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Breast Reconstruction: Focus on Implant-Based Reconstruction

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ABSTRACT

Autologous tissue-based reconstruction and prosthetic implant-based reconstruction are the two main categories of breast reconstruction. The natural feel, size, and form of the breast can be restored by breast reconstruction with breast implants. Following a nipple- and skin-sparing mastectomy and a modified radical mastectomy, implant-based breast reconstruction is most readily executed. The most popular technique for immediate and delayed postmastectomy breast reconstruction is implant breast reconstruction, which makes use of silicone tissue expanders, which were initially utilized for breast reconstruction by Radovan in 1978 and Austad in 1979. As a sign of femininity, breasts might be lost, which can cause a woman great psychological discomfort and negatively impact her sexual life and self-image. Women are given the choice of breast reconstruction following a breast cancer removal treatment, which can enhance their quality of life. However, implant-based reconstruction ought not to be seen as an adjuvant treatment. Procedures like skin-sparing mastectomy and nipple-areola-sparing mastectomy, which enable conservative surgery with an instant implant breast reconstruction, can only be carried out with an early diagnosis.

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INTRODUCTION

The majority of women who die from cancer do so from breast cancer, which is the most frequent noncutaneous malignancy in the world. Currently, 30% of women over 70 are affected by breast cancer. The emergence of novel and effective treatment regimens that lengthen survival and enhance quality of life has led to a decrease in the mortality rate from breast cancer, despite the disease's prevalence progressively rising globally at a pace of around 1% year. For American women, the lifetime risk of breast cancer is about one in eight. Women 40 years of age and older have the greatest incidence rates of breast cancer; however, African-American women had a greater incidence from 50 to 59 years of age. There are distinct surgical techniques needed for the treatment of breast cancer. Autologous tissue-based reconstruction and prosthetic implant-based reconstruction are the two main categories of breast reconstruction. The natural feel, size, and form of the breast can be restored by breast reconstruction with breast implants. Following a nipple- and skin-sparing mastectomy and a modified radical mastectomy, implant-based breast reconstruction is most readily executed. The most popular technique for immediate and delayed postmastectomy breast reconstruction is implant breast reconstruction, which makes use of silicone tissue expanders, which were initially utilized for breast reconstruction by Radovan in 1978 and Austad in 1979 [1-8].

Types of breast reconstruction

After glandular tissue has been removed, breast reconstruction can be done at any time. Whereas delayed breast reconstruction takes place after adjuvant treatment (chemotherapy or radiation) is finished, instant breast reconstruction combines the reconstructive surgery with the oncological operation. Breast reconstruction can be done in two stages: first with expander implants placed initially and then, a few months later, with permanent implants placed. Alternatively, breast reconstruction can be done in one step with the installation of permanent implants. It is also possible to do a combination reconstruction using both autologous

tissue and implants. Patients having breast reconstruction, especially a unilateral treatment, must be ready to accept that contralateral breast augmentation or reduction, or a mastopexy, may be essential in any breast reconstructive surgery [9-11].

Partial or full muscle covering is typically required to reduce implant visibility or exposure because of the mastectomy's absence of soft tissue coverage [12].

Selection of patients

Patients with non-redundant soft tissue covering, a desire for a moderately sized non-ptotic breast, and no history of radiation therapy are the best candidates for implant-based reconstruction. For patients who have undergone skin-sparing or nipple-sparing mastectomy and still have a sufficient quantity of skin remaining following the procedure, a one-step immediate reconstruction with a conventional implant is recommended [13].

When substantial skin excision or implant insertion leave a woman with insufficient skin for an instant closure, a two-step reconstruction employing expanders and implants is advised. Six months following the completion of the tissue expansion treatment is when the second step of breast reconstruction is often carried out. In order to ensure that the permanent prosthesis is precisely fitted in the pouch and cannot rotate or shift, a partial or complete capsulectomy is also carried out during this procedure in place of the expander. The inframammary crease is typically where the entrance to the implant pocket is found, hence the surgeon can rebuild the crease using this approach [14].

A postponed breast reconstruction might be required for various reasons. For instance, the patient's preference (be it psychological or otherwise), the fact that the mastectomy was performed by surgeons untrained in breast reconstruction, or any number of other factors could necessitate the delay [15].

Oncoplastic surgery

Nowadays, over 80% of women are identified with tiny tumors that may be treated with breast conserving surgery thanks to enhanced screening and early diagnosis [16].

Achieving volumetric symmetry

The restoration of volumetric symmetry is the primary cosmetic goal in breast reconstruction. There are a number of breast volume assessment techniques that have been reported to aid in achieving symmetry after breast reconstruction. These encompass nonradiological techniques (anthropometric measures, liquid volume displacement, thermoplastic procedures, and variations in light-based 3D scanners) in addition to radiological techniques (ultrasonography, mammography, CT, and MRI). It appears that maintaining or reestablishing the inframammary fold is essential for implant placement that yields the desirable cosmetic outcomes [17, 18].

Figure 1. Expander implant

Figure 2. In vivo expander implant

Autologous fat grafting

Another technique for breast restoration that is becoming more and more common is autologous fat grafting. Every year, thousands of patients worldwide have breast lipofilling, either as a substitute for breast augmentation with implants or to restore the natural shape in a deformed area following breast reconstruction [19].

Complications following breast reconstruction

Following implant-breast reconstruction, there may be local issues such as rupture, capsular contracture, deformity, seroma, and infection. These may require further operations and medical treatments. With a 0.6%–30% prevalence, capsular contracture is the most frequent side effect after reconstructive breast surgery. Patients are currently informed that a reoperation for contracture is likely to be necessary at the age of 15, with an annual incidence of 1% per breast [20].

Numerous research have looked at the connection between implant surface texture, bacterial colonization, implant placement site, and implant filler material type and contracture. Evidence suggests that silicone implants with textured surfaces—as opposed to those with flat surfaces—are substantially less likely to develop capsular contracture. Moreover, anatomic implants have been associated with less favorable results compared to circular implants [20].

Psychosocial benefits of breast reconstruction

It has been demonstrated that breast reconstruction improves the psychological health of breast cancer patients [21].

CONCLUSION

As a sign of femininity, breasts might be lost, which can cause a woman great psychological discomfort and negatively impact her sexual life and self-image. Women are given the choice of breast reconstruction following a breast cancer removal treatment, which can enhance their quality of life. However, implant-based reconstruction ought not to be seen as an adjuvant treatment. Procedures like skin-sparing mastectomy and nipple-areola-sparing mastectomy, which enable conservative surgery with an instant implant breast reconstruction, can only be carried out with an early diagnosis.

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