

Reliability of Oncoplastic Breast Conserving Surgery for Management of Early Breast Cancer in Yemeni Patients

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Background: Oncoplastic breast conserving surgery is limited in treatment of Yemeni breast cancer. The aim of this study is to evaluate the reliability and safety of oncoplastic breast surgery in Yemeni patients with early breast cancer.

Material & Methods: Patients with early breast cancer who underwent oncoplastic breast conserving surgery from July 2014 to July 2020 were included in this retrospective study. Data on the patient's demographic, tumor characteristics, the type of oncoplastic technique performed, surgical margin involved, re-excision rate, complications, satisfaction, follow up and local recurrence rate were included to evaluate the results.

Results: A total of 50 breast cancer patients underwent oncoplastic surgery by using different techniques. Volume displacement technique was the commonest technique used in 92% of the patients (local glandular flap in 64%, reduction mammoplasty in 22%, Grissoti flap in 4% and bat-wing in 2%) While the volume replacement (Latissmus dorsi flap) technique was used in 8 % of the patients with small breasts. 70% of the patients were less than 40 years old. The mean tumor size was 3.4cm. Most of the tumors (84%) was invasive ductal carcinoma. The overall postoperative complication was 14% [wound infection (4%), wound dehiscence (8%) and fat necrosis (2%)]. Re excision rate was 12% and complete mastectomy was performed for 2 patients. Patient satisfaction was 96%. Local recurrence rate was 4% with mean follow up of 23.1 (SD:16) months.

Conclusion: The oncoplastic breast conserving surgery is reliable and safe with good oncological and aesthetic outcomes for treatment of early breast cancer in Yemeni patients.

Introduction

Breast conserving surgery (BCS) together with radiotherapy has been accepted as standard treatment of early stages of breast cancer [1-3]. Conventional BCS in the treatment of early stage breast cancer has been successful in the few decades, but still many cases ended up with aesthetically non-pleasing results [4, 5]. The poor cosmetic cases had been reported up to 30% in some of the series. These aesthetically non-pleasing results had been associated especially with central, medial tumor location, large tumor size, and radiotherapy [6-8].

Oncoplastic breast surgery was started due to a need to maintain the aesthetic outcomes after surgery while still maintaining the oncological principles. Although safe and adequate tumour resection will always be a primary goal to breast surgical oncologists, better aesthetic outcomes that will not stigmatize the patients after surgery is required [9]. Oncoplastic breast surgery combines principles of oncology and plastic surgery to achieve oncological and aesthetically pleasant results [10]. Also oncoplastic breast surgery expands the indications for breast conserving allowing the resection of much larger tumour in relation to breast size. Oncoplastic breast surgery is an option for the surgical treatment of tumors larger than 4 cm and locally advanced cancers

after responding to chemotherapy, where in the past mastectomy was the only option [11, 12]. The surgical techniques used in oncoplastic breast surgery for breast conservation can be largely divided in 2 categories, either volume displacement (VD) or volume replacement (VR) [13]. The choice of the appropriate technique is based on patient and tumour characteristics because the outcomes of the surgery may depend on the type of technique. This technique involves mobilizing local glandular flaps and redistributing them to the resection defect, or it relies on harvesting autologous tissue from a remote site and transferring the flap into the resection defect.

Materials and Methods

Patients with early breast cancer (stage 1, 11) who underwent oncoplastic breast conserving surgery from July 2014 to July 2020 were included in this retrospective study. Data on patient demographics, tumor characteristics, the type of oncoplastic technique performed, surgical margin involved, re-excision rate, complications, satisfaction, follow up and local recurrence rate were included to evaluate the results. All patients underwent these techniques according to their desire. These patients were operated on by a single surgeon. Aesthetic satisfaction was verbally obtained from the patients one month postoperative. Patients were followed either phone call or in outpatient's clinic. All patients received adjuvant radiotherapy as a standard component of breast conserving therapy and also continued chemotherapy after surgery as decided by the MDT.

Statistical analysis

The data was entered and analyzed using SPSS version 26 and presented using tables and graphs. The qualitative variables were expressed by frequency and percentage, and the quantitative variables were described by range, mean, standard deviation (SD).

Results

A total of 50 breast cancer patients underwent oncoplastic breast surgery by using different techniques. The mean age was 38.5 (SD: 9.5) years old, (Range 17 to 65) years old. About 70% of the patients less than 40 years old (Table 1).

Age (year)	No.	%
< 30	9	18
31 - 40	26	52
41 - 50	9	18
51 - 60	5	10
> 60	1	2

Table 1. Age Group of the Patients (n=50).

The right side of the breast was involved as the left side (50% in each side). The anatomical site of the tumour within the breast varied between UOQ (42%), LOQ (10%), UIQ (12%), LIQ (10%), retro-areola (4%), UQ (16%) and LQ (4%). The mean tumour size was 3.4 (SD:1.1) cm. Ranging from 2 to 7 cm, with 60% of the patients presenting with palpable axillary lymph nodes. Only two patients (4%) underwent neoadjuvant chemotherapy to decrease the size of the tumor.

Volume displacement (VD) was the commonest technique used in 46 patients (92%), while volume replacement (VR) in 4 patients (8%). The volume displacement techniques included local glandular (rotation advancement) flaps in 32 patients (64%), reduction mammoplasty in 11 patients (22%), Grissotti flap in 2 patients (4%) and bat-wing in one patient (2%), while the volume replacement technique with latissimus dorsi flap was in 4 patients (Table 2).

Surgical procedure	No.	%
Volume displacement	46	92
Local glandular flap	32	64
Therapeutic mammoplasty (reduction)	11	22
Grisotti flap	2	4
Bat-wing tech.	1	2
Volume replacement (LDF)	4	8

Table 2. Types of OPS Used in the Study (n=50).

Most of the patients (84%) had invasive ductal carcinoma and 98% of the patients had lymph node involvement (Figure 1).

Figure 1. Pathological Types of the Tumor (n=50), (IDC, invasive ductal carcinoma; ILC, invasive lobular carcinoma; DCIS, ductal carcinoma In Situ).

Overall postoperative complications occurred in 14% of the patients, wound infection in 2 patients (4%) when managed conservative, wound dehiscence in 4 patients (8%). only 2 patients needed re-suturing and fat necrosis occurred in one patient (2%) (Table 3).

Variable	No. Of patients	%
No	43	86
Infection	2	4
Wound dehiscence	4	8
Fat necrosis	1	2

Table 3. Post-operative Complications (n=50).

Re-excision was performed in 6 patients (12%) who had a close margin (< 2 mm). Two patients (4%) had an involved margin and needed a completion mastectomy. Forty - eight patients (96%) were satisfied with the results while tow patients (4%) were not satisfied.

The mean follow up of the patients was 23.1 (SD:16) months (range 5 - 60) months. Two (4.7%) patients had local recurrence, one at 24 and another 15 months after surgery. Seven patients were lost for follow up.

Discussion

Oncoplastic breast conserving surgery should be recommended versus standard breast conserving surgery for the treatment of operable breast cancer in adult women who are suitable candidates for breast conserving surgery [14].

Youssef et al., (2018) in their study recommended oncoplastic breast surgery as the standard of treatment in early breast cancer and in selected cases with locally advanced breast cancer showed good response to neoadjuvant chemotherapy [15].

Our study revealed that oncoplastic breast conserving surgery was useful in patients with early breast cancer such as patients with large tumor to breast size ratio or patients with macromastia. Most of our patients (92%) had volume displacement techniques. The selection of the type of oncoplastic technique in managing breast cancer depends on the tumor size to breast size ratio, where the mean tumor size in our study was 3.4 cm (ranging 2 - 7cm). So different techniques were

used in our study. Among the volume displacement techniques 64% of our patients had wide local excision with local glandular flap and nipple areola complex (NAC) re - centralization. This technique is simple, safe and maintains the shape of the breast (Figure 2).

Figure 2. Oncoplastic Technique Using a Local Glandular Flap (A), Preoperative View; (B), The Resected Tumor; (C), Intraoperative View; (D), 4 Weeks Postoperative View.

When the volume to be excised was larger in a large breast a therapeutic mammoplasty technique was performed. This technique reduced the size of large breast, improved the margins of the tumor resected, in addition it preserved the shape of the breast. It gave good aesthetic results especially when reduction mammoplasty was done also for the contralateral side for symmetrization (Figure 3).

Figure 3. Oncoplastic Technique by Using Inferior Pedicle Reduction Mammoplasty, (A), Preoperative View; (B), Intraoperative View.

The therapeutic mammoplasty in our study included a Grisotti flap for central tumors, superior pedicle mammoplasty for lower pole tumors and an inferior pedicle mammoplasty for upper pole tumors. Clough et al., (2003) reported therapeutic mammoplasty as a good technique for cosmetic outcomes allowing wider margins of tumor resection making it oncologically favourable [16]. Yazar and colleagues (2018) believed that the oncoplastic approach to breast conserving surgery in patients with macromastia had many advantages as it improved the final aesthetic results by maintaining the natural breast contours, especially in large tumors maintaining the breast contour after resection has proven to be challenging [17]. It has been reported in earlier studies that more than 15 - 20 % reduction in the breast volume depending on tumor location, can decrease the aesthetic outcome of the surgery significantly [2, 18]. This volume was reported to be low as 5 % for medial tumor location [19]. When the breast size in our patients was small a volume replacement with latissimus dorsi myocutaneous flap (8%) was performed to maintain a good safety margin with good cosmetic results (Figure 4).

Figure 4. Oncoplastic Technique of VR with Latissimus Dorsi Flap (A, B), Preoperative View; (C, D), Postoperative View.

Preoperative tumor size, tumor location and intra -operative margin assessment are mandatory to obtain clear margin while preserving breast contour. There is an international agreement that 'no tumor on ink' is an acceptable resection margin in invasive breast cancer [20, 21] even though a recent meta-analysis [22] suggested that a 2 mm margin may be more adequate. Andre and colleagues, (2020) reported, no advantage for resection margins wider than 2 mm [23]. In our study we assessed the surgical margins blindly by excising more tissue around the tumor due to lack of frozen section analysis in our hospitals. Our results revealed that 6 patients (12%) had a close margin (< 2 mm) and 2 patients (4%) had a positive margin as a postoperative histopathology results. Re - excision and mastectomy were performed in the patients with close and positive margins respectively. These results are similar to another study where ten patients (14%) had positive margins, for which seven (10 %) patients required re - excision and three patients required mastectomy [24].

Studies reported that the average complications rate of (16%) associated with oncoplastic breast surgery are acceptable [25]. The overall complications in our study was (14%), including wound infection (4%) treated conservatively, wound dehiscence (8%), only 2 patients treated with re - suturing and fat necrosis (2%). In comparison another study stated that the common complications following oncoplastic techniques especially volume displacement technique were delayed wound

healing (3 - 15%), fat necrosis (3 - 10%) and infection (1 - 5%) [26].

In our study, the patient satisfaction regarding the aesthetic outcomes was 96%. This is similar to another study which revealed that all patients were aesthetically satisfied and were also relieved from their symptoms related to macromastia [17]. Dahlback and colleagues, (2016) stated a poor patient satisfaction in Standard breast conserving surgery when more than 20% of the preoperative breast volume was excised [27].

The follow up of our patients ranged from 5 to 60 months, in which tow patients (4.7%) had local recurrence. One of them occurred 24 months after the primary surgery and the other 15 months after the primary surgery. This is similar to another study which reported 6.8% local recurrence in a 540 consecutive patients who underwent oncoplastic breast surgery for cancer with a median follow up 49 months (6 - 262 months) [28]. Also another study revealed that for cancer recurrence rate there was no significant difference between oncoplastic surgery and standard breast conserving surgery, sooncoplastic breast surgery is a safe and a useful option in suitable patients [29].

Our study is not without limitations. It is a single center study with a small sample size. Patient's ignorance and fear from local recurrence caused most patients to deny oncoplastic surgery, despite breast cancer affecting a younger age in Yemen, who would usually seek to preserve the breast versus mastectomy. Also lack of frozen section analysis limits oncoplastic breast surgery in many cases. In addition most of the patients present in a late stage.

In conclusion, our results confirm that oncoplastic breast conserving surgery is reliable for surgical treatment of early breast cancer in Yemeni patients. It is safe with good oncological and aesthetic outcomes. So it is important to choose the proper technique for each patient.

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Ethics Committee

The study was approved by Sana'a University Medical School Research Committee.

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