

Teaching Lecture

E9. Oncoplastic Surgery: increasing surgical options for breast cancer patients

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Introduction

Throughout history surgical treatment of breast cancer has been an important part of the management of patients with breast cancer. After years of Halsted mastectomies being performed in all patients with breast cancer, a new idea of resecting less breast tissue without endangering oncological treatments began to flourish in the late 1970s. Two clinical trials supporting this hypothesis are the National Surgical Adjuvant Breast and Bowel Project (NSABP) B 06 and the Milan Trial [1,2]. With a follow-up of more than 10 years, survival rates between mastectomy and breast-conservative surgery (BCS) (lumpectomy + radiation therapy) were similar, equalizing both treatments in breast cancer patients. The goal of BCS is to remove the tumour with an adequate surgical margin and to maintain good cosmetic results. Depending on tumour location and the ratio between the breast and the tumour, accomplishing this goal can sometimes be a challenge.

Oncoplastic surgery (OPS), a term that was defined by Dr. Audretsch, describes the fusion of techniques from surgical oncology and plastic reconstructive surgery. It combines the oncological resection of breast tumours with the reconstructive breast surgery to remodel the defect resulting from tumour resection. Oncoplastic surgery refers to multiple procedures that use well-established methods of breast reconstruction surgery that have been tried in different clinical situations. The definition of how much tissue needs to be removed in breast cancer to achieve a clear margin is the first consideration for oncoplastic techniques.

Preoperative assessment and patient selection

To plan a surgical resection and to assess the volume of tissue that needs to be excised, breast imaging with mammogram and ultrasound are used to help design the best surgical approach to each patient. Assessing breast density and the size of the tumour by imaging, and identifying the extent of microcalcifications, will influence the decision of the different options of surgical approach [3]. Indications for magnetic resonance imaging (MRI) in breast surgery remain controversial [4,5]. Preoperative assessment is crucial to assure appropriate patient selection. Evaluation needs to be performed according to oncological principles, but also factors that

could influence outcomes of OPS need to be taken into account.

The leading cause of cosmetic failure in BCS is volume loss. Bulstrode et al. [6] have shown that removal of more than 20% of the breast volume increases the chances of a bad cosmetic result. The quadrants at risk of cosmetic failure are in the upper, central and upper inner quadrant and the lower and central pole of the breast. Breast-conserving surgery and reconstructive surgery should be considered in those patients in whom adequate local excision cannot be achieved without significant risk of local deformity. Other indications include women considering breast reduction in addition to excision.

Contraindications include margins that cannot be assured, locally advanced and T4 tumours, patients with multicentric disease, extensive malignant mammographic microcalcifications, and patients with inflammatory carcinoma.

Technique selection

There are two different types of approach to breast-conserving reconstruction: volume displacement techniques and volume replacement techniques [7,8]. Volume displacement techniques involve the mobilization of glandular flaps for covering the defect. As a result there is a loss in volume of the breast, so there is potentially a need for a simultaneous contralateral reduction to achieve symmetry. The resection of the tumour can be accomplished using different techniques, including glandular remodelling, inferior or superior pedicle techniques, batwing technique, racquet mammaplasty, round block techniques, and vertical scar techniques. On the other hand, in volume replacement techniques the reconstruction of the defect is covered using autologous tissue to replace the volume of excised breast tissue. It usually involves the use of latissimus dorsi flaps.

Generally volume replacement may be more suitable for patients who have small- to medium-sized breasts who cannot afford to lose volume or who may not want to, and also for women who do not want surgery on the contralateral breast. Volume replacement techniques may fit better in patients with medium to large breasts, and ptotic breasts.

Complications include mainly glandular necrosis, nipple areola necrosis, and complications in the donor site

when volume replacement techniques are used. Reported rates of complications range from 5% to 9%; as with other surgical techniques, these rates decrease with experience.

Clinical outcomes

Recent outcomes have been reported for the use of OPS in breast cancer. Rietjens et al. have reported an overall local recurrence rate of 3% in 148 patients with a follow-up of 74 months, rates comparable with the results of BCS in randomized trials [9]. Clough et al. have also reported rates of local recurrences in patients undergoing OPS comparable to BCS treatments [10]. These results are encouraging, although no prospective specific trials in OPS have been performed, and we lack long-term data on oncological outcomes in these patients.

Training in OPS

OPS has become an integral part of the surgical treatment for breast cancer. Different classifications in OPS have been developed regarding the skills needed for certain procedures. It has been classified into two levels based on excision volume and the complexity of remodelling the breast: a level I for resection of less than 20% of the breast volume that allows reshaping of the breast, and a level II that includes mammoplasty techniques [11]. Standardised recommendations for training and proposed skills by other groups include levels I-IV depending on the various levels of training required [12].

Subspecialist training in breast surgery should incorporate experience in breast reconstructive and aesthetic surgery for trainees who wish to practise as specialist breast surgeons. A consensus classified system in OPS should be established to facilitate the training in OPS and the oncological outcomes of this surgical approach.

Considerations

Some of the issues that still need to be addressed concern radiation therapy techniques applied in BCS. The delivery of a local boost of radiation therapy when OPS is performed may be a challenge when the lumpectomy cavity is separated in different portions ending in different areas of the breast. Applying some types of partial breast

irradiation as Mammosite may not be possible when using OPS. Considerations regarding positive margins after OPS, non-responding patients after neoadjuvant therapy, or extensive intraductal cancer need to be assessed in the multidisciplinary team to provide breast cancer patients with the best surgical techniques.

Conflict of interest statement

I have no financial or personal relationships to disclose.

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