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Aleksandra Szczęsna[1], Joanna Kacperczyk-Bartnik[2], Paweł Bartnik[2], Agnieszka Dobrowolska-Redo[2], Ewa Romejko-Wolniewicz[2]

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A patient with breast implants – possible complications and oncological vigilance

Pacjentka z implantami piersi – możliwe komplikacje i czujność onkologiczna

[1] Students' Scientific Group Affiliated to the 2nd Department of Obstetrics and Gynecology, Medical University of Warsaw, Warsaw, Poland
[2] 2nd Department of Obstetrics and Gynecology, Medical University of Warsaw, Warsaw, Poland
Correspondence: Joanna Kacperczyk-Bartnik, Karowa 2, 00-315 Warsaw, Poland, tel.: +48 22 59 66 421, e-mail: asiakacperczyk@gmail.com

Abstract

Background: In the light of a growing interest in breast augmentation with implant devices, physicians should be aware of medium and long-term complications after such procedures. Moreover, an increased risk of breast cancer with higher mortality in the group of implant recipients is observed, which requires an implementation of accurate screening. **Summary:** A special approach must be considered when managing a patient with breast implants due to the possibility to encounter unexpected difficulties during the diagnostic process. Certain complications of breast augmentation require urgent diagnosis followed by adequate treatment, often including surgical management. On the other hand, a patient may report worrying symptoms which mimic those related to breast implants. Plastic surgery patients should be counseled on multiple health aspects prior to the surgery, with emphasis on the oncological risk. Regular breast check-ups are necessary among women with breast implants since proper exposition of breast tissue may be problematic. **Key messages:** Proper oncological vigilance is needed as adequate imaging of augmented breasts might be compromised. A decreased survival of breast cancer patients with breast implants compared with non-augmented women is observed. A holistic approach towards the patient with breast implants helps to mitigate the risk of overlooking important symptoms.

Keywords: breast implants, breast neoplasms, mammaplasty, postoperative complications

Streszczenie

Wstęp: W związku z coraz większym zainteresowaniem zabiegami powiększania piersi personel medyczny powinien posiadać wiedzę na temat możliwości wystąpienia komplikacji po tego typu operacjach. Ze względu na obserwowaną większą śmiertelność związaną z rakiem piersi wśród pacjentek z implantami piersi jest to grupa wymagająca szczególnej uwagi podczas badań przesiewowych. **Rozwinięcie:** Badania przesiewowe w kierunku raka piersi powinny być odpowiednio dostosowane do pacjentek z implantami z uwagi na możliwe trudności w wyborze metody obrazowania piersi. Dodatkowe utrudnienia w procesie diagnostycznym mogą wynikać z niektórych komplikacji zabiegu powiększania piersi. Kluczową rolę odgrywają edukacja pacjentek na temat konieczności wykonywania regularnych badań obrazowych oraz samobadania piersi, jak również informowanie przed samą operacją o możliwych odległych skutkach zabiegu, z ryzykiem onkologicznym włącznie. **Podsumowanie:** Odpowiednia czujność onkologiczna u pacjentek z implantami piersi jest konieczna ze względu na możliwe utrudnienia w obrazowaniu i konieczność dostosowania postępowania diagnostycznego.

Słowa kluczowe: implanty piersi, mammoplastyka, nowotwory piersi, powikłania pooperacyjne

INTRODUCTION

Breast cancer (BC) is the most prevalent female cancer worldwide[1]. A 41% increase in breast implants augmentation was observed during the period of 2000–2017, as reported by the American Society of Plastic Surgeons and the Plastic Surgery Foundation[2]. Surgical outcomes contribute to women's increase in self-esteem and confidence as the majority of women are satisfied with the effects[3]. However, cosmetic aspects are not the only reason for implantation. Breast augmentation is commonly indicated in reconstruction after mastectomy and correction of congenital breast malformations. During the postoperative follow-up period, patients should be given precise information about the prophylaxis of BC, including both diagnostic imaging and breast self-examination[4]. These women should be aware of the possible neoplastic transformation and get acquainted with the methods of early detection of BC.

POSTOPERATIVE COMPLICATIONS

According to reports, complications of breast augmentation with devices are diagnosed in 1–4.6% of patients after the surgery, and those accumulate with time after the procedure[5,6]. The most serious complications include local sequelae. The severity of some of these complications may require surgical treatment or other medical procedures. Complications of breast implant augmentation are as follows (according to frequency of occurrence): implant rupture, capsular contracture, reoperation, implant removal, pain, changes in nipple and breast sensation, infection, scarring, asymmetry, wrinkling, implant displacement/migration, implant palpability/visibility, breastfeeding complications, hematoma/seroma, implant extrusion, necrosis, delayed wound healing, breast tissue atrophy/chest wall deformity, calcium deposits, and lymphadenopathy[7]. Implant rupture may arise in a silent or prominent manner at physical examination. It may lead to pouring out of the device, which may afterwards remain in the scar tissue capsule or relocate outside of the capsule. To exclude an asymptomatic implant rupture, it is recommended to follow-up the patients with magnetic resonance imaging (MRI) 3 years after the implantation, and then every 2 years, but the procedure is not mandatory or customary[8,9]. Unintended intraoperative damage by a sharp surgical instrument is a common cause of implant shell rupture. Moreover, it may be associated with a history of experiencing blunt force trauma or mammography[8]. Explantation with capsule removal followed by a reimplantation is required if silicone leakage, implant rupture or capsular contraction are at least suspected.

BREAST IMPLANT-ASSOCIATED ANAPLASTIC LARGE CELL LYMPHOMA

The texturization of an implant is meant to diminish the risk of its displacement due to a more pronounced inflammatory reaction and following the development of scar tissue adjacent to the device. This was introduced to reduce the incidence of capsule contractures and additionally to protect the anatomically shaped implant from displacement by developing a scar tissue. Unfortunately, it has been noticed that breast augmentation with the use of implants may promote the development of local anaplastic large cell lymphoma (ALCL). In 2008, a possible association between breast implants and ALCL development within the scar tissue was reported[10]. The incidence of this rare peripheral T-cell lymphoma among breast implant owners varies depending on a study from 1 case per 30,000 women with implants to 1 case per 4,000 women per year[11]. Nevertheless, breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) has a more promising curative prognosis compared to systemic ALCL due to its indolent course of the disease. According to data from November 2018, 17 cases of death were reported among 656 patients diagnosed with BIA-ALCL[12]. The cases of BIA-ALCL were diagnosed from 3.5 to 11.6 years after the implantation of anatomical, textured devices[13]. A 47% increase in the disease diagnosis was observed since the beginning of 2017, which suggests a higher awareness among professionals dealing with patients with breast implants[12]. The precise cause of BIA-ALCL development is unknown, although a few hypotheses have been presented, including texturization of implant surface, genetic factors, immune response, and microbiome biofilm[11].

BREAST CANCER

In a meta-analysis comparing the outcome of women with a history of augmentation mammoplasty with implants for cosmetic purposes and a control group of women who were diagnosed with BC, an association between antecedent breast augmentation and higher risk of BC specific mortality with overall hazard ratio of 1.38 (95% confidence interval, CI; 1.08–1.75) was noticed[14]. Similar hazard ratio was not observed in further studies, according to the literature. Contrary to these findings, the BC specific mortality ratio based on a large population of 40,451 women with or without breast implants showed no significant difference between these groups, with hazard ratio of 1.06 (95% CI; 0.65–1.76)[15]. The adverse effect on the survival is assumed to be a result of an inadequate imaging by mammography due to either radio-opacity or the development of capsular contracture that can overshadow the neoplasm[14]. The compression of the breast parenchyma may facilitate physical examination in search of any tumor mass and is suggested to be advantageous in the case of subglandular implants. It is widely believed that an implant might act as background for a thorough palpation of any tumor mass. A study by Cho et al. suggested no link between more advanced BC stage in women who had undergone breast augmentation; however, subglandular placement of implants was correlated with diagnosis at a more advanced stage of disease than with subpectoral ones[16]. Implant location has

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no actual impact on BC stage or lymphovascular invasion, but the only difference observed was tumor size. Subglandular breast implant was associated with a higher incidence of tumor size between 2 and 5 cm in diameter[17].

DIAGNOSTIC DILEMMAS

Oncological vigilance should be increased when taking care of patients with breast implants as a higher rate of malignancy detection error during screening examinations is observed among these women[18]. Silicone and other augmentation materials can attenuate the intensity of X-ray beam or produce an opaque appearance in mammography, which may lead to a malignant mass being overlooked[18]. Moreover, complications, such as capsular contracture, bear a risk of mimicking a BC, resulting in a high number of false positive results. Standard mammographic view seems to be inadequate to evaluate malignant lesions; however, as suggested by Eklund et al., the method of displacing the implant back may allow for an assessment of more of the breast tissue[19,20]. Still, there is a risk of obscuring the posterior part of glandular tissue. A study in a small group of patients with augmented breasts underlined the decreased sensitivity of both standard screening examination, as well as modified one with implant displacement[20]. Additionally, parenchymal perturbations caused by surgical procedures might create scars in the breast tissue and alter the architecture of parenchyma. This can lead to an increased number of false positive results and reduced visualization sensitivity by up to 10%[21].

An extrinsic compression of breast tissue by a subglandular implant may contribute to atrophy of the breast parenchyma, impaired lactation, sensory and vascular impairment, chest wall deformities, and aesthetic changes, including implant rippling, bottoming-out deformity, and loss of upper pole projection[22].

MRI plays a vital role both in the screening and diagnosis of implant complications due to a distinguishable resonance frequency of silicone. This feature allows an assessment of a silent implant rupture, either intra- or extracapsular one. MRI stands out from other imaging methods due to its accuracy corresponding with a higher sensitivity in BC confirmation[23]. Even though MRI seems to be the most promising BC screening method, sufficient evidence is still missing. The process of lesion diagnosis should include a comparison with a previous imaging examination prior to breast surgery[24]. Women at a high risk of developing BC may benefit from adding MRI to mammographic screening[25]. A follow-up screening among asymptomatic women after breast augmentation should involve an annual ultrasound (US) of the breast and axillary lymph nodes, and MRI every five years[26].

Any palpable mass accessible in physical examination in women with breast implant should be assessed using both US and MRI, followed by a biopsy of the palpable mass to obtain a precise diagnosis[24]. Higher sensitivity of MRI is an undeniable advantage in doubtful lesions; however, it implies the need for further lesion evaluation and increased rates of false positive findings[27]. US may detect masses which are occult in mammography and palpation. According to Kolb et al., who studied a group of women with dense breasts only, the sensitivity for BC screening with mammography alone was lower compared to mammography with ultrasound[28]. Sonography is recommended for women aged 40–75 years with dense breasts with average risk of BC[29]. In the case of high breast density, US should be considered as a supplementary examination to screening mammography[30].

CONCLUSION

An adequate approach towards patient counseling prior to cosmetic breast augmentation with implants should be introduced to thoroughly inform the recipient about possible short- and long-term complications. Proper evaluation of symptoms reported by the recipient should involve diagnostic exclusion of BC and BIA-ALCL. Although oncological screening of augmented breasts might be problematic, appropriate imaging modalities should help establish the most reliable differential diagnosis.

Conflict of interest

The authors do not report any financial or personal connections with other persons or organizations, which might negatively affect the contents of this publication and/or claim authorship rights to this publication.

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