — original draft.

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LETTER TO THE EDITOR
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Nipple-sparing mastectomy in normal breast: consequence of simulation and disease anxiety

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ABSTRACT

Diagnosis in psychiatry is a thorough and potentially artificial process. In this letter, we discuss this diagnostic process in the context of a young patient who underwent nipple-sparing mastectomy after falsifying a breast biopsy report revealing invasive ductal carcinoma. The secondary pathology revision was also forged by the patient and confirmed the diagnosis. The patient was summoned by the Service's board and admitted the falsification of breast cancer reports. After evaluation at the Psychiatric Service, changes in vital mood, psychosis, delusional activity and obsessive-compulsive symptoms were ruled out. In view of the growing demand for prophylactic mastectomy observed worldwide, similar cases may become more frequent.

KEYWORDS: breast neoplasms; patient simulation; factitious disorders.

Dear editor,

We would like to report a case received for evaluation in our Service, relevant for its severity, rarity and for having drawn multidisciplinary attention. In addition, the present case exposes the detailed and artificial diagnostic process in psychiatry. In this case, identifying the real motivation for fraud determines the final diagnosis.

A 24-year-old woman was sent to the Mastology Service after falsifying a breast biopsy report, revealing an invasive ductal carcinoma. The patient also forged the secondary pathology revision and confirmed the diagnosis. She underwent nipple-sparing mastectomy associated with sentinel lymph node biopsy and immediate right breast reconstruction with expansive prosthesis. After extensive evaluation of the material, fibrocystic alterations and fibroadenosis areas were observed, with no evidence of neoplasm. The patient was summoned by the Service board and admitted the forgery of the reports regarding the breast cancer.

After evaluation in the Psychiatry Service, vital mood alterations, psychosis, delusional activity and obsessive-compulsive symptoms were ruled out. The patient pointed out as motivation for her actions the fact that she had lost her grandfather to prostate cancer a year before, having then acquired an excessive fear of developing neoplasms in the future. Upon discovering the nodules, the patient aimed for the removal of the breast. For that matter, the patient admitted feeling regretful for breaking the law, but not for the surgical removal of her breast.

In the case described above, the diagnosis established was disease anxiety, by DSM-5. Nonetheless, the simulation attestation is also adequate, once there is conscious and deliberate production of the symptoms, and equally conscious motivation by the examinee[1]. However, while interviewing the patient's mother, it was ascertained that the patient was recently divorced and that, at the time of the surgery, the marriage was about to end. It was observed from these factors the presence of a distinct unconscious motivation: through the production of a mammary disease, she would be able to draw more attention from her ex-husband, and even a possible way of keeping the marriage. The patient denies this hypothesis and the analysis of this possible unconscious factor would demand extensive anamnestic and therapeutic processes. Nevertheless, in case this version is true, the most adequate diagnosis by the DSM-5 would be Factitious Disorder, once there is conscious production of the act and unconscious motivation[1].

To our knowledge, this is the second case of effectively performed mastectomy after the adulterated production of reports[2].

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Notwithstanding, other cases of simulation have been described involving mammary pathologies and fictitious breast cancer family history[3,4]. Therefore, because of the increasing demand for prophylactic mastectomy observed all over the world, similar cases might become more frequent.

AUTHORS' CONTRIBUTIONS

L.R.S.: Conceptualization, Data curations, Formal analysis, Writing — original draft, Writing — review & editing.

S.A.T.S.: Conceptualization, Data curations, Formal analysis, Writing — original draft, Writing — review & editing.

M.F.C.: Conceptualization, Data curations, Formal analysis, Writing — original draft, Writing — review & editing.

G.A.M.: Data curations, Writing — original draft, Writing — review & editing.

M.A.R.M.: Data curations, Formal analysis, Writing — original draft, Writing — review & editing.

R.F.J.: Conceptualization, Data curations, Formal analysis, Writing — original draft, Writing — review & editing.

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ERRATUM
https://doi.org/10.29289/25945394202020200063ERRATUM

In the manuscript "The first mastectomy: truth or legend?", DOI: 10.29289/25945394202020200063, published in the Mastology 2020;30:e20200063, on page 1:

Where it reads:

In 1984, Halsted published the 50 cases that he operated with a recurrence rate of 6%, while in Europe the recurrence rate were from 51% to 82%, because they did not use the surgical technique described by Halsted.

It should read:

In 1894, Halsted published the 50 cases that he operated with a recurrence rate of 6%, while in Europe the recurrence rate were from 51% to 82%, because they did not use the surgical technique described by Halsted.