Prepectoral direct-to-implant breast reconstruction after nipple sparing mastectomy through the inframammary fold without use of acellular dermal matrix: results of 130 cases

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Background/Objective

Implant-based breast reconstruction is the most common reconstructive option after mastectomy for breast cancer. The prosthesis in the prepectoral position is progressively being more used due to advantages over submuscular prosthesis such as less postoperative pain, muscle deficit and breast animation, better aesthetic result, as well as reducing time and surgical morbidity. Usually, an acellular dermal matrix or syntetic mesh (ADM) is used to cover the implant to reduce complications.

Due to the absence of studies using the prepectoral technique without ADM, the aim of this study was to review the results and complications of patients from our service who underwent this surgical technique for breast reconstruction.

Methods

A retrospective review of consecutive patients submitted to immediate reconstruction with definitive prepectoral implant after nipple sparing mastectomy (NSM) trought inframammary fold (IMF) without the use of ADM, between January 2018 and July 2019, was conducted.

Data for the following characteristics were collected for each patient: age, BMI, menopausal status, previous breast surgery, diabetes, smoking history, breast characteristics, types of neoadjuvant and adjuvant therapies performed (chemotherapy or radiotherapy) and surgical analyses (surgical indication, laterality and axillary lymphadenectomy at the same procedure). Complications and secondary surgical interventions were also evaluated.

For statistical analyses, Fischer's exact test was used and the p value established was less than 0.05.

Results

One hundred and thirty reconstructions were performed in 87 patients with a mean follow up of 6.5 months. The average age was 43 years. Patient's and surgical data are presented in Table 1.

Thirty-two mastectomies (24.6%) had at least one complication, the most common being flap necrosis (13 cases), persistent seroma (10 cases) and implant exposure (9 cases). Of these, 21 underwent a new surgical procedure and 12 (9.2%) evolved with prosthesis loss with an average of 64 days (12 to 180 days) after the first surgery.

Regarding prosthetic loss, the main risk factors associated were smoking history (OR 4; 1,48-10,8) and BMI over 25 (OR 4,4; 1,24-15,6), both with statistical significance ($p<0.05$). When analyzing all complications, the presence of previous radiotherapy (42,8% x 21,5%) or adjuvant radiotherapy (37,5% x 21,5%) and diabetes (42,9% x 23,6%) were more frequent in patients

Table 1 Demographic and patient outcomes	Total (n = 130)
Mean age ± SD (yr.)	43.53±8.69
Intervention	
Unilateral	44 (33.8%)
Bilateral	86 (66.2%)
Axillary lymphadenectomy	8 (6.2%)
Mastectomy indication	
Prophylactic	59 (45.4%)
Therapeutics	71 (54.6%)
Chemoterapy	
Neoadjuvant	56 (43.1%)
Adjuvant	7 (5.4%)
Radiotherapy	
Preoperative	7 (5.4%)
Postoperative	16 (12.3%)
BMI (Body mass index)	
BMI < 18 (underweight)	1 (0.08%)
BMI 18-25 (normal)	80 (64.5%)
BMI 25-30 (overweight)	34 (27.2%)
BMI > 30 (obesity)	9 (7.3%)
Diabetes	7 (5.4%)
Smoking history (previous or actual)	20 (15.4%)
Menopause	29 (22.3%)
Previous breast surgery	38 (29.2%)
Breast ptosis	
0	19 (14.6%)
1	68 (52.3%)
2	38 (29.2%)
3	5 (3.8%)
Breast size	
P	31 (23.8%)
M	55 (42.3%)
G	38 (29.2%)
GG	6 (4.6%)

that had complications, yet these findings did not reach statistical significance. Other factors evaluated such as chemotherapy, axillary lymphadenectomy, previous breast surgery, breast size and ptosis did not correlate with complications.

In regard to late aesthetic results, only patients with follow up over 6 months were evaluated. Of the 52 reconstructions, 69.3% had no capsular contracture and 28.8% had Baker's I or II contracture. Rippling was identified in 13 reconstructions (25%). No implant displacement or deformity animation were observed.

Table 2 Acute and Late Complications	
Surgical complications	32 (24.5%)*
Flap necrosis	13 (9.62%)
NAC (nipple areola complex) necrosis	1 (0.74%)
Implant exposure	9 (6.67%)
Persistent seroma	10 (7.4%)
Hematoma	4 (2.97%)
Implant loss	12 (9.23%)
Late complications (follow up > 6 months)**	
Rippling	13/52 (25%)
Capsular contracture Baker I	10/52 (19.2%)
Capsular contracture Baker II	5/52 (9.6%)
Capsular contracture Baker III	1/52 (1.92%)

* 32 breasts (may be more than one complication for breast)   ** 52 reconstructions evaluated
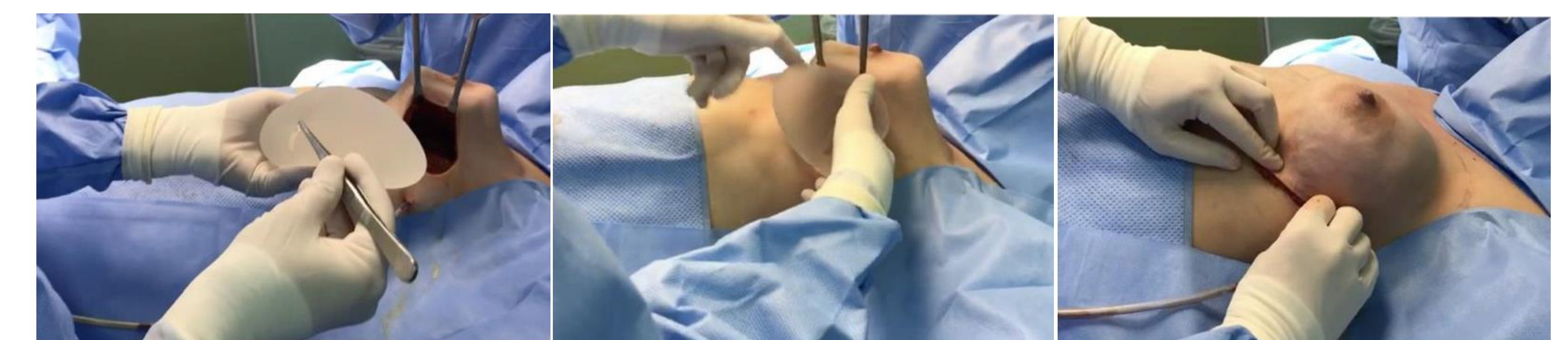
Figure 1 – surgical time of immediate breast reconstruction with prepectoral implant after nipple sparing mastectomy trought inframammary fold without dermal matrix or mesh.

Conclusion

In conclusion, our preliminary data demonstrated that breast reconstruction with definitive prepectoral implant after NSM by IMF is a promising, safe and economically advantageous technique, presenting similar results and complications rates to that with ADM or submuscular prosthesis. There are still few long-term results, but aesthetic results after 6 months were satisfatory.

References

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