

## Cosmetic Outcomes and patient Satisfaction after Volume Displacement Oncoplastic Breast Surgery for Early Breast Cancer – a study

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**Abstract:** Purpose: Oncoplastic breast surgery (OPS) is now considered as the ideal surgery in treatment of breast cancer. This study was done to evaluate the patient satisfaction and cosmetic outcome of volume displacement oncoplastic breast surgery in women treated at a tertiary care cancer hospital in south India.. Methods: This is a prospective study of 23 patients who had volume displacement OPS between January 2018 and December 2019. The Patient satisfaction and Cosmetic outcome was evaluated by patients' questionnaire and a doctor. The satisfaction was assessed by a questionnaire divided into four categories; satisfaction with breast cosmesis, satisfaction with reconstruction method, satisfaction on operative method, side effects, and preference of operative method. Results: About 90% of patients answered above the fair in cosmetic items and operative methods, only less than 5% were unhappy with severe complications such as cramps or limitations of exercise. The patients' cosmetic satisfaction score and doctor's cosmetic assessment also matched. Most patients preferred breast contour over short scar regardless of age and marital status (good contour 54% vs. short scar 21%). Conclusion: Volume displacement OPS offers both the best possible cosmetic outcome and high patient satisfaction after breast cancer surgery. Most women consider good contour better than the size of scar, meaning that volume displacement OPS is a recommendable.

**Key words:** Breast Cancer, Oncoplastic Breast Surgery, Cosmetic Outcomes

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### I. Introduction :

Breast conserving surgery (BCS) is one of the standard treatments for early breast cancer. The proportion of BCS to Mastectomy has gradually grown, now accounting for up to 70% of all breast cancer surgery worldwide [1-4]. In comparison to

Mastectomy, BCS has the benefits of better cosmesis while showing no difference in the oncologic outcomes.

[1,2]. However, sometimes BCS has limitations relating to oncologic (tumor volume, multifocality) and anatomic (size, tumor-breast ratio, tumor location) features [5]. Because of these limitations, oncoplastic surgery has emerged achieving oncologic safety whilst satisfying cosmetic outcomes [6-8]. Oncoplastic surgery first described by Audretz in 1998, meant immediate reconstruction to avoid deformity after BCS. Today the term is used to include a broader aspect, which includes both immediate and delayed reconstructions [10,11]. Breast Oncoplastic surgery is divided into two large categories, including volume displacement and volume replacement. The former is resection of cancer along with reshaping breast tissue; the latter is using autologous flap or prostheses to recreate breast contour [12].

Breast oncoplastic surgery is now worldwide approved, and includes various techniques [13,14]. Indian women present with larger tumors in smaller breast, thus further magnifying the role of oncoplastic surgery. This study was performed to survey the satisfaction rates of early breast cancer patients presenting to a tertiary cancer centre in Tamilnadu who underwent volume displacement oncoplastic surgery.

### II. Methods

Between January 2018 and December 2019, a total of 23 patients underwent oncoplastic surgery with breast cancer at the department of Surgical Oncology at The Government Arignar Anna Memorial Cancer Hospital. Among patients, 23 patients who had agreed with this study were enrolled in this study.

Patients' satisfaction was surveyed with a questionnaire and a doctor evaluated the cosmetic outcome. A doctor who did not participate in the surgery recorded the doctor's judgment on the aesthetic point of view.

We also assessed the the patients' acceptability of long scars, which are seen in results of oncoplastic surgery. This study was approved by the intuitional Review Board of Hospital.

### **Volume displacement oncoplastic surgery**

Oncoplastic surgery is classified into three different groups based on the amount of excised tissue, skin removed and the displacement of breast fibroglandular matrix. Simple glandular advancement (SGA) is the surgical technique which does not need further skin excision, and can be performed only for small mass with small resulting defects. The defect is filled with breast matrix displacement which is of small amount. Dermoglandular advancement (DGA) is performed when the defect is relatively large volume and a further skin excision needs to be made, excising the breast mass with a surrounding margin of normal parenchyma followed with then displacement of skin and breast tissue matrix to fill in the defect. Dermoglandular rotation (DGR) requires a long skin incision with wide excision of breast parenchyma and skin, thereby resulting in a relatively large defect which is replaced by the rotation of another quadrant of breast matrix. Technique is selected based on tumor and breast size (excision volume) and tumor location, as judged by the operating surgeon.

### **Questionnaire on patients' satisfaction**

The questionnaire on patients' satisfaction was carried out during the follow-up visit at least three months after surgery. The satisfaction was assessed by a questionnaire divided into five categories; satisfaction with breast cosmesis, satisfaction with reconstruction method, satisfaction on operative method, side effects, and preference of operative method. The patients' acceptability of long surgical scar while maintaining breast contour was also assessed. Patients answered all these questions of the five-point scale (Table 1).

### **Doctor's cosmetic assessment**

Cosmetic outcome was evaluated by a doctor who was not part of the surgical team. He/ She inspected the operated breast and compared with the opposite breast with regards to breast shape and symmetry, dimpling, nipple deviation, deformity, scar contracture either at the clinic during the patient follow up without knowledge of questionnaire results. The result was classified according to the above mentioned criteria using a four point scale [16] and scored as follows: (1) excellent = 4; treated breast was identical to untreated breast, (2) good = 3; treated breast was slightly different to untreated breast (3) fair = 2; tr breast was clearly different to untreated breast, (4) poor = 1; treated breast was seriously distorted

### **Statistical analysis**

The survey on both the patients' satisfaction and doctor's assessment were technically analyzed on each aspect. Analysis of variance test was used for the comparison of mean score. All statistical tests were performed by SPSS ver. 18 and P-value < 0.05 was considered as statistically significant in all results.

## **III. Results**

### **Patients' characteristics**

A total of 23 females were enrolled in this study and their mean age of the patients was  $48 \pm 9.0$  years. The mean tumor size was  $2.9 \pm 1.4$  cm. In terms of tumor location, 14 tumors located in upper outer quadrant, 3 tumors in lower outer quadrant, 4 tumors in upper inner quadrant, and 2 tumors in lower inner quadrant. In operative methods, 7 patients underwent SGA, 14 patients underwent DGA and the rest 2 patients underwent DGR.

### **Survey on patients' satisfaction and doctor's cosmetic assessment**

Table 3 shows the patients' satisfaction with breast cosmesis, satisfaction with reconstruction method, satisfaction on operative method, side effects, and preference of operative method. For the cosmetic appearance, over the 50.0% of the patients were above satisfied in all questions except for the undressed appearance (44 %). However, 82% of patients answered above the fair in their undressed appearance. In respect to operative method, 86% were above satisfied in their operative results. Patients showed their satisfaction on the results coincide expectation before surgery and surgery procedure. In the case of side effect, less than 26 % of all patients experienced side effect in all items.

Doctor's cosmetic perception on volume displacement breast oncoplastic surgery showed relatively good results. Among the cases, 21% and 48% cases were scored excellent and good, respectively. Only, less than 10 % were seen to have poor outcomes (Table 4).

86% of the patients preferred good contour to long scar. Only 16 % patients preferred short scar despite bad contour.

**IV. Discussion**

Oncoplastic surgery consists of two categories, which are volume displacement and volume replacement surgery [12]. Among these, volume displacement oncoplastic surgery constitutes resection of cancer and reshaping breast tissue. This is usually done in patients with a large breast volume [17]. With this in mind, displacement oncoplastic surgery may not be feasible in women with small to medium breast. Moreover, the acceptability of long scar with a good contour has not been evaluated.

This study studied the satisfaction of patients with breast cancer undergoing volume displacement breast oncoplastic surgery. Cosmetic outcome was found to be satisfactory in over 50% of all patients in all questions except for the undressed appearance. In complication items, only less than 5% of all patients reported of severe complications such as cramps or limitations of exercise.

These results are relatively high satisfaction results comparable to others, and we think that this might be attributed to specimen weight to breast volume ratio. [17,18]. Although this study did not compare satisfaction between oncoplastic surgery and BCS, the patient cosmetic satisfaction rated up to about 90% (including fair) with severe complications being less than 5%. This suggests that oncoplastic surgery is a good surgical technique.

This study has evaluated the acceptability of long scar for good breast contour. Good breast contour is preferred over short scar (86% vs. 16%), regardless of age and marital status. This shows that more women put importance on general appearance with their clothing on.

**V. Conclusion :**

Volume displacement breast oncoplastic surgery ensures both the best possible cosmetic outcome of breast cancer resection with high patient satisfaction. For this reason, it is a recommendable surgical technique. Women tend to give importance general contour of breast more than the size of scar for cosmetic satisfaction.

**CONFLICT OF INTEREST**

We have no potential conflict of interest relevant to this article.

**Table 1 – Patients cosmetic satisfaction questionnaire**

<u>A</u> SATISFACTION WITH BREAST COSMESIS						
		Very unsatisfied Score - 1	Mildly dissatisfied Score - 2	Satisfied Score -3	Highly Satisfied Score - 4	Extremely satisfied score - 5
1	Appearance in mirror clothed					
2	Appearance in mirror unclothed					
3	Shape of breast when wearing bra					
4	Shape of breast when not wearing bra					
5	Feeling normal with clothes					
6	Bras fit comfortably					
<u>B</u> SATISFACTION WITH RECONSTRUCTION OUTCOMES						
1	RESULT OF RECONSTRUCTION					
2	SIZE OF BREAST					
3	HOW NATURAL BREASTS LOOK					
4	HOW BREASTS FEEL TO TOUCH					
5	BREASTS MATCHED TO EACH OTHER					
<u>C</u> SATISFACTION OF OPERATIVE METHOD						
1	ARE YOU SATISFIED WITH RESULT OF SURGERY					
2	DOES THE RESULT COINCIDE WITH YOUR EXPECTATION BEFORE THE SURGERY					
<u>D</u> SIDE EFFECTS						
1	PAIN ON OPERATED BREAST					
2	CRAMPS AROUND THE BREAST					
3	LIMITATIONS ON MOVING ARM					
4	PAIN ON SHOULDER OR ARM					
<u>E</u> PREFERENCE OF OPERATIVE METHOD						
1	IS IT ACCEPTABLE THAT SCAR IS OBVIOUS WHEN THE BREAST SHAPE IS SATISFACTORY					
2	IS IT ACCEPTABLE THAT THE BREAST SHAPE IS UNSATISFACTORY WHEN THE SCAR IS BARELY VISIBLE					

**Table 2 Patient Characteristics**

Number of patients	23	
Mean age of patients	48 +/- 9 years	
Brassiere cup size	Large	4
	Medium	10
	Small	9
Tumor location	UO	14
	LO	3
	UI	4
	LI	2
Operative Method	SGA	7
	DGA	14
	DGR	2

**Table 3 - Questionnaire results**

<b>A</b>						
<b>SATISFACTION WITH BREAST COSMESIS</b>						
		Very unsatisfied Score - 1	Mildly dissatisfied Score - 2	Satisfied Score - 3	Highly Satisfied Score - 4	Extremely satisfied score - 5
1	Appearance in mirror clothed	<u>1</u>	<u>3</u>	<u>8</u>	<u>6</u>	<u>5</u>
2	Appearance in mirror unclothed	<u>1</u>	<u>2</u>	<u>7</u>	<u>9</u>	<u>4</u>
3	Shape of breast when wearing bra	<u>1</u>	<u>2</u>	<u>7</u>	<u>10</u>	<u>3</u>
4	Shape of breast when not wearing bra	<u>1</u>	<u>3</u>	<u>6</u>	<u>9</u>	<u>4</u>
5	Feeling normal with clothes	<u>0</u>	<u>4</u>	<u>7</u>	<u>8</u>	<u>4</u>
6	Bras fit comfortably	<u>1</u>	<u>3</u>	<u>7</u>	<u>8</u>	<u>4</u>
<b>B. SATISFACTION WITH RECONSTRUCTION OUTCOMES</b>						
1	RESULT OF RECONSTRUCTION	<u>1</u>	<u>2</u>	<u>12</u>	<u>6</u>	<u>2</u>
2	SIZE OF BREAST	<u>1</u>	<u>3</u>	<u>8</u>	<u>7</u>	<u>4</u>
3	HOW NATURAL BREASTS LOOK	<u>1</u>	<u>3</u>	<u>9</u>	<u>6</u>	<u>4</u>
4	HOW BREASTS FEEL TO TOUCH	<u>1</u>	<u>5</u>	<u>9</u>	<u>5</u>	<u>3</u>
5	BREASTS MATCHED TO EACH OTHER	<u>1</u>	<u>3</u>	<u>8</u>	<u>7</u>	<u>4</u>
<b>C. SATISFACTION OF OPERATIVE METHOD</b>						
1	ARE YOU SATISFIED WITH RESULT OF SURGERY	<u>1</u>	<u>3</u>	<u>9</u>	<u>6</u>	<u>4</u>
2	DOES THE RESULT COINCIDE WITH YOUR EXPECTATION BEFORE THE SURGERY	<u>1</u>	<u>2</u>	<u>7</u>	<u>9</u>	<u>4</u>
<b>D. SIDE EFFECTS</b>						
1	PAIN ON OPERATED BREAST	<u>0</u>		<u>3</u>	<u>8</u>	<u>8</u>
4	CRAMPS AROUND THE BREAST	<u>1</u>	<u>4</u>	<u>7</u>	<u>6</u>	<u>5</u>
3	LIMITATIONS ON MOVING ARM	<u>2</u>	<u>4</u>	<u>7</u>	<u>6</u>	<u>4</u>
4	PAIN ON SHOULDER OR ARM	<u>1</u>	<u>2</u>	<u>7</u>	<u>10</u>	<u>3</u>
<b>E. PREFERENCE OF OPERATIVE METHOD</b>						
1	IS IT ACCEPTABLE THAT SCAR IS OBVIOUS WHEN THE BREAST SHAPE IS SATISFACTORY	<u>0</u>	<u>3</u>	<u>7</u>	<u>10</u>	<u>3</u>
2	IS IT ACCEPTABLE THAT THE BREAST SHAPE IS UNSATISFACTORY WHEN THE SCAR IS BARELY VISIBLE	<u>2</u>	<u>4</u>	<u>7</u>	<u>6</u>	<u>4</u>

**Table 4 Doctors Cosmetic Assessment**

<b>ASSESSED PARAMETER</b>		<b>EXCELLENT SCORE -4</b>	<b>GOOD SCORE -3</b>	<b>FAIR SCORE - 2</b>	<b>POOR SCORE - 1</b>
1	BREAST SHAPE AND SYMMETRY	<u>6</u>	<u>11</u>	<u>5</u>	<u>1</u>
2	DIMPLING	<u>5</u>	<u>11</u>	<u>6</u>	<u>1</u>
3	NIPPLE DEVIATION	<u>6</u>	<u>10</u>	<u>4</u>	<u>3</u>
4	DEFORMITY	<u>6</u>	<u>10</u>	<u>4</u>	<u>3</u>
5	SCAR CONTRACTURE	<u>4</u>	<u>11</u>	<u>5</u>	<u>3</u>

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