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EDITORIAL

Evolving role of skin sparing mastectomy

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Abstract

Skin sparing mastectomy (SSM) can facilitate immediate breast reconstruction and is associated with an excellent aesthetic result. The procedure is safe in selected cases; including invasive tumours < 5 cm, multi-centric tumours, ductal carcinoma in situ and for risk-reduction surgery. Inflammatory breast cancers and tumours with extensive involvement of the skin represent contra-indications to SSM due to an unacceptable risk of local recurrence. Prior breast irradiation or the need for post-mastectomy radiotherapy do not preclude SSM, however the aesthetic outcome may be compromised. Preservation of the nipple areola complex is safe for peripherally located node negative tumours. An intraoperative frozen section protocol for the retro-areolar tissue should be considered in these cases. The advent of acellular tissue matrix systems has enhanced the scope of implant-based immediate reconstruction following SSM. Cell-assisted fat transfer is emerging as a promising technique to optimise the aesthetic outcome.

Key words: Skin sparing mastectomy; Breast reconstruction; Acellular dermal matrix; Implants; Flaps

Core tip: Skin sparing mastectomy (SSM) is oncologically safe in selected cases and is aesthetically superior to simple mastectomy. New techniques such as the use of acellular dermal matrix a and cell-assisted fat transfer have enhanced the use of implants for volume replacement following SSM.

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INTRODUCTION

Despite the increasing popularity of breast conserving surgery, approximately one third of women diagnosed with breast cancer still require or opt to have total mastectomy as a loco regional treatment. There is a growing body of evidence that immediate reconstruction following total mastectomy is associated with aesthetic and psychological benefits[1]. The preservation of the skin envelope of the breast facilitates immediate reconstruction with a superior aesthetic result compared with conventional mastectomy. In standard skin sparing mastectomy (SSM), the nipple areolar complex is sacrificed and reconstructed at a later date. However, the nipple areolar complex can be preserved in certain cases [nipple sparing mastectomy (NSM)] and this further enhances the aesthetic outcome and is associated with psychosexual benefits[1,2].

ONCOLOGICAL SAFETY

The preservation of the skin envelope of the breast had previously raised concerns regarding the oncological safety of SSM. This concern has been based on the fact that the skin envelope of the breast contains residual glandular breast tissue and can harbour a residual disease[3,4]. However, numerous retrospective and prospective studies have shown that SSM is oncologically safe with no compromise of loco-regional control or overall survival

(OS). This is particularly true for ductal carcinoma in situ (DCIS) and T1 and T2 invasive breast cancer. There are limited data regarding the oncological safety in patients with T3 tumours, however, the published data show no compromise of clinical outcome[1,5].

A recent meta-analysis of all published studies (9 studies, 3739 SSMs) related to SSM demonstrated a similar disease-free survival to non-SSM. In fact, the meta-analysis showed that the OS was slightly superior in the SSM group, however, this observation should be interpreted with caution since the meta-analysis do not include the tumour grade in the pooled analysis[6].

Furthermore, NSM has been growing in popularity, due to increasing data supporting its oncological safety. A recent meta-analysis of the NSM (n = 6615) was published in 2013 and demonstrated an acceptable incidence of local recurrence, distant relapse and nipple-related complications[2]. Preservation of the nipple areolar complex is oncologically safe provided that the tumour-nipple distance exceeds 2.5 cm and the local recurrence is lowest for node-negative, unifocal tumours, which are estrogen receptor-positive and human epidermal growth factor receptor 2 negative. It is very important that an intra-operative frozen section protocol is in place when the nipple areolar complex preservation is considered and if intra-operative frozen section analysis of the sub-areolar tissue demonstrates malignancy, then the nipple areolar complex is sacrificed[1]. Prophylactic mastectomy for risk reduction represents a good indication for NSM.

SSM has been found oncologically safe for extensive DCIS. However, it is important that adequate surgical margins are obtained and the DCIS does not extensively involve the surgical margins. If there is significant DCIS involvement of the margins (< 1 mm at more than one site), then surgical excision of the overlying skin flap should be considered and, if this is not feasible, then post-mastectomy radiation should be considered as an adjuvant treatment after multidisciplinary discussion especially for high grade DCIS. Fore focally positive or close margins, post-mastectomy radiation can be omitted since the incidence of local recurrence is lower than the risk of developing cancer in the contra-lateral breast[7].

Due to the fact that it is not feasible to conduct randomised controlled trials, there is a continuous need to publish updated meta-analyses from time to time, in order to ensure that the oncological safety of SSM remains intact[2]. Such meta-analyses should assess the risk of bias (selection bias, detection bias, attrition and reporting bias) and study heterogeneity. OS and disease-free survival (DFS) should be the primary end points of the meta-analysis while the secondary endpoints should include surgical complications and quality of life.

In relation to T3 tumours, it is feasible to downstage the tumour with neo-adjuvant treatments, such as neo-adjuvant systemic therapy or even radiation prior to carrying out SSM. Neither prior radiotherapy nor post-mastectomy radiation represent contraindications to SSM, however, one has to accept that the aesthetic outcome will be compromised by radiation treatment, due to a higher incidence of capsule formation, which will require surgical intervention, if it becomes symptomatic[2,8].

BREAST RECONSTRUCTION FOLLOWING SSM

Following SSM, volume replacement is most commonly carried out using a mammary tissue expander or a fixed volume implant. The advent of the acelullar dermal matrix devices has enhanced the scope of using implants in the context of immediate reconstruction and increased the rate of single-stage SSM and immediate reconstruction[9]. Other options for breast reconstruction include free autologous tissue transfer with the free deep inferior epigastric perforator flap being the commonest[10]. In relation to conventional pedicled flaps, the latissimus dorsi myocutaneous has its role in the field of immediate reconstruction.

Finally, the advent of cell-assisted fat transfer has been recently introduced, in order to improve the aesthetic outcome in women undergoing SSM and immediate reconstruction. The cell-assisted fat transfer is useful in improving the aesthetics of the breast contours and providing soft tissue covering in areas where the implant is palpable and visible. Furthermore, there is evidence suggesting that the use of cell-assisted fat transfer is associated with improvement of the severity of the capsule that develops in some patients undergoing breast reconstruction[11].

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