

**COMMUNICATION****Evolving Trends in Breast Surgery:  
Oncoplastic to Onco-Aesthetic Surgery**

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The term oncoplastic surgery was first coined by Gabka and Bohmert [1], reflecting a recognition that the cosmetic outcome of breast surgery is an important part of patient outcomes. With the publication of practice guidelines, the principles of oncoplastic surgery were embedded in the management of breast cancer [2-6]. The evidence that poor aesthetic outcomes after breast surgery adversely impacted the quality of life led surgeons to seek out and refine surgical techniques that would preserve the size, volume, shape, and cosmetic appearance of breasts treated for breast cancer [7]. This led to the evolution of surgical procedures that utilize fibroglandular flap advancement to fill the surgical defect left after the excision of the breast, and therapeutic mammoplasty to excise large tumours or tumours located at cosmetically unforgiving sites on the breast such as the lower and medial quadrants of the breast [8,9]. Various techniques have been described for reconstructing large-volume breast excisions [10-12]. Increased awareness regarding the availability of these techniques has led women of today to be well informed and to expect an aesthetically acceptable breast form after the conservative treatment of breast cancer.

Advancements in reconstruction techniques after mastectomy using latissimus dorsi flaps, transverse rectus abdominus muscle flaps, and deep inferior epigastric perforator flaps, as well as improvements in implant-based reconstruction, contributed to an increase in the demand for and uptake of post-mastectomy reconstruction; moreover, the safety of nipple sparing mastectomy has been demonstrated in large-scale cohort studies [13,14]. The evidence that post-mastectomy radiotherapy can contribute to patient survival com-

pelled breast surgeons to revise the reconstruction options offered to women after mastectomy. Delayed reconstruction with autologous flaps or two-staged reconstruction deploying a tissue expander during radiotherapy, followed by a fixed-volume implant or autologous flap reconstruction, became the reconstruction of choice for patients who were likely to need chest wall radiotherapy after mastectomy [14].

The literature regarding potential comorbidities associated with silicone-based breast implants led to declining patient acceptance of silicone-based implants. After safety statements by the Food and Drug Administration, the uptake of silicone-based resumed in North America, and silicone and saline-based implants are more commonly used implants [15]. The advent of acellular dermal matrix (ADM) dramatically increased the number of options and techniques available for breast reconstruction, and the increasing use of ADM diminished the surgical challenge of donor site morbidity, enhancing patient acceptance. Guidelines for the optimal use of ADM are still evolving and are the focus of intense research and training [16]. Advancements in liposuction techniques that yield a high success rate after autologous fat transplant have led to the development of lipo-modelling techniques as an adjunct in restoring cosmetic defects after breast-conserving surgery and enhancing the cosmetic appearance of a reconstructed breast [17-19].

Oncoplastic breast surgery has come of age: the technical skills of surgeons have advanced, the technology of reconstructive mechanical adjuncts has improved, and a better scientific understanding of restorative and reconstructive breast surgery has been achieved. The new frontiers of aesthetic enhancement after breast cancer surgery in terms of restoring normal anatomical appearance and symmetry have been reached by breast surgeons. Indeed, most modern oncoplastic-trained surgeons are able and willing to undertake surgery on the contralateral side to enhance the aesthetics and cosmetic appearance of the breast treated for cancer. One could perhaps argue that surgical treatment that involves the techniques of flap formation, reconstruction with pedicled grafts, liposuction, lipo-modelling, and the use of ADM now deserves to be called onco-aesthetic surgery, which is a significant and rewarding step forward from oncoplastic surgery!

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