International Surgery Journal
Dahshan MEE et al. Int Surg J. 2023 May;10(5):912-917
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20231390

Case Series

The outcome of Grisotti flap oncoplastic technique in central breast cancer: case series

Mohamed Ebrahim El Dahshan[1]*, Hossam Mahmoud Mokhtar Khalil[2], Ayman Abd Elhameed Elnemr[1]

[1]Department of General Surgery, [2]Department of vascular Surgery, Faculty of Medicine, Tanta University Hospital, Tanta, Egypt

Received: 05 March 2023
Accepted: 05 April 2023

***Correspondence:**
Mohamed Ebrahim El Dahshan,
E-mail: mohamed.eldahshan@med.tanta.edu.eg

ABSTRACT

Breast cancer patients with centrally located cancer always receive mastectomy or the combination of central excision and primary closure. With the development of modern oncoplastic breast-conserving technique, a variety of techniques are available to deal with centrally located breast cancers (CLBCs). Among these techniques, Grisotti flap technique is special, because it is easy to handle and only causes minor injury by using a local rotational dermoglandular flap to fill the defect of central part. In our study, we performed grisotti flap on seven patients with CLBCs and one patient with Paget's disease. We found that performing Grisotti flap technique is safe oncologically with satisfactory aesthetic outcome for patients with CLBCs. However, further long term study on larger number of patients is needed to assess the long-term outcome of this surgical procedure in terms of survival.

Keywords: Centrally located breast cancer, Grisotti flap technique, Oncoplastic breast conserving surgery

INTRODUCTION

Breast cancer is the most common cancer in women. With the development of radiotherapy and clinical practice, breast surgeries have shifted from radical surgeries to breast-conserving surgeries that is currently the standard treatment for early-stage breast cancer.[1,2]

Oncoplastic breast surgery (OBS), which combines the concepts of oncologic and plastic surgery, is becoming more common, especially in Western countries.[3-8] At present, there are many different oncoplastic surgical techniques such as careful planning of skin and parenchymal excisions, reshaping of the gland following parenchymal excisions and repositioning of the nipple areola complex (NAC) to the center of the breast with or without a correction in the contralateral breast to achieve better symmetry.[9] The concept of OBS combining partial mastectomy with the breast reduction technique has become more popular.[10-13]

Centrally located breast tumors represent 5-20% of all breast cancer cases.[14] Traditionally, conservative breast surgery was contraindicated in these tumors with total mastectomy as the treatment of choice. This may be attributed to the fear of local control failure and risk of tumor multicentricity.[15,16]

The surgical management of tumours in the retroareolar region of the breast continues to remain a challenge with many surgeons opting for central excision and primary closure or radical mastectomy to achieve clearance. However, there is a trend towards providing less mutilating procedures while improving cosmesis.[17]

Additionally, the conventional conservative treatment or central quadrantectomies, which includes excision of the NAC and the underlying cylinder of parenchyma down to the pectoralis fascia, may result in local glandular defects and poor esthetic outcome including obvious distortion of breast contour and scar contracture in most cases.

However, restoration of the central defect by the oncoplastic volume displacement or replacement techniques has been shown to be effective. The choice of the oncoplastic techniques depends on the achievement of free safety margins, the breast volume, and its ptotic degree.[14]

The commonly used central breast-conserving techniques include wedge resection, purse-string technique, and breast reduction plastic surgery. The most popular technique for CLBC is Grisotti flap technique, which uses a skin-parenchyma flap that has an inferior pedicle and is pushed up into the defect after lumpectomy.[17]

The standard Grisotti flap provides an excellent oncoplastic option for patients with retroareolar cancers and moderate size breast. It also allows the preservation of the breast while achieving a satisfactory cosmetic result in terms of contour and projection.[18,19]

The objective of the current study was to assess the short-term surgical and esthetic outcomes of Grisotti flap oncoplastic technique after centrally located breast tumor resection.

CASE SERIES

This prospective study was conducted on eight female patients with central breast cancer who underwent BCS followed by immediate reconstruction employing Grisotti oncoplastic technique were operated on in the Surgical Oncology Unit at Department of General Surgery. Then completed adjuvant therapy in the medical Oncology Department, Faculty of Medicine; Tanta University Hospital, from February 2020 to January 2023.

All females with central breast tumors during the study period who were candidates for restoration of the central defect by either oncoplastic volume displacement or replacement techniques were asked to join the study. Required ethical approval was obtained from local ethical committee and written informed consents were obtained from all patients before enrollment.

The exclusion criteria included extensive skin involvement outside the area of NAC, multicentricity, inflammatory carcinoma, distant metastasis, and patients who refused breast reconstruction.

All eight patients were diagnosed with centrally located invasive ductal carcinoma (IDC) except one patient with Paget's disease (case 3) in our hospital between February 2020 and January 2023. None of these patients received preoperative systemic chemotherapy or endocrine therapy. They were examined preoperatively and diagnosed with adequate disease for breast conserving surgery by mammography (MMG), ultrasonography (US), computed tomography (CT), and magnetic resonance image (MRI) systems and histological findings by percutaneous biopsy with immunohistochemical analysis for hormone receptor status, HER2 and Ki76. Sentinel lymph node (SLN) biopsy using methylene blue and indocyanine green dye method was performed to avoid axillary lymphadenectomy in four patients (case 1,3,4,7), while axillary lymphadenectomy was performed on the other four patients.

The demographic data of patients is shown in Table 1. The age of patients ranged from 41 to 77 years. Three of patients suffered from lt. breast cancer (cases 3,4,7) while the other 5 patients suffered from rt. breast cancer. One patient presented with Paget's disease (case 3), the other seven patients presented with IDC, two of them with stage 1 and five patients with stage 2.

Gisotti flap technique was applied to the eight patients.

Grisotti technique

The operation started with marking of the NAC outline, another smaller circle being just below the NAC and also the inframammary sulcus then, the medial and lateral borders of the flap were drawn extending from the medial and lateral margins of the areolar down to the inframammary fold and converging distally to give a comma-shaped appearance. Then complete de-epithelialization of the flap (except the new areola) was done (Figure 1 and 2).

Figure 1: Marking of Grisotti flap.

Figure 2: Incision and de-epithelialization of the flap which harvested as laterally based flap.

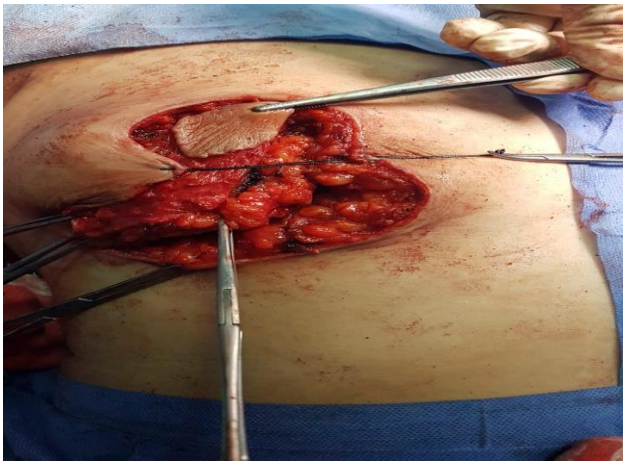

Figure 3: Central quadrantectomy including NAC and tumor.

Figure 4: Closure of wounds with inserted drain.

Figure 5: Postoperative view of Grisotti flap technique after 3 months with excellent esthetic outcome; the patient refused nipple reconstruction, areola tattooing, and contralateral surgery for symmetry.

Central quadrantectomy including NAC and tumor with a column of tissue from the subcutaneous layer down to the pectoral fascia was done with marking the specimen peripheries for intra-operative frozen section analysis (Figure 3). Four titanium clips were placed along the margins of the tumor bed to facilitate subsequent adjuvant radiotherapy. The medial and inferior margins of the flap were then incised down to the pectoral fascia with wide mobilization of the flap from the pectoral fascia; then, the flap was advanced and rotated to fill the defect. With complete suture of the wounds (Figure 4). Another separate incision in the axillary fold was done for axillary LN dissection. The same procedure was done for Paget disease of the nipple.

Table 1: Characteristics of the 8 patients with centrally located breast cancer.

Patients	Age (year)	Type of tumour	TNM staging	SLN status
Case 1	52	IDC	II	positive
Case 2	41	IDC	II	Not done
Case 3	63	Paget disease	-	negative
Case 4	77	IDC	I	positive
Case 5	58	IDC	II	Not done
Case 6	52	IDC	II	Not done
Case 7	49	IDC	I	negative
Case 8	61	IDC	II	Not done

Pathological evaluation

All specimens were subjected to histopathology and immunohistochemical examination including ER, PR, Her-2-neu and ki-67. Margins were regarded as negative margins in all cases. Oncological treatments were completed according to national protocols with chemotherapy, radiotherapy, biological treatment and hormonal therapy if indicated.

Postoperative complications

Recorded complications included minor wound dehiscence (case 5) and surgical site infection (case 8) requiring only outpatient conservative management.

Esthetic and oncologic results

In order to evaluate the esthetic outcomes which were judged by both surgeon and patient satisfactions. The

subjective patient satisfaction about her reconstructed breast was expressed as excellent (five points), good (four points), fair (three points), poor (two points), and very poor (one point). The 6-month subjective patient satisfaction was excellent in 6 patients, good in 2 patients (Figure 5).

Postoperative follow-up

Postoperative clinical follow-up was done at three months intervals and included palpation of the breast and axilla. Tumor marker (CA 15-3), mammograms, and ultrasonography were done according to the standard protocol. MRI was done when needed. There was no episode of local recurrence or systemic metastasis after an average follow-up duration of 11.25 months (range 6 to 15).

DISCUSSION

Patients with CLBC account for 5% to 20% of breast cancer cases and, for a long time, they have been denied BCS and instead been conventionally treated with mastectomy.[20] The high incidence of NAC involvement associated with these tumors necessitates nipple and areola resection together with an adequate safety margin around the tumor, which has yielded acceptable cosmetic results and oncological control.[21]

Although Paget's disease of the nipple had been extensively studied, its optimal treatment remains the subject of controversy. In 1991, Dixon et al reported the results obtained from 48 cases of Paget's disease without a palpable lump that had undergone either simple mastectomy or cone excision of the NAC.[22] They advocated mastectomy in these cases because locoregional recurrence was found in 40% of cases after cone excision and in only 5.4% of cases after mastectomy. On the other hand, other reports concluded that BCT could safety be proposed to patients with Paget's disease.[23]

Simple closure of the central defect, both vertically and horizontally, gave the breast a particular shape, which appeared as if the breast had been amputated at the tip.[23] Central quadrantectomy including NAC resection through an elliptical incision was advocated by Pezzi et al and yielded satisfactory results without reconstruction.[24] Clough et al advocated immediate breast repair after central tumor resection, and declared that cosmetic results were poor following simple lumpectomy and that secondary reconstruction in the breast was very difficult.[25]

Some surgeons instead advocate to perform a mastectomy, particular skin-sparing mastectomy followed by immediate breast reconstruction using autologous or implant-based techniques.[26,27]

Grisotti flap technique is a partial mastectomy and an immediate volume replacement technique that was reported in 1994.[28] Grisotti flap has become a more acceptable standard approach as it allows reconstruction of the defect, following quandrantectomy, by utilizing an advancement and rotation of a random pattern dermoglandular pedicle.[29] This technique can yield excellent cosmetic results and avoid mastectomy in selected patients.[30]

In this study, we did not report any cases of local recurrences or distant metastasis, as usually reported by other authors, this can be explained by the small number dictated by the relative rarity of the CLBC, not exceeding 9% of breast cancer cases.[31,32] Another cause might be the short time of follow up, which actually was not one of the main intentions of this effort. However, it worth mentioning in this context that, other authors reported in extended series of 298 patients treated with OBS, 5-year recurrence-free and overall survival rates of 93.7% and 94.6%, respectively.[33] Despite the resultant smaller volume following OBS, the shape and the form of the breast was preserved. Most patients do not request, or require, further surgery for cosmesis. The techniques used mainly involve direct incisions. These scars are rarely conspicuous because they become less visible after radiotherapy; however, they are much longer than usual lumpectomy scars, and patients should be warned of this drawback.[31]

However, the oncologic outcome of BCS was shown to be comparable to the classic mastectomy in cases of central breast tumors. For example, after a median follow-up of 42 month of 69 patients who underwent either BCS or mastectomy, there was no difference between both groups with respect to local breast or axillary recurrence, systemic metastases, or disease-related death.[34]

Moreover, all patients were reluctant to undergo a NAC reconstruction, though it is a much simpler procedure if compared to contralateral symmetrization, this was also reported by other not only Egyptian colleagues, but also Italian authors; which insinuated that simple preservation of the breast mound for a feminine body contour was the most essential requirement for women, especially in relatively conservative societies.[29]

In this study, the cosmetic result was evaluated by patients as excellent in 6/8 (75% of patients, good in 2/8 (25% of patients), This was similar to the results reported by other authors who reported excellent up to 80%, and good up to 20. Similarly, previous studies showed a very good patient acceptance. For example, Wagner et al examined the patient satisfaction of 33 patients after BCS in the form of central quadrantectomy with complete removal of the NAC which reveled excellent in 80 % and good in 20 %with no poor result.[34,35]

CONCLUSION

Despite the challenges in restoring the central defect after resection of the central breast tumors, using the oncoplastic Grisotti technique are considered acceptable alternatives to mastectomy and yield a satisfactory esthetic outcome with lower morbidity. However, further long-term study on larger number of patients is needed to assess the long-term outcome of this surgical procedures in terms of survival.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2020. CA Cancer J Clin. 2020;70:7-30.
2. Franceschini G, Martin Sanchez A, Di Leone A, Magno S, Moschella F, Accetta C, et al. New trends in breast cancer surgery: a therapeutic approach increasingly efficacy and respectful of the patient. G Chir. 2015;36(4):145-52.
3. Audretsch WP, Rezai M, Kolotas C. Onco-plastic surgery: "target" volume reduction (BCT-mastopexy), lumpectomy reconstruction (BCT-reconstruction) and flap-supported operability in breast cancer. Proceedings of the 2nd European Congress on Senology. Vienna, Austria; Moncuzzi, Bologna; 1994: 139-57.
4. Audretsch WP, Rezai M, Kolotas C. Tumor-specific immediate reconstruction (TSIR) in breast cancer patients. Perspect Plast Surg. 1998;11:71-106.
5. Clough KB, Cuminet J, Fitoussi A, Nos C, Mosseri V, et al. Cosmetic sequelae after conservative treatment for breast cancer: classification and results of surgical correction. Ann Plast Surg. 1998;41(5): 471-81.
6. Bostwick J, Paletta C, Hartrampf CR. Conservative treatment for breast cancer. complications requiring reconstructive surgery. Ann Surg. 1986;203:481-90.
7. Petit JY, Rietjens M. Deormities following tumorectomy and partial mastectomy. In: Noon B, eds. Plastic and reconstructive surgery of the breast. Philadelphia: Marcel Decker; 1991: 455-66.
8. Clough KB, Nos C, Salmon RJ, Soussaline M, Durand JC. Conservative treatment of breast cancers by mammaplasty and irradiation: a new approach to lower quadrant tumors. Plast Reconstr Surg. 1995;96(2):363-70.
9. Masetti R, Pirulli PG, Magno S, Terribile D, Fabbri MC, Chiesa F. Oncoplastic techniques in the conservative surgical treatment of breast cancer. Breast Cancer. 2000;7:276-80.
10. Kijima Y, Yoshinaka H, Funasako Y, Natsugoe S, Aikou T. Oncoplastic surgery after mammary reduction and mastopexy for bilateral breast cancer lesions: report of a case. Surg Today. 2008:335(4):9-38.
11. Kijima Y, Yoshinaka H, Ishigami S, Hirata M, Kaneko K, Mizoguchi T, et al. Oncoplastic surgery for Japanese patients with ptotic breasts. Breast Cancer. 2011;18(4):273-81.
12. Kijima Y, Yoshinaka H, Hirata M, Mizoguchi T, Ishigami S, Nakajo A, et al. Oncoplastic surgery for Japanese patients with breast cancer of the lower pole. Surg Today. 2011;41(10):1461-5.
13. Zaha H, Hakazu O, Watanabe M. Breast-conserving surgery using reduction mammoplasty. Jpn J Breast Cancer. 2008;23:211-5.
14. Grisotti A, Casella D, Calabrese C. Immediate reconstruction of central quadrantectomy defects with a rotation flap, the Grisotti technique. In: Fitzal F, Schrenk P, eds. Oncoplastic breast surgery; a guide to clinical practice. New York: Springer-Verlag Wien; 2010: 97.
15. Simmons RM, Brennan M, Christos P, King V, Osborne M. Analysis of nipple/ areolar involvement with mastectomy: can the areola be preserved? Ann Surg Oncol. 2002;9(2):165-8.
16. Vlajcic Z, Zic R, Stanec S, Lambasa S, Petrovecki M, Stanec Z. Nippleareola complex preservation: predictive factors of neoplastic nipple-areola complex invasion. Ann Plast Surg. 2005;55:240-4.
17. Shechter S, Friedman O, Inbal A, Arad E, Menes T, Barsuk D, et al. Oncoplastic partial breast reconstruction improves patient satisfaction and aesthetic outcome for central breast tumours. ANZ J Surg. 2019;89(5):536-40.
18. Geletzke A, EH, Gass JS. In: Klimberg VS, Kovacs T, Rubio IT, eds. Oncoplastic Breast Surgery Techniques for the General Surgeon. Switzerland: Springer; 2020.
19. Johnson M, Cook L, Fabio I. Rapisarda, Dibendu Betal and Riccardo Bonomi: Oncoplastic breast surgery technique for retroareolar breast cancer: a technical modification of the Grisotti f lap in patients with short nipple to inferior mammary crease distance. J Surgic Case Rep. 2020;9:1-4.
20. Multon O, Bourgeois D, Validire P. Breast cancers with central localization: conservative treatment by tumorectomy with ablation of the areolar plaque. Presse Med. 1997;26:988-94.
21. Horiguchi J, Koibuchi Y, Iijima K, Yoshida T, Takata D, Rokutanda N, et al. Local control by breast-conserving surgery with nipple resection. Anticancer Res. 2005;25(4):2957-9.
22. Dixon AR, Galea MH, Ellis IO, Elston CW, Blamey RW. Paget's disease of the nipple. Br J Surg. 1991;78(6):722-3.
23. Marshall JK, Griffith KA, Haffty BG. Conservative management of Paget disease of the breast with radiotherapy: 10- and 15-year results. Cancer. 2003;2142:97-9.
24. Pezzi CM, Kukora JS, Audet IM. Breast conservation surgery using nipple-areolar resection for central breast cancers. Arch Surg. 2004;139:32-7.

25. Clough KB, Baruch J. Plastic surgery and conservative treatment of breast cancer. Indications and results. Ann Chir Plast Esthet. 1992;37:682-92.
26. Wayand W. Central quadrantectomy with resection of the nipple-areola complex compared with mastectomy in patients with retroareolar breast cancer.Breast J. 2007;13:557-63.
27. Schrenk P. In: Fitzal F, Schrenk P, eds. Retroareolar Breast Cancer Treated with Central Quadrantectomy. Vienna: Springer Verlag; 2015.
28. Grisotti A. Immediate reconstruction after partial mastectomy. Operat Techniq Plast Reconstruct Surg. 1994;1:1-12.
29. Galimberti V, Zurrida S, Zanini V, Callegari M, Veronesi P, Catania S, et al. Central small size breast cancer: how to overcome the problem of nipple and areola involvement. Eur J Cancer. 1993;29:1093-6.
30. Betal MS, Rapisarda F, Kalra L, Bonomi R, Johri A. Grisotti flap reconstruction of central retroareolar breast cancers at west Sussex breast unit. Eur J Surg Oncol. 2011;52:996.
31. 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):1389-95.
32. Sohn VY, Arthurs ZM, Sebesta JA, Brown TA. primary tumor location impacts breast cancer survival. Am J Surg. 2008;195(5):641-4.
33. Clough KB, Kaufman GJ, Nos C, Buccimazza I, Sarfati IM. Improving breast cancer surgery: a classification and quadrant per quadrant atlas for oncoplastic surgery. Ann Surg Oncol. 2010;17(5):1375-91.
34. Wagner E, Schrenk P, Huemer GM, Sir A, Schreiner M, Wayand W. Central quadrantectomy with resection of the nipple-areola complex compared with mastectomy in patients with retroareolar breast cancer. Breast J. 2007;13(6):557-63
35. Schrenk P, Huemer GM, Sir A, Moser F, Wayand W. Tumor quadrantectomy combined with reduction mammoplasty for the treatment of breast cancer. Eur Surg. 2006;38(6):424-32.

Cite this article as: Dahshan MEE, Khalil HMM, Elnemr AAE. The outcome of Grisotti flap oncoplastic technique in central breast cancer: case series. Int Surg J 2023;10:912-7.