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Oncoplastic breast surgery

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Abstract

Goal

To present the history and application techniques of oncoplastic surgery.

Oncoplastic surgery is a breast-conserving surgery performed using mammoplasty techniques. The aim is to reshape and preserve the cosmetic of the breast tissue after an oncological resection. After breast-conserving surgery, various cosmetic problems that occur in the early period can reach 80% in various series in the long term. Factors causing cosmetic problems include the amount of tissue removed, density of the breast tissue, the ratio of the tumor to the breast, location of the tumor, shape of the breast. Re-operation rates after breast-conserving surgery reach 20%.

Indications for oncoplastic surgery are as follows: patients with breast to tumor rate exceeding 15%, localization outside the upper outer quadrant (central, inner and lower quadrants), multifocal/multicentric tumors and macromastia. Oncoplastic surgery techniques can be basically divided into two: volume displacement and volume replacement. The volume displacement operations

are performed in patients with a breast to tumor ratio of 20%. In these techniques, the defect is repaired by a mobilization of the intramammary tissues and re-centralization of the areola if necessary. In volume replacement techniques, the defect is repaired by forming flaps and/or fat grafts from the adjacent areas. Major resections of up to 50% of the breast tissue can be performed with these methods, and defects can be repaired without causing cosmetic problems.

Many parameters, such as breast structure, size, experience, etc. are important in deciding on the method to be applied. Therefore, it is recommended to determine the most appropriate method for each patient individually.

Oncoplastic surgery also has its downsides: it requires experience, long incisions, prolonged wound healing, change in tumor bed, and the need for symmetry to the opposite breast. Current literature shows that oncoplastic surgery reduces re-operation rates, that cosmetic results are satisfactory, and that it is oncologically safe.

Conclusion

Oncoplastic surgery is currently one of the surgical treatment options for the breast cancer.

Introduction

According to the latest Global Cancer Observatory (GLOBOCAN) statistics, breast cancer is the cancer with the highest incidence among both sexes (1). Surgical developments related to management of the breast cancer are also increasing. Today, extensive surgical procedures are being replaced by surgical procedures that both preserve the breast and follow oncological principles (2). Nevertheless, 20-30% of patients may still experience poor cosmetic outcomes following breast-conserving surgery (BCS) (3). In the last two decades, oncoplastic breast surgery (OBS) techniques, which are applied to patients with smaller breast volumes and larger tumors, are being developed. A partial mastectomy defect can be reconstructed by removing a larger tissue using OBS techniques. Thanks to these techniques, in addition to conserving the breast, better aesthetics, better patient satisfaction, and most importantly, better surgical margins can be achieved (4).

History

In the late 1980s, various surgical teams in Europe used plastic surgery techniques in cases where BCS would be challenging. (2) Werner Audretsch is the surgeon who first used the term OBS. The purpose of (5) OBS is to reduce the incidence of re-excision and to remove larger tumors with larger tissue by minimizing postoperative sequelae (2). Despite all these developments, OBS techniques have begun to gain wider acceptance among surgeons in the last decade (6). OBS technique requires experience in surgical techniques for breast cancer and also plastic surgery experience for reconstruction (6). In a recent study conducted in Turkey, it was revealed that OBS can be performed at a rate of 87% in centers where breast cancer surgery is performed (7).

Indications

When applied to breasts with large volume and ptosis, better cosmetic outcomes can be obtained with wider resection (8). OBS is also recommended for larger resections that require removal of 20% of the breast volume as well as skin removal (9). In addition, tumors located in the central, inner or lower quadrant generally show good cosmetic results after BCS. On the other hand, OBS may be preferred procedure in tumors located outside of these quadrants (9).

Contra indications

A small breast without ptosis, as well as a conical breast, are definite contraindications for OBS. The presence of a previous history of radiotherapy to the breast is a relative contraindication for this procedure, however, smoking, connective tissue diseases, uncontrolled diabetes, and advanced age should also be considered due to the possibility of increased complications (9).

Pre-procedure planning

Preoperative planning is crucial since it determines the technique that will be used, the site of the resection, and the final appearance of the breast (9). As a rule of thumb, tumor localization, breast structure, and clinical evaluation of the patient are important factors in determining OBS. (8). If more than 20% of the volume of the breast is to be removed, this may cause concerns in terms of aesthetic outcomes. Additionally, prior to the procedure, it is important to consider factors such as tumor diameter, multi-centricity, multifocality, the location of the tumor and its distance from the skin, the distance between the nipple-areola complex and the tumor as well as previous radiotherapy and breast surgery history, breast volume, shape, ptosis, and asymmetry (8).

Oncological safety

Oncoplastic surgery has an increased frequency of use nowadays. The procedure may also be viewed as an alternative to total mastectomy or as an extension of partial mastectomy. In addition, it is noted to have great cosmetic benefits, as it also protects the breast in the presence of large tumors (10). Furthermore, in terms of oncologic safety, there was suspicion that the tumor may spread because of previous reconstructions. However, recent studies have shown that with the development and increasing use of adjuvant treatment protocols and the improvement of preoperative imaging modalities, local recurrences have decreased. Also, an increase in accurate diagnoses and accurate indications has contributed to this. Recent large-scale studies have reported that average life expectancy and recurrence-free survival are not lower with oncoplastic surgery (11, 12). Another study conducted in patients with T1-T2 tumors reported long median and disease-free survival, less local recurrence, fewer distant metastases, fewer positive surgical margins, less conversion to total mastectomy, and less re-excision in patients who underwent oncoplastic surgery (13).

Complications

The average complication rate after oncoplastic breast surgery varies from 15-30% depending on the study (4). Seroma, hemorrhage, wound dehiscence, surgical site infection, and fat necrosis may occur after oncoplastic surgery and may also occur with other breast surgeries. Skin necrosis, flap necrosis, and breast areola complex necrosis, which are more characteristic of oncoplastic surgery, may also occur.

Techniques

Although they may differ according to the size of the breast and the location of the tumor, as a general rule, oncoplastic techniques fall into two general categories: volume replacement and breast volume displacement. Whether or not a woman has ptosis, volume displacement may prove beneficial to her if her breasts are medium or large. Since volume displacement techniques are not cosmetically appropriate for women with small breasts and without ptosis, women with these conditions should use volume replacement techniques (9). Furthermore, volume replacement techniques are often used in patients with tumors affecting the upper quadrant or upper outer quadrant (9).

The volume displacement technique is applied after resection by pulling the glandular or dermoglandular flaps around the cavity into the defect. In this technique, surgery may be required in the contralateral breast due to loss of breast volume (6). Closure of the cavity with a flap brought from adjacent tissues is the most used method (6). Generally, the volume displacement method is followed by skin incision, removal of the lesion, unfolding of the nipple-areola complex (NAC), approximation of the glandular flaps, deepithelialization, and repositioning of the nipple-areola complex (14). In general, if the resection area is smaller than 20% of the whole breast, it is considered that the defect can be closed with simple glandular and skin flaps (9). The nipple-areola complex can also be centralized in appropriate cases by deepithelializing the skin on the opposite side of the defect into a crescent shape, without exposing it completely. If cancer requires resection of more than 20%, it is essential to inform the patient before surgery that the other breast may also need intervention because in these cases the breast may be smaller, upper-located, and flatter after the procedure (9).

The second technique, the breast volume replacement method, is most used for large tumors, large tumor-to-

breast ratio and patients with small breasts (9). In the volume replacement method, the cavity created after resection is closed with a similar volume of extramammary autologous tissue. Tissue transfer occurs in the form of exposed tissue via a vascularly preserved pedicle (15). These tissues may be fasciocutaneous flaps, myocutaneous flaps, flaps with perforating pedicles, and free flaps (9). The most commonly used flap is the latissimus dorsi musculocutaneous flap (6). Surgery is rarely required after volume replacement to ensure symmetry of the contralateral breast (9).

Classification of the Oncoplastic breast surgery

Oncoplastic breast surgery is classified into three categories according to the Canadian classification.

Level 1 OBS

In this group, the surgeon does not need plastic surgery experience. It is carried out mainly by mobilization of glandular tissue in the breast and displacement of the breast areola complex. There is no need for skin excision (2). It can be used in cases where less than 15% of the breast needs to be resected (16). Dimpling of the breast can be prevented.

Level 2 OBS

In cases where 16-25% of the volume of the entire breast must be removed, or when the location of the tumor is cosmetically problematic (upper inner quadrant, lower quadrant), level 2 OBS techniques may be used (16). In both there may be significant tissue loss and cosmetic problems after lumpectomy (17). Level 2 OBS techniques may require plastic surgery experience or attendance by plastic surgeon. With Level 2 OBS techniques, larger tissues and multifocal tumors can be removed with safe surgical margins and good cosmetic outcomes (17).

Tumor in the upper or Mid-quadrant

The Crescent Mastopexy

This technique is suitable for upper-middle quadrant tumors where the nipple is not involved. In tumors located more laterally, this technique will not be suitable since the nipple-areola complex may be displaced (18). In crescent mastopexy, the skin is excised along with the tumor with a parallel incision to the breast. Subsequently, the defect is closed with the glandular tissues located superior and inferior (18).

The Batwing and Hemi-Batwing Procedures

The Batwing procedure is used in tumors located in the upper quadrant and in cases where a wider resection is required. Likewise, in this procedure, the nipple must not be involved with the tumor (19).

In the Batwing procedure, a batwing-like incision is made over the areola, forming a triangle on both sides. Then the glandular tissue is excised up to the pectoral fascia. The defect is closed with absorbable sutures. The problem with the Batwing procedure is the unilateral displacement of the nipple-areola complex towards the superior, resulting in a disequilibrium of symmetry with the contralateral breast. This situation can be corrected, if necessary, with symmetry surgery of the contralateral breast. While in patients with breast ptosis, the displacement of the nipple-areola complex towards the superior is a desirable condition (20). Hemi-batwing surgery is similar to Batwing surgery, with the difference that it is best suited for tumors located in the upper outer quadrant. When the tumor is located in the inner quadrant, the procedure is not preferred due to the fact that it will be visible after surgery. The difference between the hemi-batwing procedure and the batwing is that the incision forms a one-sided triangle (18)

Round Block Procedure (Donut Mastopexy - Benelli)

If breast cancer is located in the upper outer quadrant, a Round Block procedure may be preferred. In this procedure, the nipple is incised all around. Then lumpectomy is performed, the circumference of the nipple is deepithelialized and the incision is closed. However, in this technique, numbness may occur in the nipple (14).

Reconstruction with Grisotti Flap

A Grisotti mastopexy may be appropriate in the case of tumors located in the middle quadrant or when the nipple-areola complex must be removed. In Grisotti mastopexy, the nipple-areola complex is removed up to the pectoral fascia, then a circular tissue previously determined in the lower quadrant is brought superior, becoming the new nipple (21).

Racket Mammoplasty

Although breast-conserving surgery can be successfully performed for tumors in the upper outer quadrant, oncoplastic surgical techniques should be used for small or medium-sized breasts requiring resection of more

than 20% of the breast to avoid deformity. At this stage, racket mammoplasty can be used (18).

In the racket mammoplasty, the skin is passed subcutaneously with two linear incisions extending from the areola to the axilla and the tumor is excised considering clean surgical margins. Then, in order to prevent the areola from sliding laterally, the medial side of the areola is deepithelialized and the nipple is repositioned by shifting the areola complex to the medial side. The tumor cavity is clipped and the glandular tissues are brought closer together (22).

Tumors of the lower quadrant J mammoplasty

J mammoplasty is a surgical procedure that is suitable for tumors of the lower outer quadrant. In this procedure, the tumor is excised with a clean surgical margin through two parallel linear incisions extending from the medial and lateral of the areola to the lower outer quadrant. A lateral connection is made between both incisions. Then, as in all lower quadrant tumors, the periphery of the nipple-areola complex is deepithelialized and then displaced toward the superior pedicle (22).

Superior Peduncle Mammoplasty

Superior pedicle mammoplasty, Wise Pattern, or inverse 'T' mammoplasty can be used in lower-middle quadrant tumors. A linear line is drawn from the middle of the patient's inframammary sulcus and clavicle to the areola and then to the inframammary sulcus on other side of the areola. Then, linear lines are drawn laterally and inferiorly from the upper level of the areola, depending on the breast tissue to be resected. Meanwhile, the new breast areola should be calculated as 3.5-4.5 cm. After the resection is completed, the tissue in the cranial of the nipple-areola complex is deepithelialized and the nipple-areola complex is shifted cranially. Then, the underlying cavity is closed by first approximating the glandular tissues, followed by subcutaneous and skin suturing (23).

V Mammoplasty

Lower inner quadrant tumors are one of the most challenging areas to operate on in breast cancer. Surgery in this region carries a high risk of deformity, and bird's beak deformity may occur after the removal of the tumors (18). The inverted T mammoplasty technique can be used for tumors in the lower inner quadrant, but the V

mammoplasty technique is more appropriate (22). In this technique, the skin and subcutaneous tissue are resected through a triangular incision to the mammary fascia, with the base extending into the inframammary sulcus and the tip into the areola. The medial and lateral glandular tissues are released from the pectoral fascia. Then, these glandular tissues are brought closer to each other with absorbable sutures. As the areola complex moves caudally after this procedure, the cranial side of the areola complex is deepithelialized and repositioned (24).

Level 3 OBS

Level 3 OBS can be used in cases where 26-60% of the volume of the breast needs to be resected and the contralateral breast also needs to be symmetrized. This group of oncoplastic breast surgery techniques is also used when patients have large breasts that need to have a large portion removed, but do not wish to undergo a mastectomy. These techniques enable clean surgical margins to be achieved even in patients with tumors larger than 5 cm in diameter and with a multifocal-multicentric mass (17).

Conclusion

The aim of the oncoplastic surgery is to reshape and preserve the cosmetic of the breast tissue after a resection based on the oncological principles. Basically there are two types of oncoplastic surgery techniques : volume displacement and volume replacement techniques. Thanks to these techniques, in addition to conserving the breast, better aesthetics, better patient satisfaction, and most importantly, better surgical margins can be achieved

REFERENCES

1. Sung H, Ferlay J, Siegel RL, et al. Global Cancer Statistics 2020 : GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. 2021;71(3):209-249. doi:10.3322/caac.21660
2. Clough KB, Benyahi D, Nos C, Charles C, Sarfati I. Oncoplastic surgery: Pushing the limits of breast-conserving surgery. *Breast J.* 2015;21(2):140-146. doi:10.1111/tbj.12372
3. Kaufman CS. Increasing Role of Oncoplastic Surgery for Breast Cancer. *Curr Oncol Rep.* 2019;21(12). doi:10.1007/s11912-019-0860-9
4. Piper M, Peled AW, Sbitany H. Oncoplastic breast surgery: current strategies. *Gland Surg.* 2015;4(2):154-163. doi:10.3978/j.issn.2227-684X.2015.03.01

5. Audretsch W. Sofortrekonstruktion der weiblichen Brust nach subkutaner- und modifiziert radikaler Mastektomie. Published online 1980.
6. Franceschini G, Terribile D, Magno S, et al. Update on oncoplastic breast surgery. *Eur Rev Med Pharmacol Sci.* 2012;16(11):1530-1540.
7. Çakmak GK, Emiroglu S, Sezer A, et al. Surgical trends in breast cancer in Turkey: An increase in breast-conserving surgery. *J Glob Oncol.* 2020;6:285-292. doi:10.1200/JGO.19.00275
8. Urban C, Lima R, Schunemann E, Spautz C, Rabinovich I, Anselmi K. Oncoplastic principles in breast conserving surgery. *Breast.* 2011;20(SUPPL. 3):92-95. doi:10.1016/S0960-9776(11)70302-2
9. Bertozzi N, Pesce M, Santi PL, Raposio E. Oncoplastic breast surgery: comprehensive review. *Eur Rev Med Pharmacol Sci.* 2017;21(11):2572-2585.
10. Campbell EJ, Romics L. Oncological safety and cosmetic outcomes in oncoplastic breast conservation surgery, a review of the best level of evidence literature. *Breast Cancer Targets Ther.* 2017;9:521-530. doi:10.2147/BCTT.S113742
11. Carter SA, Lyons GR, Kuerer HM, et al. Operative and Oncologic Outcomes in 9861 Patients with Operable Breast Cancer: Single-Institution Analysis of Breast Conservation with Oncoplastic Reconstruction. *Ann Surg Oncol.* 2016;23(10):3190-3198. doi:10.1245/s10434-016-5407-9
12. Clough KB, Van La Parra RFD, Thygesen HH, et al. Long-term Results after Oncoplastic Surgery for Breast Cancer: A 10-year Follow-up. *Ann Surg.* 2018;268(1):165-171. doi:10.1097/SLA.0000000000002255
13. De La Cruz L, Blankenship SA, Chatterjee A, et al. Outcomes After Oncoplastic Breast-Conserving Surgery in Breast Cancer Patients: A Systematic Literature Review. *Ann Surg Oncol.* 2016;23(10):3247-3258. doi:10.1245/s10434-016-5313-1
14. Masetti R, Di Leone A, Franceschini G, et al. Oncoplastic techniques in the conservative surgical treatment of breast cancer: An overview. *Breast J.* 2006;12(SUPPL. 2). doi:10.1111/j.1075-122X.2006.00331.x
15. Yang JD, Lee JW, Kim WW, Jung JH, Park HY. Oncoplastic surgical techniques for personalized breast conserving surgery in breast cancer patient with small to moderate sized breast. *J Breast Cancer.* 2011;14(4):253-261. doi:10.4048/jbc.2011.14.4.253
16. Molina BJ, Shelby RD, Janis JE. Key Areas for Development in Oncoplastic Breast Reconstruction. *Plast Reconstr Surg - Glob Open.* Published online 2020:1-6. doi:10.1097/GOX.0000000000003273
17. Arnaout A, Ross D, Khayat E, et al. Position Statement on Defining and Standardizing an Oncoplastic Approach

to Breast-Conserving Surgery in Canada. *Current Oncology*. 2019;26(3):405-409. doi: 10.3747/co.26.4195

18. Cantürk NZ, Şimşek T, Özkan Gürdal S. Oncoplastic Breast-Conserving Surgery According to Tumor Location. *Eur J Breast Heal*. 2021;17(3):220-233. doi:10.4274/ejbh.galenos.2021.2021-1-2

19. Manie TM, Youssef MMG, Taha SN, Rabea A, Farahat AM. Batwing mammoplasty: A safe oncoplastic technique for breast conservation in breast cancer patients with gigantomastia. *Ann R Coll Surg Engl*. 2020;102(2):115-119. doi:10.1308/rcsann.2019.0129

20. Anderson BO, Masetti R, Silverstein MJ. Oncoplastic approaches to partial mastectomy: An overview of volume-displacement techniques. *Lancet Oncol*. 2005;6(3):145-157. doi:10.1016/S1470-2045(05)01765-1

21. Chen Y, Chen Q, Dong J, et al. Modified Grisotti flap technique in centrally located breast cancer: case report. *Gland Surg*. 2021;10(9):2867-2873. doi:10.21037/ggs-21-176

22. Clough KB, Ihrai T, Oden S, Kaufman G, Massey E, Nos C. Oncoplastic surgery for breast cancer based on tumour location and a quadrant-per-quadrant atlas. *Br J Surg*. 2012;99(10):1389-1395. doi:10.1002/bjs.8877

23. Holmes DR, Schooler W, Smith R. Oncoplastic Approaches to Breast Conservation. *Int J Breast Cancer*. 2011;2011:1-16. doi:10.4061/2011/303879

24. Clough KB, Oden S, Ihrai T, Massey E, Nos C, Sarfati I. Level 2 oncoplastic surgery for lower inner quadrant breast cancers: The liq-v mammoplasty. *Ann Surg Oncol*. 2013;20(12):3847-3854. doi:10.1245/s10434-013-3085-4