Patient Reported Outcomes and Nipple Position following Nipple-Sparing Mastectomy: A Prospective Examination of Prepectoral and Subpectoral Patients

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Background

- Nipple-sparing mastectomy (NSM) is becoming more popular. The role of pocket dissection (prepectoral vs subpectoral) in implant-based reconstruction on patient reported outcomes (PRO's) and nipple position following NSM has not yet been explored.
- We hypothesize that prepectoral reconstruction results in superior PRO's and more anatomical nipple position compared to subpectoral reconstructions following NSM.

Methodology

- Patient Criteria: Women > 18 years who underwent NSM with implant-based reconstruction. All patients had a minimum of 6-month follow-up and 3D images before and after surgery.
- PRO 's and clinical outcomes were prospectively collected as part of routine clinical care.
- The VECTRA XT 3D imaging system was used to take preoperative and postoperative images as part of routine care. Vectra analysis module (VAM) software was used to determine nipple displacement. Images were superimposed and markers were used to calculate the x-,y-, and z axis distances between the nipple positions in the two images. (Fig 1)
- Outcome measures: BREAST-Q satisfaction with breasts and physical well-being of chest, Demographics, short term (30 day) and long term complications, surgical characteristics, and nipple displacement were collected.
- Analysis: Prepectoral and subpectoral were compared on demographics, clinical characteristics, complications, BREAST-Q PROs, and X-, y-, z- coordinates in VAM for changes in nipple position.

Results

Table 1. BREAST-Q Scores Over Time by Pocket Dissection

Satisfaction with Breasts	Implant		
	Prepectoral, N = 59[1]	Subpectoral, N = 88[1]	p-value[2]
Preoperatively	44 (0, 58)	48 (0, 64)	0.2
	Prepectoral, N = 46[1]	Subpectoral, N = 63[1]	p-value[2]
6 months postoperatively	60 (51, 73)	59 (48, 74)	0.7
	Prepectoral, N = 49[1]	Subpectoral, N = 79[1]	p-value[2]
1 year postoperatively	61 (49, 67)	64 (53, 78)	0.3
Physical Well-Being of Chest	**Implant**		
	Prepectoral, N = 60[1]	Subpectoral, N = 89[1]	p-value[2]
Preoperatively	76 (64, 92)	72 (64, 80)	0.034
	Prepectoral, N = 46[1]	Subpectoral, N = 63[1]	p-value[2]
6 months postoperatively	80 (72, 92)	72 (64, 88)	0.11
	Prepectoral, N = 51[1]	Subpectoral, N = 79[1]	p-value[2]
1 year postoperatively	85 (70, 100)	76 (68, 85)	0.051

[1]Median (IQR) [2]Wilcoxon rank sum test

Table 2. Patient Complications by Pocket Dissection

Characteristic	Prepectoral, N = 96[1]	Subpectoral, N = 120[1]	p-value[2]
Infection	1 (1.0%)	4 (3.3%)	0.4
Hematoma OR Return	7 (7.3%)	3 (2.5%)	0.11
Mastectomy Skin Flap Necrosis	9 (9.4%)	13 (11%)	0.7
Return to OR	20 (21%)	12 (10%)	0.026*
Implant Loss	3 (3.1%)	1 (0.8%)	0.3
Nipple Necrosis/Loss	15 (16%)	26 (22%)	0.3
Return to OR (Long Term Complication)	13 (14%)	8 (6.7%)	0.090
Overall Complications (Short Term)	30 (31%)	38 (32%)	>0.9
Overall Complications (Short or Long)	30 (31%)	38 (32%)	>0.9

[1]n (%)

[2]Fisher's exact test; Pearson's Chi-squared test

Table 3. Vectra Data by Pocket Dissection

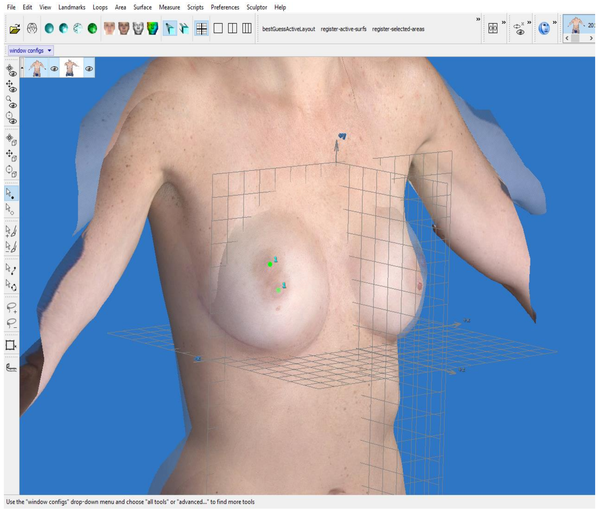
Axis	Prepectoral, N = 42[1]	Subpectoral, N = 51[1]	p-value[2]
Avg. Horizontal (X) R	-1 (-5, 3)	1 (-7, 10)	0.4
Avg. Vertical (Y) R	-5 (-11, 3)	2 (-19, 16)	0.5
Avg. Depth (Z) R	3 (-2, 10)	-1 (-8, 10)	0.4
Avg. Straight Line R	18 (12, 21)	24 (20, 29)	<0.001*
Axis	**Prepectoral, N = 36[1]**	**Subpectoral, N = 46[1]**	**p-value[3]**
Avg. Horizontal (X) L	0 (-4, 5)	2 (-8, 10)	0.9
Avg. Vertical (Y) L	-1 (-7, 5)	4 (-18, 15)	0.6
Avg. Depth (Z) L	1 (-6, 10)	-1 (-8, 8)	0.7
Avg. Straight Line L	17 (11, 24)	24 (16, 31)	0.005*

[1]Median (IQR)

[2]Wilcoxon rank sum test

[3]Wilcoxon rank sum exact test

Fig 1. Vectra superimposed images



Conclusions

- Implant pocket did not impact postoperative patient-reported outcomes in patients who underwent nipple-sparing mastectomy.
- Prepectoral had a greater incidence of return to OR compared to subpectoral with no other differences in short or long-term outcomes.
- These findings are consistent with other published studies.
- Patients with prepectoral reconstruction had less nipple displacement as compared to subpectoral following nipple-sparing mastectomy.
- We found no significance in direction of nipple displacement
- This is the first study using 3D surface imaging to investigate nipple position following NSM

References

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