

E11. Breast remodelling, breast reconstruction

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Introduction

For most women affected, mastectomy is a mutilating and deforming procedure that can severely damage a woman's quality of life and self-esteem. In recent years, considerable progress has been made in the surgical treatment of breast cancer. Both breast remodelling and reconstructive surgery after ablation have benefited from new techniques allowing the integration of cosmetic methods used in oncoplastic surgery. The rate of breast reconstructive therapy continues to increase, and, more recently, has been used in combination with neoadjuvant chemotherapy in operable breast cancer patients. *"The volume of resection is the critical balance between cosmetics and local recurrence"*, Jay Harris.

Today, invasive breast cancer requires clear margins of 1 mm. By contrast, for patients with ductal carcinoma *in situ* (DCIS) clear margins of at least 10 mm are required.

Contraindications for breast reconstruction

With the modern techniques now at hand, most patients requesting breast reconstruction will be satisfied with the outcome if their expectations are realistic.

Thus, women with unrealistic expectations, i.e. those refusing to accept the resulting scars or those in a poor general condition should be rejected as candidates for these procedures until their expectations become more realistic or their general condition improves. In the meantime, external epitheses might help cover the physical handicap. This can be of particular concern where cases require immediate reconstruction. Regarding reconstructive breast surgery as an elective approach to improve quality of life, surgeons should be aware of the prognosis of their patients prior to the reconstructive surgery.

Patient's expectations

Returning the patient to a state that is close to the 'normal' should be the goal of any reconstructive approach. Ideally, the reconstructed breast should age with time and change with the patient's body weight, in the same manner as a normal breast would. The

reconstruction should be symmetrical and attractive from the patient's and her partner's point of view. However, in practice this goal is not always achieved, even in the most experienced hands. Patients have to be educated that the surgical approach might need one or more revisions to achieve the desired shape.

Reducing the morbidity of breast reconstruction

The evidence to date supports the use of breast reconstruction in combination with postoperative radiation therapy as standard treatment. However, the rate of morbidity following this interdisciplinary approach is still high. Clearing of the axilla, radiotherapy and a lack of surgical experience are likely to contribute to this observed morbidity.

Integration of new techniques into breast cancer care

Conservative clearing of the axilla and a reduction in the dose and duration of radiotherapy have been proposed as methods of reducing the observed morbidity. New techniques, such as sentinel lymphadenectomy and intraoperative radiation (IORT) have therefore been introduced, but are still considered experimental. Both local control rates and improved quality of life by reducing morbidity rates will continue to be crucial aspects of the surgical treatment for breast cancer.

On the basis of existing and future knowledge, the management of care for most women affected will most likely follow this sequence:

1. Minimally-invasive diagnostic procedures will be used including the identification of prognostic factors.
2. Sentinel lymphadenectomy
3. Neoadjuvant chemotherapy
4. Breast reconstructive therapy
5. IORT

Breast reconstruction

Due to the increased use of breast conservation techniques and breast reconstruction, the necessity for

mastectomy has declined. Nevertheless, surgeons should be aware that primary reconstruction is likely to have a higher complication rate compared with late or secondary reconstructions.

John Bostwick III claimed that the choice of a reconstructive technique is up to the individual and should be tailored to each patient's requirements. In his experience, no single technique was equally good for all patients, as each has its benefits and limitations. Nowadays, the reconstructive surgeon has a menu of options from which to choose.

Advantages of implant-based reconstructions

This technique uses tissue expansion followed by placement of an implant filled with silicone gel or saline. It represents the most widely-used procedure in the United States and Europe. It has advantages, especially for those for whom autologous tissue reconstruction is contraindicated due to a poor performance status (for example). In this setting, implants might be the patient's best choice.

From a technical point of view, the main advantage of any implant-based reconstruction is its simplicity. The placement of an implant or tissue expander is easy, requires no special equipment and might be performed after proper training in virtual every institution that respects the guidelines and indications of good breast cancer care. Furthermore, the procedure itself is short, and hospitalisation and recovery time is minimal. Implants might be changed if required and can be used under a latissimus dorsi flap to increase the breast's volume. Unfortunately, implants have significant disadvantages such as capsular contractures, chronic pain and implant failures. Most of these complications can increase over time. However, the complication rate for the use of implants in irradiated tissue is very high.

The standard procedure after radiotherapy is to use autogenous tissue grafts like transverse rectus abdominis myocutaneous flap (TRAM) or the latissimus dorsi flap (LAD) or a combination of LAD+Implants.

Today, implants are considered as a safe treatment option. In 2000, the Institute of Medicine study on implants from the National Academy of Sciences commissioned by the US Congress was reported and the key points are summarised below (<http://Books.nap.edu/catalogue>):

- There is no credible evidence that silicone implants are responsible for any major disease of the whole body, such as cancer.
- Silicone is not harmful to nursing babies.
- Breast implants have improved over time.
- Most patients with implants are satisfied.
- Problems are local and do not last forever.
- Silicone is safe.

Advantages of autologous tissue reconstruction

Autologous fatty tissue is similar in consistency to mature tissue and is therefore an ideal substitute. Because autologous tissue is part of the patient's body, nerves can grow into it, and sensation in autologous reconstructed breasts is usually better compared with implants. Indications for a myocutaneous flap are:

- Poor condition of thoracic tissues:
 - Previous radiotherapy
 - Lack of skin
 - Lack of muscle (Halsted)
- Capsula contracture with implants
- Large breasts and patient's request
- Extensive recurrence in the chest wall

On the other hand, autologous tissue reconstruction is more complex, demands extended hospitalization, as well as a longer recovery period. The surgical procedure is more difficult and requires a personal learning curve and proper training. The nature of the procedure itself leaves the surgeon and patient faced with specific problems such as potential deleterious changes in the donor site, even when the operation is completely successful. Significant morbidity may occur if too much tissue is harvested. Should flap loss occur, salvage is more difficult compared with the loss of an implant.

In summary, breast reconstruction can be successfully accomplished with the use of tissue expansion and implants, with flaps overlying implants, or autologous tissue alone. Under optimal conditions, autologous tissue reconstruction might be more successful in terms of remodelling a new breast. For achieving the optimal benefit, close cooperation is mandatory to combine the interests of the patient, the oncologist and surgeon.

References

- [1] Bostwick J III. Plastic and reconstructive breast surgery. Mosby; 1991.
- [2] Hartrampf CR. Hartrampf's Breast Reconstruction with Living Tissue. New York, NY: Raven Press; 1991.
- [3] Gaubitz M, Jackisch C, Domschke W, Heindel W, Pfeiderer B. Silicon breast implants – Correlation between implant ruptures, MR spectroscopically estimated silicone presence in the liver, antibody status and clinical symptoms. *Rheumatology* 2002; 41: 129–135.
- [4] Eltze E, Bettendorf O, Rody A, Jackisch C, Herchenröder F, Böcker W, Pfeiderer B. Influence of local complications on capsule formation around various filled model implants in a rat animal model. *J Biomed Mater Res* 2003; 64: 12–19.
- [5] Kroll SS. Breast Reconstruction with autologous tissue: Art and Artistry. Springer NY; 2000.