

Skin-Reducing Mastectomy and Direct-to-Implant Breast Reconstruction With Submuscular-Dermal-Mesh Pocket

Stefano Bonomi, MD,* Laura Sala, MD,* Massimiliano Gennaro, MD,†
Cristian Ricci, PhD,‡ and Umberto Cortinovis, MD*

Background: Despite skin-sparing mastectomy techniques have significantly improved reconstructive options and aesthetic outcomes, patients with large and ptotic breasts remain a challenging group to treat satisfactorily. The Wise-pattern skin-reducing mastectomy (SRM) has been designed for this kind of patients but is not without morbidity. To improve safety, the authors reviewed their experience with a modified SRM and immediate 1-stage implant-based breast reconstruction, using a synthetic absorbable mesh combined with a dermal flap.

Methods: A retrospective review was undertaken to identify women with medium to large ptotic breast and medium minimally ptotic breast who had undergone SRM and direct-to-implant breast reconstruction using definitive anatomical gel implant, de-epithelialized dermal flap, and absorbable synthetic mesh, between October 2014 and December 2016. Patient demographics were queried, and complication rates, aesthetic outcomes, and patients satisfaction were assessed.

Results: Sixty-two procedures of SRM were performed in 56 patients. Forty-five women received contralateral symmetrization. Twenty-one overall complications occurred in 16 patients. Statistical correlation between risk factors and complications onset was assessed. Body mass index resulted the most substantial risk factor ($P = 0.0028$) for developing complications, whereas preoperative chemotherapy ($P = 0.0050$) and comorbidities ($P = 0.0117$) played a decent role. Smoking attitude ($P = 0.1122$), age ($P = 0.9990$), and implant weight ($P = 0.1583$) did not result as significant risk factors. The reconstructive outcomes were good to excellent in 92.8%, with patient satisfaction ranking very to highly satisfied in 84%.

Conclusions: The authors' series suggests that SRM with direct-to-implant breast reconstruction can be easily performed when an appropriate SRM pattern is designed, providing complete implant coverage with submuscular-dermal-mesh pocket.

Key Words: skin-reducing mastectomy, one-stage implant-based breast reconstruction, large ptotic breast, direct-to-implant breast reconstruction, skin-sparing mastectomy, prophylactic mastectomy

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Radical and total mastectomies rate has decreased over the time compared with skin-sparing mastectomy (SSM) and nipple-sparing mastectomy (NSM). Conservative mastectomies associate good cosmetic results with oncological safety and better quality of life.^{1–6} By preserving the native skin envelope, the inframammary fold, and the shape of the breast, it enables direct-to-implant (DTI) breast reconstruction, which improves both the cosmetic result and the psychological advantages of simple mastectomy with staged or delayed implant-based breast reconstruction.

However, to perform optimal oncological and reconstructive surgery with good aesthetic outcomes and minimal complication rates, high skills are needed. Such procedures are highly demanding and require

great ability to deal with volume and symmetry especially in medium/large ptotic breasts. These aspects are a challenge for the reconstructive surgeon because of skin envelope amount and possible nipple malposition leading to poor cosmetic outcomes.^{7–9}

Skin-reducing mastectomy (SRM) has been popularized in 2006¹⁰ as a Wise-pattern mastectomy and 1-stage reconstruction technique in large and ptotic breasts. Many authors have further published interesting refinements of this surgical procedure.^{7–8,11–17} Skin mastectomy flaps and superficial or deep nipple-areola complex (NAC) necrosis are the main complications described. Lack of complete muscular implant coverage can increase the risk of implant exposure, particularly near the inframammary fold where the implant lies directly beneath the skin wound. Furthermore, a large volume implant might also be associated with some tension on the relatively long skin flaps when an inverted-T procedure is used. This can produce wound healing problems and skin necrosis at the T-junction.¹³

Although SRM has been proposed in the past, we felt that the benefits of this technique deserve readdressing and refinements have been made to further improve safety. In this study, we described our modified technique suitable not only in medium/large ptotic breasts but also in medium minimally ptotic breasts (grade I, Regnault ptosis scale¹⁸). Two main refinements have been introduced: the use of an absorbable synthetic mesh as implant support to complete the submuscular pocket lower pole, and the dermal flap placement between the implant and the cutaneous flaps as an additional layer between alloplastic material and skin envelope. These modifications allowed for enlargement of selection criteria and reduction of complications. Risk factors and related complication rates, as well as aesthetic outcomes and patients satisfaction, were assessed.

PATIENTS AND METHODS

A retrospective review on medical records was performed on all patients who underwent postmastectomy implant-based breast reconstruction ($n = 868$) at Fondazione IRCCS Istituto Nazionale dei Tumori between October 2014 and December 2016. For inclusion in this series, we selected 56 women with medium to large ptotic breasts and medium minimally ptotic breasts who had a modified inverted-T pattern SRM and DTI breast reconstruction with definitive cohesive gel anatomical implant and absorbable synthetic mesh.

Outcomes included risk factors assessment, overall complications, unplanned secondary operations, revision procedures, aesthetic outcomes, and patient satisfaction. Postoperative complications were arbitrarily distinguished in major and minor complications. Major complications were considered major mastectomy skin flap necrosis, major cellulitis, complete nipple loss, implant exposure with subsequent implant loss, hematoma requiring reoperation, and capsular contracture. Minor complications were minor mastectomy skin flaps necrosis and cellulitis, partial nipple loss, seroma, and hematoma not requiring reoperation. Major cellulitis was defined as an infection requiring intravenous antibiotics, whereas minor cellulitis was defined as that requiring only oral or local antibiotics. Major mastectomy skin flap necrosis was defined as that managed with surgical debridement, whereas minor mastectomy

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Reprints: Stefano Bonomi, MD, Plastic and Reconstructive Surgery Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Via Venezian 1, 20133, Milan, Italy. E-mail: Stefano.bonomi@istitutotumori.mi.it.

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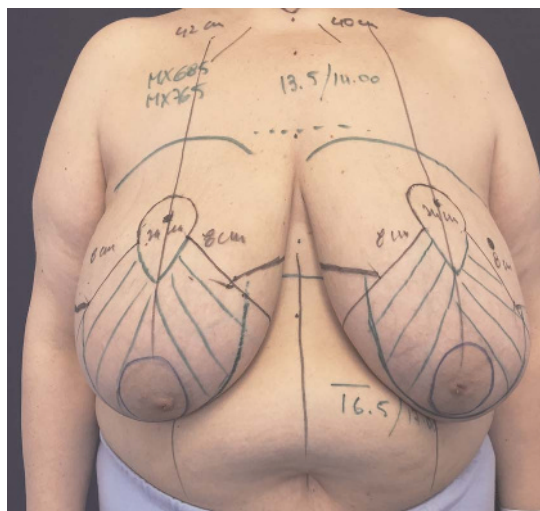


FIGURE 1. Preoperative markings for bilateral skin-reducing mastectomy in large and ptotic-breasted patient.

skin flap necrosis or epidermolysis was defined as that managed with office debridement or local wound care.

Indications and Preoperative Planning

Skin-reducing mastectomy eligibility was evaluated preoperatively by the plastic and breast surgeons. Inclusion criteria for this procedure were either women with medium or large ptotic breasts with a nipple-sternal notch distance greater than 23 cm and a nipple-inframammary fold distance longer than 8 cm eligible for a SSM for breast cancer or for prophylaxis. A new indication of the modified technique included medium breasts with minimal ptosis. Skin-reducing mastectomy was not indicated in patients who had previously received radiation therapy or undergone reduction mammoplasty.

The patient was marked preoperatively in the standing position (Fig. 1). The inframammary fold and breast meridian were drawn on both sides. The nipple new position was marked (19–23 cm) on the nipple-sternal notch line. The SRM pattern followed the contralateral breast reduction/mastopexy pattern with inverted-T scar. Vertical lines length was usually 5.5 to 7 cm, depending on reduction degree needed. The other ends of two oblique lines were then extended laterally and medially to join the inframammary fold, as in breast reduction or

mastopexy. The inferior dermal flap width was usually 6 to 8 cm. When NAC lift was less than 3 cm, a superior dermal pedicle supplying the NAC was planned; a bipedicle dermal flap for 3- to 4-cm NAC lift and NAC graft for lift greater than 4 cm were performed, according to oncological criteria.

Surgical Technique

Skin is incised and inferior or bipedicle dermal flap area is de-epithelialized and sculpted (Figs. 2A, B). Through these same incisions mastectomy, lymph node biopsy (LNB) or axillary dissection (AD) are executed. Mastectomy is performed following Cooper's ligaments plane, preserving dermal flap vascularization, according to oncological guidelines. Pectoralis major fascia is preserved. Retroareolar ducts biopsy is performed to preserve the NAC when possible.

Submuscular pocket preparation is started by incising along the lateral border of pectoralis major, and the inferior-lower insertions are cut and medial-cranial sternal insertions released. A 15 × 15-cm absorbable polyglactin mesh is used to create the lateral aspect of the pocket without raising serratus muscle and complete the lower-medial part of the pocket itself. The mesh is sutured inferiorly to the superficial fascia at the inframammary fold, laterally to serratus muscle fascia, and superiorly to inferior border of pectoralis major muscle with absorbable sutures (Fig. 3A). The implant is soaked in Rifampicin and then inserted into the pocket. Usually 1 suction drain is placed in the pocket, one in the subcutaneous plane, and one in the armpit. The inferior dermal flap is positioned over the mesh, as implant lower pole coverage and sutured above the pectoralis major instead of the inferior border of the muscle, with absorbable sutures (Fig. 3B).

When the dermal flap carries the NAC, the areola is firstly sutured in the new position and the dermal flap acts as an additional layer between the allogenic material and the skin, making the skin mastectomy flaps suture more reliable and safer, especially at the T-junction (Fig. 4A). Subcutaneous and cutaneous sutures are completed (Fig. 4B).

Suction drainages were applied until less than 30 mL were collected in 24 hours.

Aesthetic Outcomes Assessment and Patients Satisfaction Evaluation

The reconstructive and aesthetic outcomes were assessed at 12 months after surgery on clinical examination and by reviewing patients' clinical photographs by a 4-member jury, composed of a nurse, a resident, and 2 attending plastic surgeons. Various parameters were evaluated including the overall breasts shape, volume, symmetry,

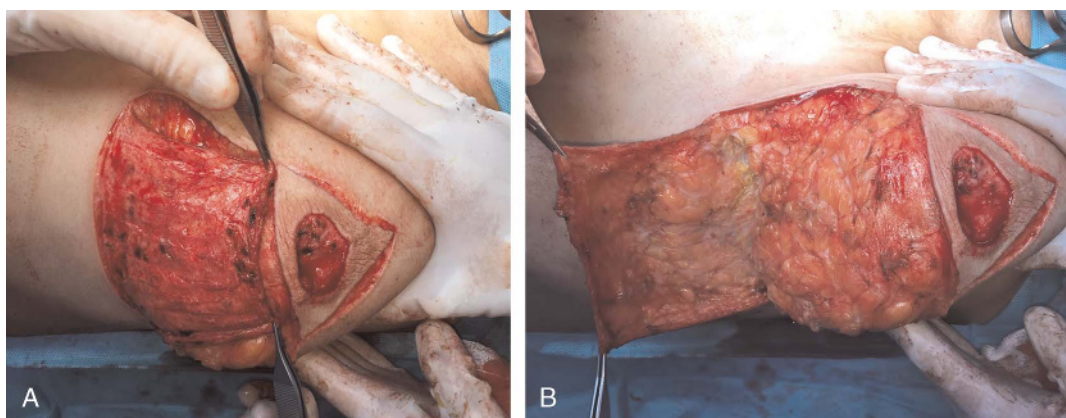


FIGURE 2. The inferior dermal flap is de-epithelialized and raised. The nipple-areola complex has been removed for oncological issues (A, B).

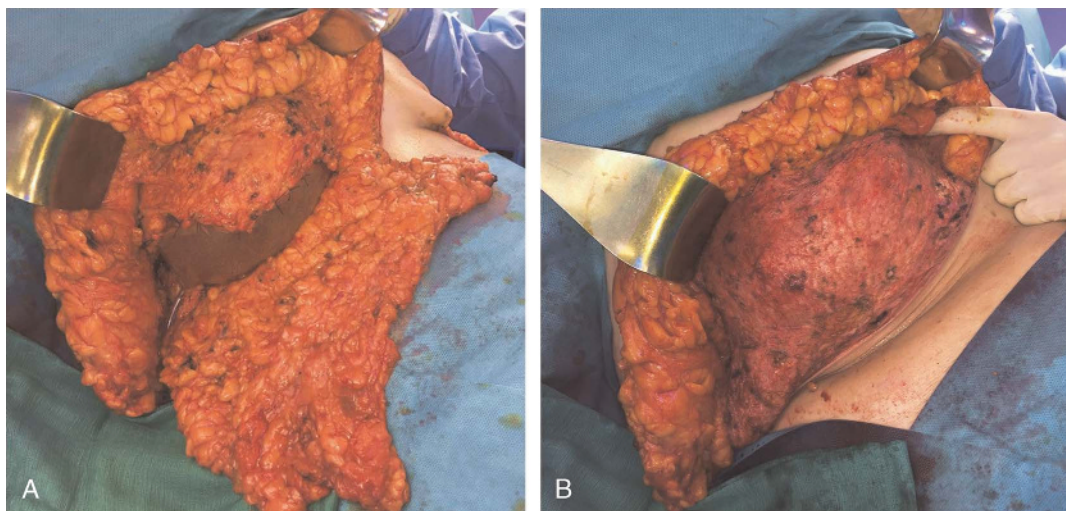


FIGURE 3. Intraoperative picture with implant in place, showing absorbable synthetic mesh sutured to the inferior border of the pectoralis major muscle and to the superficialis fascia at the inframammary fold (A). The inferior dermal flap has been previously de-epithelialized and sutured to cover the inferior pole of the implant. The dermal flap is tacked to the pectoralis muscle, covering the implant and the mesh, without tension (B).

projection, upper pole fullness, and scars on a scale of poor, fair, good, and excellent.

Satisfaction questionnaire was administered to patients asking to rank their satisfaction with breast shape, size, projection, upper pole fullness, symmetry, and scar appearance on a scale of disappointed, satisfied, very satisfied, and highly satisfied. Patients were asked whether they would undergo the same reconstructive procedure again and whether they would recommend it to other women.

Statistical Analysis

The sample was described using median and interquartile range (IR) for continuous variables, whereas frequencies and percentages were used to describe categorical variables. The single procedure was considered as analysis unit so that bilateral procedures in a single patient were considered as 2 procedures. Comparisons of age, body mass index (BMI), and implant size between subjects who experienced and those who did not experience any complication were performed using the Mann-Whitney *U* test. Results were confirmed using independent *t* test and models adjusted for surgery (unilateral, bilateral), dermal flap (with or without NAC) and mastectomy (prophylactic, therapeutic),

axillary surgery (reported as LNB/AD or no LNB/AD), comorbidities (any comorbidity, no comorbidity), preoperative chemotherapy (CT, no CT), and smoking (no smokers, former and current smokers). The association between the above mentioned characteristics and complications was evaluated using the χ^2 or the Fisher's exact test where appropriate. Statistical analysis was performed using the SAS software Version 9.3.

RESULTS

Sixty-two procedures of SRM were performed in 56 patients, and the reconstruction was unilateral in 50 patients and bilateral in 6 patients. Patients' characteristics are summarized in Table 1.

Twenty SRM were performed with NAC graft, 20 with dermal flap carrying the NAC, and 22 without NAC. Of these, 6 patients received nipple reconstruction with local flaps at the end of surgery; the remaining 16 had nipple reconstruction within 10-month postoperative period. For the unilateral cases, contralateral breast reshaping was performed at the same time in 45 patients. The mean sternal notch-nipple distance was 29 cm (range = 25–42 cm), and the mean breast width was 14 cm (range = 12–17 cm). The mean follow-up was 20 months

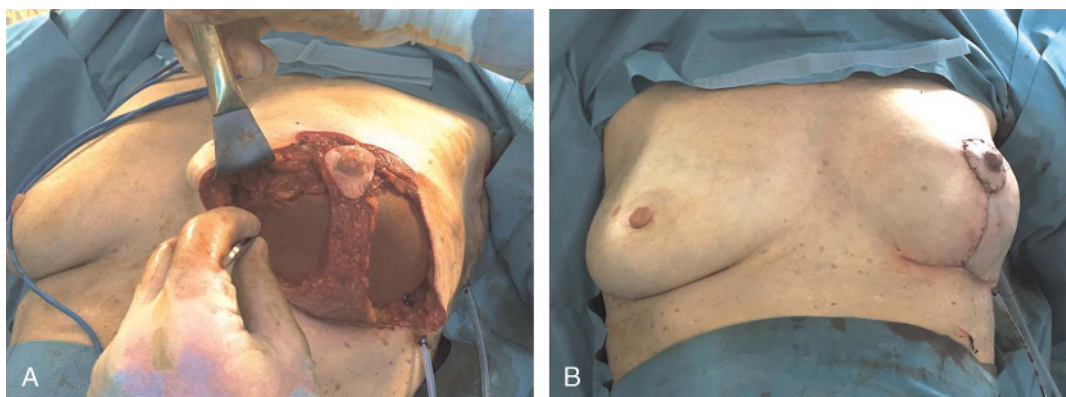


FIGURE 4. The bipedicle dermal flap carrying the NAC lies just above the pectoralis muscle and the synthetic mesh at the lower pole (A). Skin closure (B).

TABLE 1. Patients' Characteristics

Procedures	n = 62
<i>Type of Mastectomy</i>	
Prophylactic	12 (19.4%)
Therapeutic	50 (80.6%)
<i>Histology</i>	
DIST1N0	25 (40.3%)
DIST1N1	1 (1.6%)
LIN2	1 (1.6%)
Nonpathologic	11 (17.7%)
T1 N1	2 (3.2%)
T2 N0	3 (4.8%)
T2 N1	7 (11.3%)
TIS	10 (16.1%)
TIS paget	2 (3.2%)
<i>*Dermal flap</i>	
With NAC	20 (32.3%)
Without NAC	22 (35.4%)
Grafted NAC	20 (32.3%)
<i>*LNB/AD</i>	
AD	7 (11.3%)
LNB	43 (69.4%)
NO	12 (19.4%)
Patients	n = 56
<i>Surgery</i>	
Unilateral	50 (89.3%)
Bilateral	6 (10.7%)
Age, y	47.0 (40.0–56.0)
Prosthesis size, g	520 (433–618)
<i>Smoking status</i>	
Active smokers	6 (10.7%)
Former smokers	12 (21.4%)
Never smokers	38 (67.8%)
BMI, kg/m ²	23.8 (22.5–25.9)
<i>Comorbidities</i>	
Diabetes	3 (5.4%)
Hypertension	6 (10.7%)
CT = YES	4 (7.1%)
Contralateral symmetrization procedures	n = 45
Superior pedicle reduction mammoplasty	15 (33.3%)
Inferior pedicle reduction mammoplasty	7 (15.6%)
Superomedial pedicle reduction mammoplasty	14 (31.1%)
Superior pedicle with autoprosthesis mastopexy	9 (20.0%)

*Frequencies and percentages performed on number of procedures.

(range = 14–38 months). None of the patients enrolled were exposed to preoperative or postoperative radiotherapy.

Sixty-two textured extra or full-projected anatomical silicone gel-filled implants were used (range = 255–775 g), of which, 51 were Natrelle 410 (Allergan, Inc, Irvine, Calif.) and 11 CPG Mentor (Johnson and Johnson Medical, Berkshire, United Kingdom). Sixty-two absorbable Vicryl mesh (Ethicon Inc, US LLC) were used in all patients.

Medium suction drainages appliance was 20 days (range = 10–30 days).

Sixteen patients experienced 1 or more complications during the follow-up for 21 overall complications. Four patients had major

complications (7%), and 12 patients had minor complications (21%). Of these 16 patients, 11 patients experienced 1 complication (partial NAC loss and minor mastectomy skin flaps necrosis developed in 4 patients respectively, hematoma developed in 2 patients, and major mastectomy skin flaps necrosis with implant loss in 1 patient). The remaining 5 patients had 2 complications (1 patient developed hematoma and capsular contracture, 2 patients developed minor mastectomy skin flap necrosis and partial NAC loss, 1 patient developed minor mastectomy skin flaps necrosis and minor cellulitis, and 1 patient minor cellulitis and persistent seroma).

The median age was 47 years (IR = 40–56 years), and no substantial difference was found between patients who did or did not experience complications ($P = 0.9990$). The median BMI was 23.8 kg/m² (IR = 22.5–25.9 kg/m²). Body mass index was higher in patients who encountered complications (median = 25.6 vs 23.1 kg/m², $P = 0.0028$). Preoperative chemotherapy ($P = 0.0050$), diabetes, and hypertension ($P = 0.0117$) played a decent role in complications onset. Smoking attitude ($P = 0.1122$) did not result as a significant risk factor. The median implant size was 520 g (IR = 433–618 g), and implant weight did not result as a significant risk factor for complications ($P = 0.1583$) (Table 2).

Patient Satisfaction and Outcome Evaluation

Success was defined as a satisfied patient with respect to aesthetic outcome in terms of size, shape, projection, symmetry, and no need for any kind of surgical revision postoperatively. Scores were calculated from the 56 questionnaires. Patients' satisfaction was very high in 84%, regarding breast shape, size, projection, upper pole fullness, symmetry, and appearance of the scars. A total of 53 patients (95%) reported that they would have elected to undergo the procedure again and would recommend to another woman.

Regarding aesthetic evaluation by the medical staff, we have chosen a 4-member jury composed by a nurse, a resident, and 2 attendees to have a better assessment of the overall result, evaluating both the purely aesthetic and technical aspects. Each member has peculiar characteristics: the nurse, as a woman with her experience in assisting patients evaluated mainly the aesthetic result itself, according to the female aesthetic sense. The 2 attendees, with their experience, evaluated the result in its entirety, assessing the technical and aesthetic aspects, same the resident, albeit with a more limited experience. There were 54 patients available with complete preoperative and postoperative pictures that have been assessed. The overall score of breast shape, volume, projection, symmetry, and scars was good to excellent in 92.6% and fair in 7.4% (Table 3).

DISCUSSION

Skin-sparing mastectomy techniques have significantly improved reconstructive options and aesthetic outcomes for women with breast cancer. The ideal patients for DTI breast reconstruction often have small and nonptotic breasts. Patients with large and ptotic breast are challenging from a cosmetic and reconstructive point of view. Traditional tissue expansion in submuscular pocket in large-ptotic breast patients is commonly difficult especially at the lower pole. Often, the expansion not only expands the skin but also expands into the chest wall. Even with larger implants in these patients, it is difficult to provide adequate size, shape, or symmetry.

The SRM pattern has been designed for patients with macromastia undergoing mastectomy, because these patients would present a mismatch between skin redundancy and implant volume. Skin-reducing mastectomy allows excess skin envelope removal and provides a pleasant shape and symmetry with the contralateral breast that usually needs reduction. Although SRM has been previously described,^{7,10–17} we believe that it is worth revisiting and describing some refinements we have

TABLE 2. Patients Characteristics in Association with Complications

Characteristics	No Complications (n = 40)	Any Complications (n = 16)	Major Complications (n = 4)	Minor Complications (n = 12)	P*	P†
Surgery						
Unilateral	34 (60.7%)	16 (28.6%)	4 (25.0%)	12 (75.0%)	0.1676	—
Bilateral	6 (10.7%)	0 (0%)	0 (0%)	0 (0%)		
Type of mastectomy						
Prophylactic	8 (14.3%)	0 (0%)	0 (0%)	0 (0%)	0.0892	—
Therapeutic	32 (57.1%)	16 (28.6%)	4 (25.0%)	12 (75.0%)		
Histology						
Pathologic	33 (58.9%)	16 (28.6%)	4 (25.0%)	12 (75.0%)	0.1740	—
Nonpathologic	7 (12.5%)	0 (0%)	0 (0%)	0 (0%)		
Dermal flap						
NAC	32 (57.1%)	6 (10.7%)	1 (6.2%)	5 (31.2%)	0.0039	0.3956
Without NAC	8 (14.3%)	10 (17.9%)	3 (18.8%)	7 (43.8%)		
SNB/AD						
Yes	32 (57.1%)	16 (28.6%)	4 (25.0%)	12 (75.0%)	0.0892	—
No	8 (14.3%)	0 (0%)	0 (0%)	0 (0%)		
Smoking status						
Never smokers	30 (53.6%)	8 (14.3%)	2 (12.5%)	6 (37.5%)	0.1122	0.9999
Not ever smoker	10 (17.9%)	8 (14.3%)	2 (12.5%)	6 (37.5%)		
Comorbidities						
Yes	3 (5.4%)	6 (10.7%)	4 (25.0%)	2 (12.5%)	0.0117	0.0082
No	37 (66.1%)	10 (17.9%)	0 (0%)	10 (62.5%)		
CT						
Yes	0 (0%)	4 (7.1%)	0 (0%)	8 (50.0%)	0.0050	0.2720
No	40 (71.4%)	12 (21.4%)	4 (25.0%)	4 (25.0%)		
Age, y	46.5 (39.0–54.0)	47.0 (42.0–58.5)	45.0 (41.0–54.5)	54.0 (45.0–64.0)	0.9999	0.2636
Prosthesis size, g	520 (415–615)	565 (482.5–620)	550 (482.5–607.5)	600 (512.5–652.5)	0.1583	0.2636
BMI, kg/m ²	23.1 (22.1–25.5)	25.6 (25.1–28.1)	26 (25.1–28.1)	25.5 (24–27.8)	0.0028	0.2636

Continuous data reported as median and interquartile range.

*P value for the comparison no complications vs any complications.

†P value for the comparison major complications vs minor complications.

NAC, nipple areola complex, SNB, sentinel node biopsy.

introduced to improve the safety of this reconstructive option for these more challenging patients.

When using the inverted-T SRM pattern, the major concerns are related to the viability of the skin flaps, especially at the T-junction. To

reduce the incidence of skin flap necrosis, we used a more conservative Wise pattern to simplify flaps suture without tension. The inferior dermal flap can improve the issue of the lower pole. The advantage of the dermal flap is that there is additional autologous tissue available

TABLE 3. Patient Satisfaction and Clinical Evaluation Scores

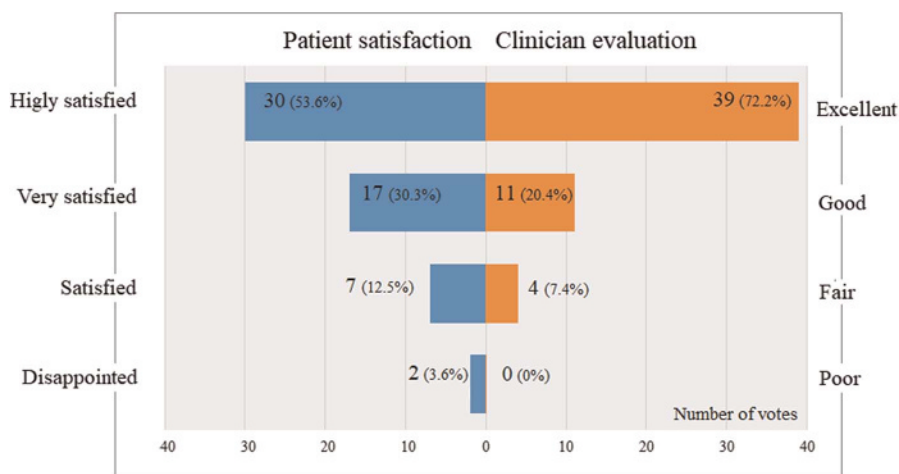




FIGURE 5. Preoperative and postoperative pictures of a 48-year-old woman with medium minimally ptotic breast. She underwent left skin-reducing mastectomy followed by immediate single-stage reconstruction with silicone implant and absorbable mesh (A). Twelve-month postoperative photographs (B, C). The patient refused contralateral symmetrization.



FIGURE 6. Preoperative view of a 44-year-old woman with medium ptotic breast who underwent bilateral skin-reducing mastectomy. She underwent direct-to-implant reconstruction with submuscular-dermal-mesh pocket (A, B). One-year postoperative view (C, D).



FIGURE 7. Preoperative and postoperative pictures of a 45-year-old woman with large and ptotic breast. She underwent therapeutic bilateral skin-reducing mastectomy with nipple graft (A). Twelve-months postoperative results (B, C).

providing double-layered protection at the suture site avoiding implant exposure. Furthermore, combining the inferior dermal flap with absorbable synthetic mesh provides multiple layers of coverage of the inferior pole of implant, with less implant palpability, and increases the reliability of the Wise-pattern mastectomy. The vascularized layer of tissue coverage preserves the integrity of the reconstruction despite the possibility of wound breakdown at the T-junction. The feasibility to treat these patients with local wound care alone, with no implant exposure, means that even high-risk patients can be considered candidates for the procedure.

Moreover, another advantage when using a synthetic mesh is that the Vicryl mesh bears the weight of the implant. This allows increased blood flow to the dermal and mastectomy skin flaps by relieving tension in the tissues. In our technique, fixed volume implants were placed at primary surgery up to a volume of 775 g, and statistical analysis revealed no differences in complications rate for larger implants compared with smaller implants ($P = 0.1583$), especially regarding the risk of skin flap necrosis. Thus, the implant weight does not represent a risk factor for complications, probably thanks to the mesh that minimizes the tension on mastectomy skin flaps. Not least, the use of Vicryl

mesh is much less expensive than acellular dermal matrix with less incidence of seroma or any other complications related to the use of an acellular dermal matrix.¹⁹

Our technique is suitable also in women with moderate to larger minimally ptotic breasts, when large amount of skin is preserved, and there is a marked disparity between the volume of the skin envelope and the implant pocket. This situation cannot be properly compensated by choosing only bigger implants, which would be lacking in projection in the lower pole, with subsequent excessive upper pole fullness, neither by means of 2-stage operation using a tissue expander with undesirable skin retraction of the mastectomy flaps. For such reasons, we think that DTI breast reconstruction should be preferred for better shaping of the breast mound with contralateral symmetrization to immediately match the opposite breast.

Aesthetic results and patient satisfaction are extremely important especially in patients undergoing prophylactic mastectomy. Although subcutaneous mastectomy offers excellent aesthetic results with small breasts, obtaining optimum results for moderate and large breasts are more challenging and require reposition of the areola as well as decreasing the breast skin envelope. The use of SRM with implants as a

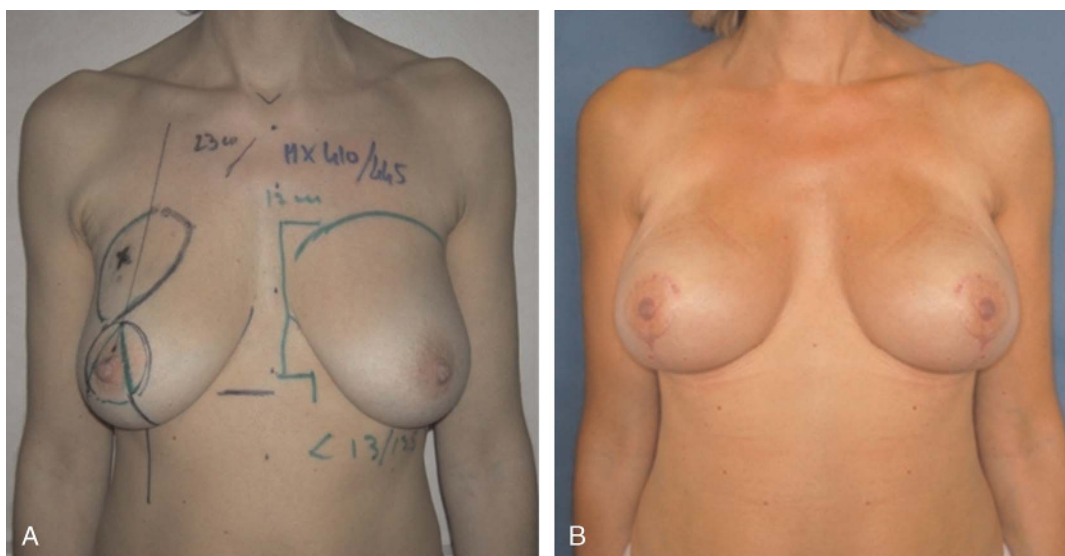


FIGURE 8. Preoperative view of a 52-year-old woman with medium minimally ptotic breast who underwent skin-reducing mastectomy with direct-to-implant reconstruction on the right side and mastopexy on the left side (A). One-year postoperative view (B).

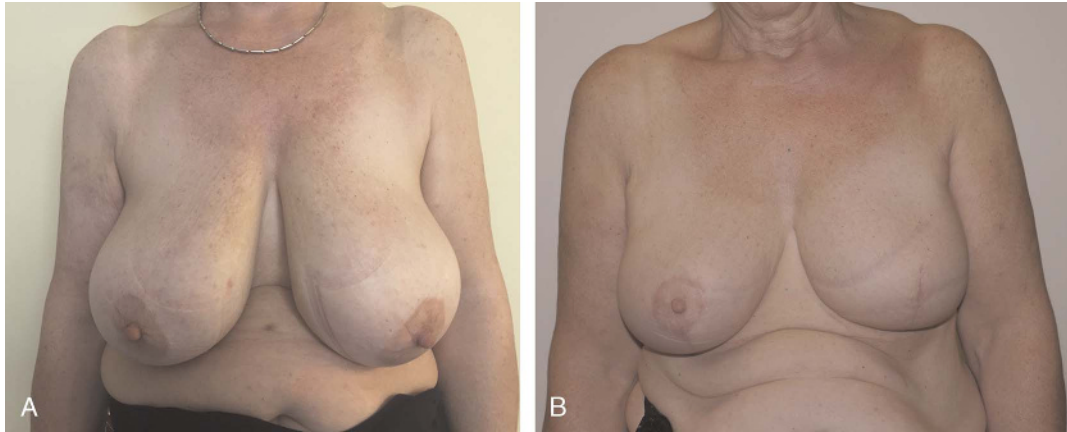


FIGURE 9. Preoperative view of a 58-year-old woman with large-ptotic breast who underwent left skin-reducing mastectomy and direct-to-implant breast reconstruction and right reduction mammoplasty (A). Two-year postoperative results. The patient refused nipple-areola complex reconstruction (B).

1-stage reconstructive option can be performed after prophylactic mastectomy as a valid alternative to a 2-stage procedure by means of a preshaping mastopexy/reduction followed by a delayed NSM and DTI reconstruction.⁹

Regarding complications rate and risk factors, we recorded a statistical correlation among complication onsets and some patient conditions. Body mass index resulted the most statistically significant risk factor ($P = 0.0028$) within patients who experienced complications and those who did not experience any complication. The moderate evidence of complications connection with preoperative chemotherapy ($P = 0.0050$), diabetes, and hypertension ($P = 0.0117$) was already expected. Regarding patients who experienced major complications, comorbidities were found to be the detrimental risk factors ($P = 0.0082$). Diabetes is connected to vascular pattern disorders leading to delayed wound healing and increased risk of infection. Our patients were indeed more susceptible to experience superficial epidermolysis and partial NAC loss. At the same time, hypertensive patients have higher risk of sudden pressure change that can result in hematoma formation, as we experienced in 3 patients.

Surprisingly, smoking habit did not result as a significant risk factor ($P = 0.1122$) for patients who experienced complications. Anyway, we advice to carefully consider the described technique in heavy smokers and whenever microvascular disease is present.

In conclusions, our results demonstrate that good outcomes are achievable with modified SRM and DTI with absorbable mesh combined with dermal flap in patients with moderate to larger breast (Fig. 5) and ptotic medium/large breasts (Figs. 6, 7). Placement of definitive anatomical implants at the time of primary surgery allows optimal control of the final breast shape and size, without the requirement for subsequent tissue expansion and further operation for expander replacement. Moreover, the aesthetic value of this technique is optimized by contralateral symmetrization as proved by the high level of satisfaction of both surgeons and patients, particularly in terms of shape, size, and symmetry (Figs. 8, 9).

CONCLUSIONS

One-stage modified SRM with vascularized dermal flap and synthetic absorbable mesh is a useful option for women with macromastia undergoing mastectomy and implant-based breast reconstruction. This technique is a safe oncological procedure with good aesthetic results and high level of patient satisfaction.

The absorbable mesh is the key strength of the modified surgical technique, which unloads implant weight on dermal and mastectomy skin flaps, without affecting their viability.

Further refinements in technique, technology and patients selection will possibly minimize the risk of complications in these otherwise challenging patients.

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