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Breast

Simultaneous Salvage Auto-augmentation: Contemporary Strategy for Management of the Breast Explantation Patient

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Background: The treatment of patients requiring explantation of breast prostheses is a complicated clinical issue, for which a consensus regarding the best way forward is still evolving. We believe that simultaneous salvage auto-augmentation (SSAA) is a viable option for the treatment of patients with explantation.
Methods: Sixteen cases (32 breasts) were reviewed over a 19-year period. The management of the capsule is based on intraoperative findings and not on preoperative evaluation because of the poor interobserver correlation of Baker grades.
Results: The mean age and clinical follow-up duration were 48 years (range: 41–65) and 9 months, respectively. We observed no complications, and only one patient underwent unilateral surgical revision of the periareolar scar, under local anaesthesia.
Conclusions: This study suggests that SSAA with or without autologous fat injection is a safe option for women undergoing explantation, with potential aesthetic and cost-saving benefits. In the current climate of public anxiety regarding breast implant illness, breast implant-associated atypical large cell lymphoma, and asymptomatic textured implants, it is anticipated that the number of patients desiring explantation and SSAA will continue to increase. *(Plast Reconstr Surg Glob Open 2023; 11:e4860; doi: 10.1097/GOX.0000000000004860; Published online 6 March 2023.)*

INTRODUCTION

The treatment of patients requiring explantation is a complicated clinical issue, for which a consensus regarding the best way forward is still evolving.[1] Frequently, the patient is not able to or does not desire to undergo further implant-based reconstruction. According to the Aesthetic Plastic Surgery National Database Statistics 2020–2021, 71,000 patients had breast implants removed and were not replaced between 2020 and 2021. Removal of breast implants has increased by 47% over the previous year.[2] This population of patients requires the development of methods and clinical pathways to improve the clinical and aesthetic outcomes.

Simultaneous salvage auto-augmentation (SAA) with lollipop mastopexy has been previously described.[3–5] Multiple publications have described breast auto-augmentation after explantation, with "lollipop," "L" and inverted "T" mastopexies with diverse pedicles, and most commonly with an inverted T closure.[3,6–11] Benefits of vertical versus inverted T-shaped closure have been discussed by multiple authors.[12–27] Aesthetic patients undergoing explantation are especially suitable for lollipop mastopexy versus an inverted T with its additional scars.

With the contemporary focus on asymptomatic textured implants and breast implant illness (BII), SSAA is even more timely and relevant as an effective procedure. SSAA may be combined with autologous fat injection (AFI) depending on the amount of residual breast tissue. This 19-year review highlights the benefits and safety of SSAA in the primary author's practice. We describe a patient series of SSAA, with and without AFI, and share our clinical experience regarding the technique. A treatment algorithm is presented (Fig. 1).

PATIENTS AND METHODS

Informed written consent was obtained from all patients. Surgery was performed exclusively under general anesthesia, on an ambulatory basis. Surgery was performed in the United Kingdom at Hospital of St. John

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and St. Elizabeth, London Independent Hospital, London Welbeck Hospital and The Princess Grace Hospital, and in the United States at Greenwich Hospital, Norwalk Hospital, Norwalk Surgical Center, and Sasco Hill Surgery Center.

Sixteen patients (32 breasts) were reviewed over a 19-year period (Table 1). Six patients were treated within the last 2 years, reflecting the increasing demand for explantation surgery. Table 2 summarizes the indications for surgery. Figure 1 summarizes the treatment algorithm. The management of the capsule is based on intraoperative findings and not on preoperative evaluation because of the poor interobserver correlation of Baker grades.[28,29]

The current indications for capsulectomy are Baker grade III and Baker IV capsular contracture and diagnosed BIA-ALCL.[30,31] Not all Baker grade III or IV capsules require total capsulectomy. These patients should be evaluated for evidence of palpable calcifications, which may indicate a total capsulectomy. Ultimately, the decision to perform total capsulectomy should be discussed with the patient and may still be performed.[32]

The decision to perform AFI is made preoperatively, predicated on thickness of lower pole breast parenchyma and patient request. Preference is to perform AFI simultaneously, enabling AFI into the pectoralis major muscle,

Takeaways

Question: Explantation of breast prostheses is a complex clinical issue. We believe that simultaneous salvage auto-augmentation is a practical solution in these cases.

Findings: We performed salvage auto-augmentation in 16 patients requiring explantation, with one minor postoperative areolar scar revision.

Meaning: Simultaneous salvage auto-augmentation is a good choice for patients undergoing explantation of implants.

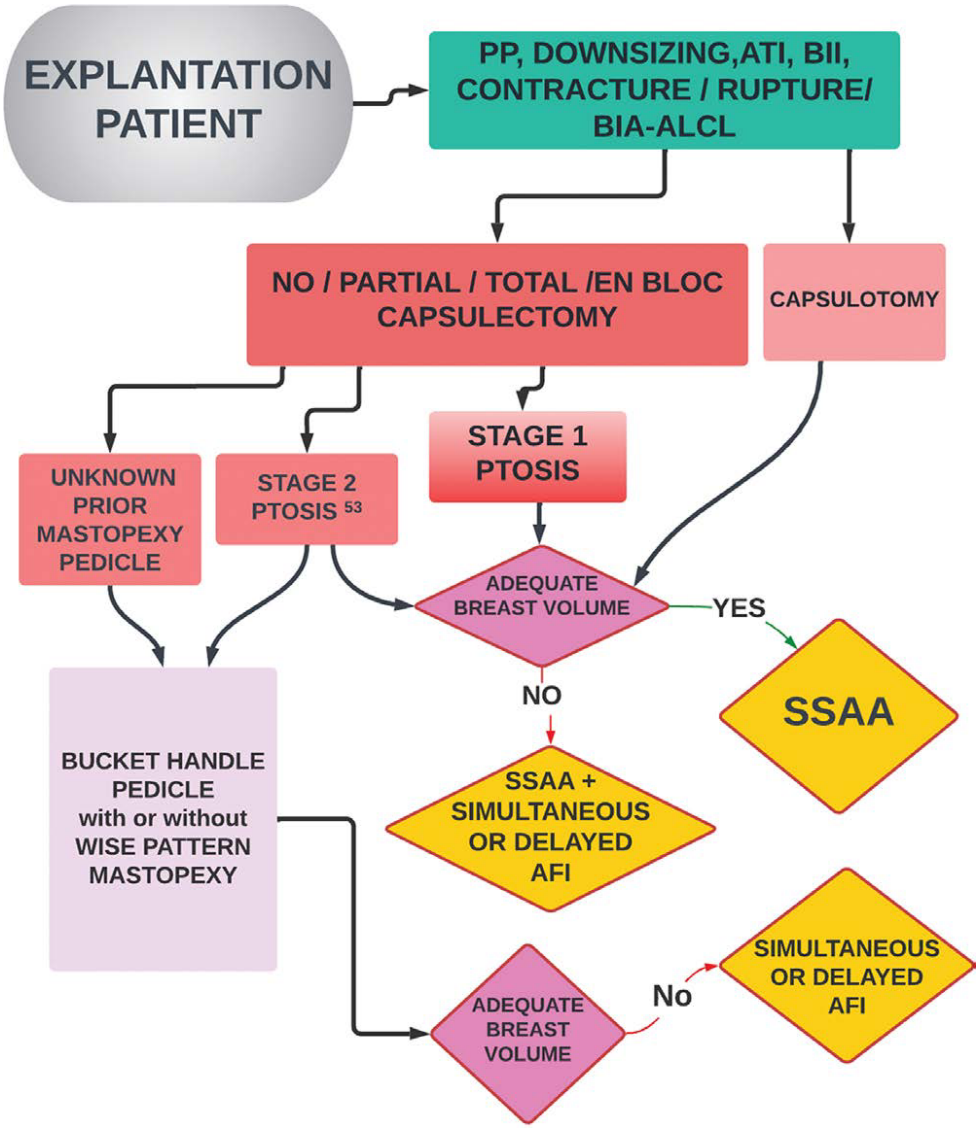

Fig. 1. Treatment algorithm for breast explantation. ATI, asymptomatic textured implant patient; PP, patient preference; CC, capsular contracture.

Table 1. Patient Data

Patient No.	C	Preoperative Dx	Postoperative Dx	FU M	AFI	IMP LOC	IMP Type	IMP Shell MAN	Size	Capsulectomy	Flap Pedicle	Time Since Previous Implant Surgery (y)	Surgery (M/D/Y)	Drain
1	UK	PP, WFD	UNK	2	No	SM	Gel	UNK	UNK	UNK	INF	UNK	7/12/03	UNK
2	UK	RUP BIL	RUP BIL	5	No	SG	Gel	TEXT MISTI	UNK	TOTAL	INF	13	4/2/04	Yes BIL, RV
3	UK	PP	Same	13	No	SG	Gel	TEXT UNK	150?	Partial Lateral BIL	INF	1	10/6/09	No
4	USA	RUP BIL	Same	8	No	SM	Gel	TEXT Allergan	110	TOTAL	INF	10	1/6/10	Yes BIL, PEN
5	UK	CONTR	Gel bleed BIL	1	No	SG	Gel	UNK UNK	Unk	TOTAL	BH	14	3/11/10	Yes BIL, JP
6	UK	PP/rippling/ shape	Same	45	No	SG	Gel	SM UNK	Unk	Partial Lateral BIL	BH	4	6/5/10	No
7	UK	PP	Same	14	No	SM	Gel	TEXT	Unk	TOTAL	INF	17	2/4/13	Yes BIL, RV
8	UK	PP	RUP UNI	6	No	SM	Gel	TEXT Nagor	290	Partial Lateral BIL	INF	5	2/14/14	Yes BIL, RV
9	USA	PP	Same	2	No	SM	Gel	SM Allergan	300	Partial Lateral BIL	INF	17	8/27/18	Yes BIL, JP
10	USA	RUP UNI	Same	1	No	SM	SAL	TEXT Mentor	300	Partial Caps UNI	INF	20	10/22/19	YES BIL
11	USA	RUP BIL	Same	1	No	SM	Gel	UNK	275	Partial Lateral BIL	INF	11	9/30/20	No
12	USA	PP	Same	12	Yes	SM	SAL	SM Allergan	270 300	Partial Lateral BIL	INF	16	1/1/21	No
13	USA	PP	Same	2	No	SM	Gel	SM UNK	375	Capsulotomy	INF	16	7/27/21	No
14	USA	Swelling discomfort	Same	6	No	SM	SAL	UNK	Unk	Partial Lateral BIL	INF	16	6/28/22	No
15	USA	RUP BII	Same	3	No	SM	Gel	TEXT Mentor	500	Near total 80% L Partial lateral R	INF	11.5	9/8/22	Yes UNI, L
16	USA	RUP UNI	Same	3		SM	SAL	SM Mentor		Partial lateral R	INF	20	9/12/22	Yes UNI, R

BH, Bucket-handle pedicle; BII, breast implant illness; BIL, bilateral; C, country; CC, capsular contracture (total capsulectomy); Dx, diagnosis; FU-M, follow-up months; Gel, silicone gel; IMP LOC, implant location; INF, Inferior dermo-glandular pedicle; JP, Jackson Pratt drain; L, left; MAN, manufacturer; PEN, Penrose drain; Postop, postoperative; PP, patient preference; Preop, preoperative; PT, ptosis; R, right; RUP, rupture; RV, Redivac drain; SAL, saline; SG, subglandular; SM, smooth; SM, submuscular/dual-plane; TEXT, Textured; UK, United Kingdom; UNI, unilateral; UNK, unknown; WFD, water fall deformity.

Table 2. Indications for Surgery

Indications	Patients	Breasts	Percentage (Patients)
Asymptomatic textured implant	0	0	0
Patient preference/downsizing	8	16	50
Breast implant illness	1 unilateral gel rupture	1	6
Capsular contracture without obvious rupture (bleed)	1 bilateral	2/32	6
Rupture, saline:	2 unilateral	2/32	13
Rupture, gel	4 bilateral	8/32	25
BIA-ALCL	0	0	0
Total	16	31	100

Table 3. Preoperative Marking

Step	Marking	Comments	Line/Points
1	Mid-sternal line	MSL: SSN to X	MSL/SSN, X
2	Mid-clavicular point	8 cm from SSN	MCP
3	Breast mid-point	Bisect widest part of breast	BMP
4	Mammillary line: BMP to MCP	10–12 cm from MSL. Extends across IMF	ML
5	Infra-mammary fold	IMF	IMF
6	Nipple location on ML	Kirwan maneuver[3] Elevate NAC at 3 and 9 o'clock until IMF is effaced	A point
7	Elliptical areolar marking	Round template, diameter varies	A point superiorly
8	Vertical infra-areolar ellipse	Aufricht maneuver[33]	B point: medial intersection with peri-areola marking C point: lateral intersection with peri-areola marking
9	Curved vertical lines meet 2–4 cm above IMF	Inferior junction of vertical lines	D point: caudal junction of vertical lines above IMF
10	Double-check skin redundancy areolar and vertical ellipse	Pinch breast skin mediolaterally[36]	B and C Points

BMP, breast mid-point; IMF, infra-mammary fold; MCP, mid-clavicular point; ML, mammillary line; MSL, mid-sternal line; X, xiphoid.

inferior pedicle, and subglandular plane before closure, followed by subcutaneous AFI.[11] Patients with previous IMF incisions or prior mastopexy with unknown vascular supply to the nipple areolar complex (NAC) are managed with a bucket-handle pedicle (four patients). Each case is evaluated on its own merits.

Preoperative Markings

Table 3 summarizes the steps of preoperative surgical markings. The patient is marked in the standing position[3,4] (Fig. 2). A midsternal line is drawn from the supra-sternal notch (SSN) to xiphoid (X).[33] The mid-clavicular point is marked halfway from the SSN to the acromioclavicular joint, (usually 8 cm from the SSN).The mid-point of the breast is measured at its widest point. This point is joined to the mid-clavicular point using a 12″ ruler, thus marking the mammillary line (ML).[33] The patient holds the breast up with the hand on either side of the breast, and the ML is continued through the inframammary fold (IMF) onto the abdominal wall. The same procedure is repeated on the contralateral side.[33]

To determine the superior border of the new NAC, the authors recommend grasping the skin adjacent to the NAC, medially and laterally at the 3 and 9 o'clock positions (Fig. 2B),[3] elevating the NAC and taking up the laxity of the lower breast skin until the IMF is effaced. The skin is marked at the new superior border of the areolar region along the ML (Fig. 2A). This is point A, the superior border of the neo-areola. Point A is adjusted upward or downward depending on the surgeon's judgment (usually 17–19 cm from the SSN).

The next step is to mark the periareolar skin excision by using a circular template with diameters of 4, 5, 6,7, 8, 9, and 10 cm.[3] The templates are semi-transparent. The superior edge of the template is placed at point A, and the inferior border of the template is placed at the inferior border of the areolar at rest. Upward pressure can be applied to the lower edge of the areola to include it within the template; 7-8-cm templates are most commonly used. The circumference of the template is marked with blue Sharpie. When the template is removed, the NAC drops (if it was elevated), creating an elliptical shape. The resultant planned nipple elevation is the template diameter minus the planned diameter of the NAC. For example, if the new NAC is 4 cm in diameter, then using the 8 cm diameter template, the nipple elevation would be 4 cm. If a 9-cm or 10-cm template is required, it may be safer to use a bucket handle flap or a medial-superior pedicle.[34] The final marking should not be a circle, and ideally is adjusted to the shape of an ellipse that borders the medial and lateral edges of the NAC. Horizontal skin is often deficient and a full-circle pattern may result in a horizontal deficit. The resultant horizontal deficiency can create a horizontal groove

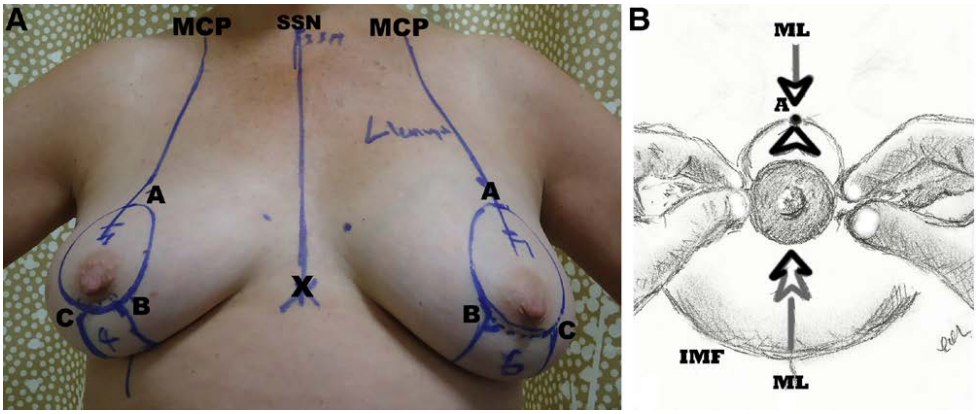

Fig. 2. Preoperative planning in the standing position. A, Preoperative markings, 7-cm peri-areolar ellipse with 4 cm and 6 cm transverse measurement at superior point of inferior ellipse. Front view. B, Elevation of the NAC until the lower pole skin is stretched and the IMF is effaced.

across the center of the breast, with flattening of the breast mound. This is more likely to occur in patients with large areolas. Further excision of peri-areolar skin can be reassessed after explantation. A preexisting areola diameter greater than 8 cm is a "red flag." Large areolas result in obligatory skin excisions in both vertical and horizontal axes, which may exceed preexisting breast skin redundancy. In such cases, a bucket-handle pedicle with a standard Wise pattern mastopexy is a safer choice. Another indication for planning a bucket handle is inadequate parenchyma.[35]

The inferior elliptical excision is marked using the Aufricht maneuver[33] with the hands on top of the head. The resultant medial and lateral lines are curved inferiorly to meet 2 cm above the IMF at point D (Fig. 3). Superiorly, the medial and lateral lines are indented where they meet the periareolar skin markings superiorly (Figs. 2, 3, 4A), as this can be an area of limited skin redundancy. Point B and point C mark the respective intersections of medial and lateral vertical lines with the periareolar ellipse (Figs. 2, 3).

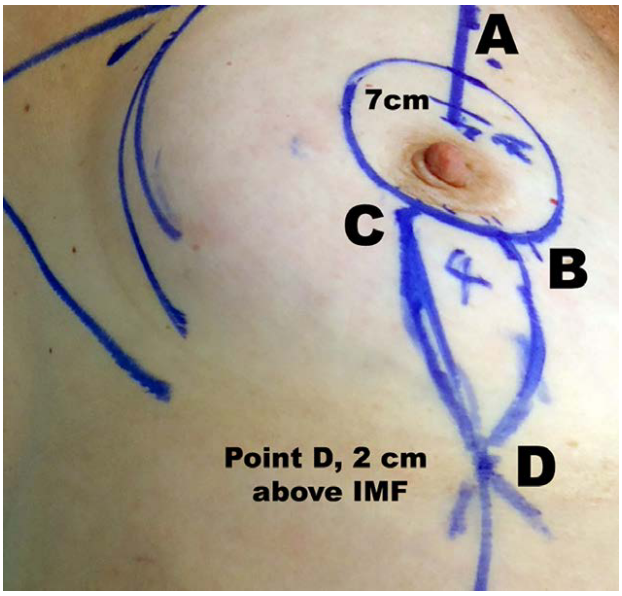

Fig. 3. View of the preoperative markings of the right breast in the supine position with the arm abducted to 90 degrees. Preoperative markings, right breast, supine view with 4-cm width of inferior ellipse.

The inferior ellipse is usually 4 to 6 cm in width at its superior edge (Fig. 2). Removal of this horizontal portion from the superior part of the vertical ellipse reduces the diameter of the periareolar skin excision by the same amount. If the circumference of a circle is π x diameter, and the circumference of an 8 cm circle is approximately 24 cm (π = 3.14 s), then after excising the inferior ellipse with a 6-cm superior margin, the remaining circumference of the periareolar skin is 18 cm (24 minus 6 cm). The diameter of the neo-areolar is 4 to 5 cm; so its circumference is 12 to 15 cm. Therefore, the disparity between the outer periareolar skin excision and the neo-areolar circumference is between 3 cm (18 minus 15 cm) and 6 cm (18 minus 12 cm). In practice, this disparity is further reduced because the periareolar skin excision is an ellipse, not a circle. The width of the vertical elliptical excision can be further confirmed by pinching the skin in a medio-lateral direction[36] and by tailor-tacking intraoperatively.[34]

Finally, the markings are checked for symmetry. A gynaecological caliper is used to check the SSN to A point symmetry. A 15 cm ruler is used to check the distance from the medial border of the periareolar skin excision to the midline (typically 10 cm).

Surgical Technique

This has been previously described.[3,4] Skin is prepared with Betadine. The incision lines are injected with 30 cm^3 of a solution containing 15 cm^3 of 2% lidocaine with epinephrine (1:200,000) and 15 cm^3 of 0.5% bupivacaine plain. A tumescent solution of 1000 cm^3 normal saline with 10 cm^3 0.25% bupivacaine, 20 cm^3 2%, lidocaine, 15 cm^3 8.4% sodium bicarbonate, and 1.0 cm^3 epinephrine (1 mg/ml) is injected into the areas of adjacent liposuction (lateral chest and axillary region) and into pericapsular tissues. Tumescent injection into the breast is limited

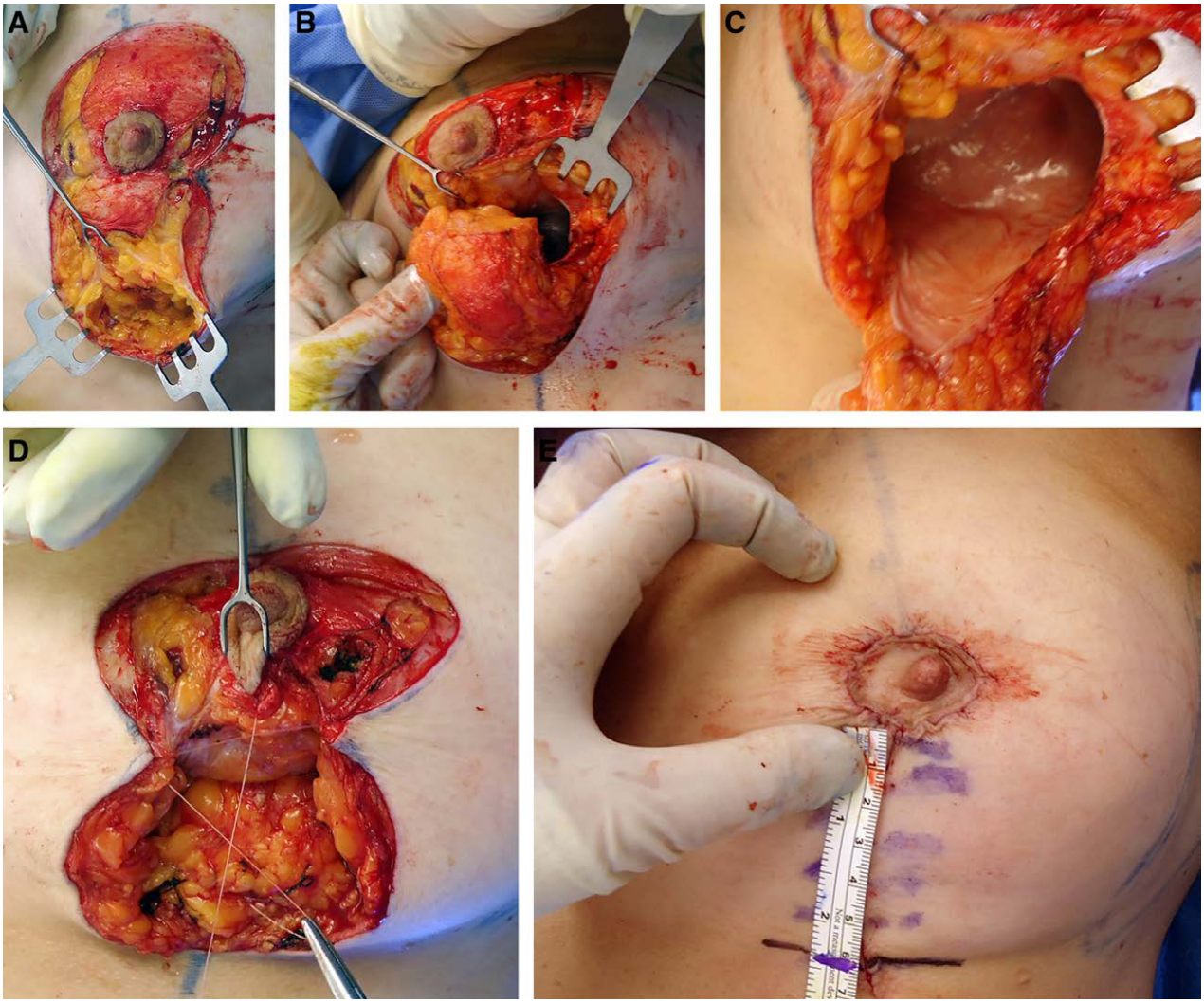

Fig. 4. Intraoperative stages in performing SSAA. A, Intraoperative view, left breast. De-epithelialization within skin markings and vertical incisions with cutting cautery. B, Intraoperative view, left breast. Horizontal cut 2 cm below inferior edge of NAC and creation of inferior dermo-glandular pedicle. Preservation of medial and lateral parenchymal attachments of inferior third of inferior ellipse. C, Intraoperative view, left breast. Preservation of capsule. D, Intraoperative view, left breast. First suture between point A and 12 o'clock of NAC. Second suture between points B and C and 6 o'clock of NAC. E, Intraoperative view, left breast. IMF finds its own level. NAC to IMF distance 6 cm.

to avoid distortion of the breast. Irrigation solution is 50% Betadine (10% povidone-iodine) and 50% normal saline.

The NAC is scored with a 42- or 45-mm areola marker depending on the size of the nipple. This is done with the areola on enough stretch to allow the marker to make a symmetrical indentation. The surgeon incises the areola indentation with a number 15 blade with the areola on stretch. The senior author (LK) rarely uses a 38-mm marker because it may inadvertently remove too much areolar skin if there is an incorrect cut. A 45-mm marker is used if the nipple is large.

The outer periareolar and vertical markings are incised. The intervening skin is de-epithelialized (Fig. 4A). A suction cautery unit is used to make vertical incisions on either side of the NAC at the 3 and 9 o' clock positions. These vertical cuts continue into the vertical limbs of the inferior ellipse to point D, preserving 5 mm of de-epithelialized skin at the margins (Fig. 4A). Skin at the inferior angle of the inferior ellipse is retracted with two Freeman 4 prong retractors, and the skin is undermined in the subdermal plane to the IMF (Fig. 4A). Parenchymal attachments of the inferior one-third of the vertical incisions are preserved (Fig. 4B), and dissection is performed in an oblique direction toward the periphery of the breast. The capsule and implant are explored using a lateral approach. A decision as to whether to proceed with a buried inferior pedicle, versus a "bucket handle" pedicle, can be delayed until evaluation of the capsule and breast parenchyma has been completed. Total capsulectomy may impair blood supply to inferior and superior pedicles and destroy potential planes for AFI. Inadequate parenchyma or significant ptosis (see discussion below) may favor a bucket-handle or a medial-superior pedicle.[34] In the bucket-handle technique, the attachment of the

inferior ellipse to the superior pedicle remains intact. If an inferior pedicle is planned, the superior pedicle is divided transversely 2 cm below the inferior margin of the NAC (Fig. 4B). The deep plane of the superior and inferior dermoglandular pedicles will include the capsule if there is no indication to excise it (Fig. 4C). The implant is usually removed as soon as the pocket is entered. If a gel implant is ruptured, either before or during the procedure, the shell and silicone gel are removed, and the pocket irrigated. With ruptured saline implants, the implant is removed, free fluid is suctioned, and the pocket is irrigated. Intracapsular adhesions, are released to allow for unimpeded placement of the inferior dermoglandular flap and to enable collapse of the pocket.

The inferior flap is transposed to the deep fascia of the pectoralis major (subglandular implant) or to the chest wall (subpectoral implant). There are no attempts to eliminate the subpectoral pocket, reattach pectoralis major, or dissect a subglandular pocket to anchor the inferior flap. If the capsule is unremarkable, a lateral strip may be removed to act as a "wick" for fluid collection or as a biopsy. However, this is not mandatory; the inferior pedicle itself functions as a wick. A pathologically thickened capsule usually has a well-demarcated pericapsular plane of dissection and may be removed without a significant risk of injury to the chest wall or axilla. Drains (7 silicone) (Medline Ref. no. DYNJWE1320) may be inserted with significant capsulectomy and anticipated postoperative bleeding. The drain exits through the incision, in the lower end of the vertical closure or the horizontal closure if a horizontal ellipse is excised. The drain is secured with staple and 3M Tegaderm dressing (3M St. Paul, Minn.).

The inferior flap is sutured to the chest wall or the pectoralis major with a figure of eight suture of 2-0 PDSII (polydioxanone). The pedicle is usually positioned in a medial-superior direction at the level of the third rib. There is minimal stretch. If placed too high, the inferior breast may appear hollow, or the parenchymal base may create tension and distort the inferior closure. This should be evaluated when suturing the flap. Sometimes, the pedicle may be loosely tethered to fill the inferior breast and avoid traction on the inferior closure. All deep sutures are absorbable except for the permanent purse-string suture[37,38] (see below).

Closure

The first suture is a 4-0 poliglecaprone (Monocryl) between point A and the 12 o'clock point of the NAC. The second suture is a 3-0 polydioxanone (PDS II) between points B and C and the 6 o'clock point of the NAC (Fig. 4D). Superior traction is applied to the ends of the second suture.[3,4] This elevates the inferior vertical limb, which is then closed with deep interrupted 3-0 polydioxanone (PDS II) sutures.

The peri-areolar closure is completed with 4-0 poliglecaprone (Monocryl) deep interrupted sutures at the 3 and 9 o'clock positions, followed by four more sutures, halfway between these points. A 3-0 white polyester suture soaked in Betadine is then placed as a buried purse-string suture around the areola, which is then tightened around the areola marker.[37,38] Placement of the purse-string suture also helps define the length of the vertical scar.

The patients are placed in a seated position. If necessary, tailor tacking is performed on the vertical inferior ellipse and any planned horizontal closure in the IMF. Usually, as the vertical incision is closed, the IMF establishes its own level, and a vertical incision continues onto the abdominal wall (Fig. 4E). Excess subcutaneous fat at the inferior end of the vertical incision can be reduced using liposuction or direct excision. If an IMF horizontal excision is performed, it is closed with deep 3-0 polydioxanone. The primary author prefers to evaluate the breast shape postoperatively performing a delayed horizontal excision after 6 months.

The final closure of the vertical and horizontal incision is completed with deep interrupted and subcuticular 4-0 poliglecaprone. The final periareolar closure is a subcuticular 4-0 poliglecaprone. The closure of the vertical incision is initiated 1 cm below the 6 o'clock position of the areola, to prevent areola creep[3] and distortion of the areola. Half-inch Steri strips are applied.

Xeroform gauze is placed on the areola with the nipple exposed, followed by gauze secured with Tegaderm. A soft postsurgical bra (Design Veronique) is applied but is optional.

RESULTS

Sixteen patients (32 breasts) had SSAA over a 19-year period using a vertical mastopexy with an inferior-based flap in 28 breasts and a bucket-handle flap in four breasts. To put this in perspective, during the same period, the primary author performed a total of 78 breast auto-augmentations (156 breasts), of which 16 (32 breasts) had SSAA. Average age was 52 years (range, 41–65 years), and average time from last implant surgery (15 patients), 12.4 years (range, 1–20). Average follow-up was 9 months. The first author was the previous surgeon in nine patients. Seven were performed by other surgeons before being referred to the primary author. Twelve had bilateral dual-plane implants, eight had silicone gel, and four had saline. Four had subglandular gel implants. Patients were encouraged to continue follow-up for a minimum of 1 year, but in some cases, did not return despite multiple attempts to contact them.

Three patients had areola circumcision with 45-mm, five with 42-mm, and two with a 38-mm marker. Six patients had unknown diameter marker. Four patients (eight breasts) underwent total capsulectomy for Grade III capsular contracture (assessed intraoperatively); two of the four patients had dual-plane implants, and two had subglandular implants. A fifth (Patient 15) with BII and a unilateral ruptured Siltex implant with enlarged axillary lymph nodes, underwent a unilateral, subtotal (80%) capsulectomy with cauterization of the remaining capsule. The remaining patients underwent only partial lateral capsulectomies. One patient had simultaneous AFI. Fourteen of the 16 patients (28 breasts) had an inferiorly based dermo-glandular pedicle (87.5%). Two of the 16 patients

(four breasts) had a bucket-handle pedicle (12.7%). Drain status was recorded in all but patient 1. Eight patients had drains, six bilateral, two unilateral (14/30 breasts or 47%); seven patients (16/30 breasts or 53%) had no drains. One of the seven without drains (patient 11) had bilateral silicone gel rupture (Table 1). Primary healing was achieved in all cases. Patient 1 had an L closure, and patient 3 had bilateral short horizontal closure intraoperatively.

Complications

There was no partial or complete NAC loss, hematoma, seroma, infection, or hypertrophic scar. Patient 12 had unilateral areola revision, under local anesthesia, 6 months postoperatively. There were no postoperative instances of "window-shading."

Case Examples

Case 1 (Patient No. 12)

A 61-year-old woman with bilateral smooth saline submuscular implants inserted 16 years before presentation. At the time of surgery, the implants were intact, and the capsule was normal. Partial capsulectomy with simultaneous SSAA and AFI was performed without drainage. Figures are shown of patient before and after surgery in Supplemental Digital Content 1 and 2. (**See figure 1, Supplemental Digital Content 1,** which demonstrates frontal views: preoperative (left) and postoperative (right) of patient 3 months after surgery, **http://links.lww.com/PRSGO/C445**.) (**See figure 2, Supplemental Digital Content 2,** which demonstrates right oblique views: preoperative (left) and postoperative (right) views of patient 3 months after surgery. **http://links.lww.com/PRSGO/C446**.)

Case 2 (Patient No. 7)

A 50-year-old woman had bilateral textured gel submuscular implants 17 years prior. At the time of surgery, the implants were intact, and the capsule was thickened. A bilateral total capsulectomy and SSAA was performed with bilateral drains (Fig. 5).

Case 3 (Patient No. 14)

A 51-year-old woman presented with bilateral submuscular smooth saline 16 years prior. The patient experienced irritation and swelling from the left implant when using the ipsilateral arm, as a hairdresser. At the time of surgery, the implants were intact, and the capsule was thin. Bilateral SSAA was performed without drainage (Fig. 6).

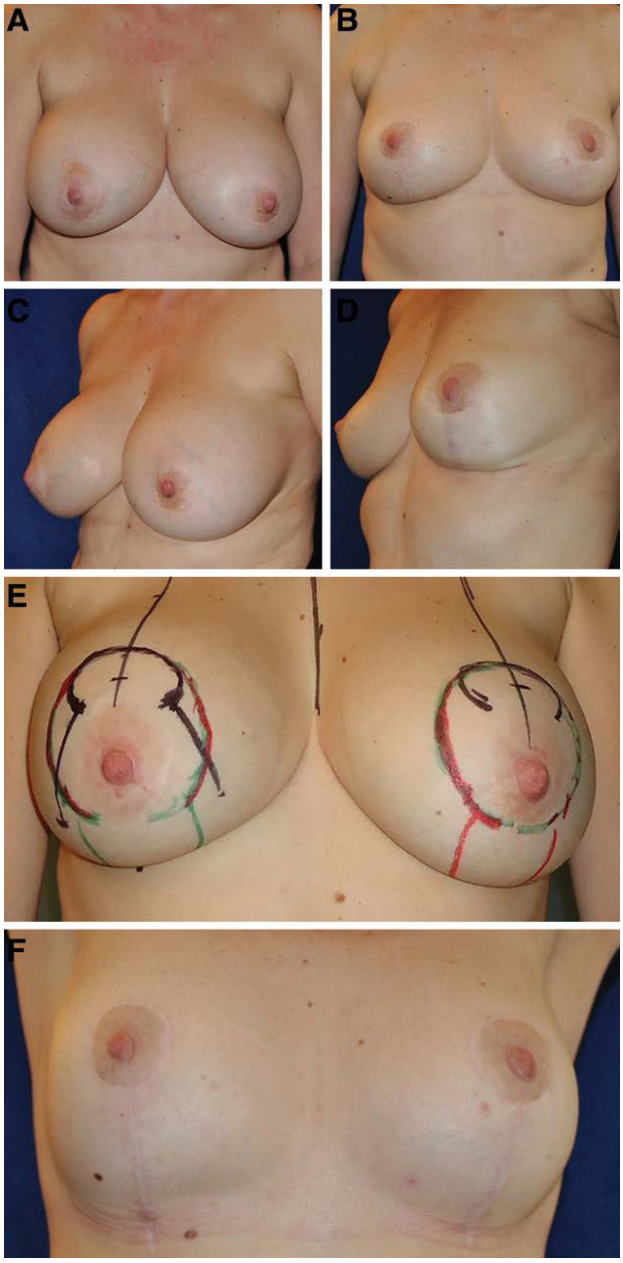

Fig 5. A 50-year-old woman with bilateral textured gel submuscular implants, clinical and intraoperative Baker Class III. A, Preoperative and right 14 months after SSAA. Front view. C-D, preoperative and right 14 months after SSAA. Left oblique view. E, Preoperative markings showing difference between keyhole pattern and elliptical pattern (right breast). F, Healed scars 14 months after SSAA. Front view.

DISCUSSION

Simultaneous versus delayed breast reconstruction after explantation is vital for the psychological welfare and body image of the patient. About 94% of all procedures included either implant replacement or removal in combination with further reconstructive measures. This indicates the importance of a reconstructed breast after implant complications or implant revision surgery, as reflected by numerous studies examining positive body image and quality of life after breast reconstruction.[39–43]

Swanson[44] stated that a constellation of systemic symptoms known as "breast implant illness" has motivated many women to have their implants removed (this term replaces the old description "human adjuvant disease," which was similarly challenging to define).[1] The role of capsulectomy is unclear in this patient group because there is no known physical cause for this entity. Whether the implant, the capsule, or both (or neither) is responsible is unknown.

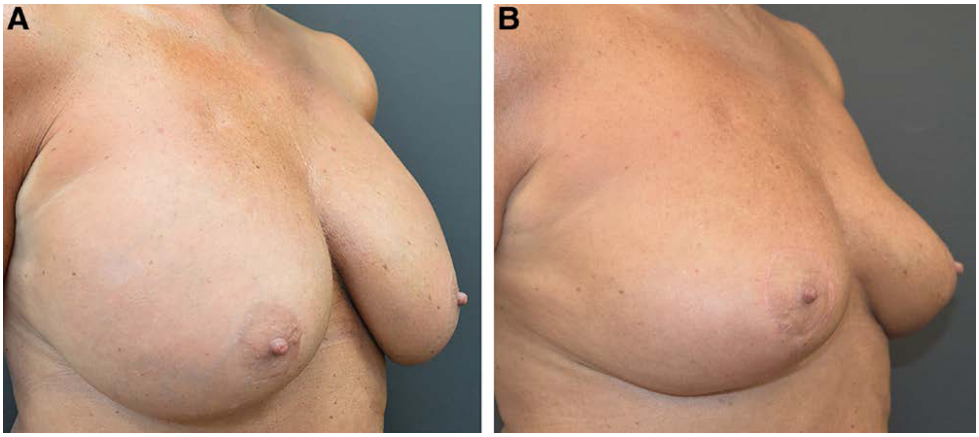

Fig. 6. A 51-year-old woman with bilateral submuscular smooth saline 16 years prior. Irritation and swelling on the left. Intraoperatively, capsules thin and unremarkable. A, Preoperative. B, postoperative, 4 months after SSAA; right oblique view.

The removal of the capsule is not consistently followed by disease remission.[45]

Capsulectomy significantly increases the operating time and healthcare costs,[6,46,47] and is associated with a significant incidence of postoperative complications.[48] Furthermore, there is no scientific evidence that capsulectomy reduces the risk of the rare BIA-ALCL in women exposed to textured implants,[44] and therefore, regulatory bodies have not recommended routine removal or replacement of asymptomatic textured implants.[49] Additional breast tissue resection is inevitable, which is poorly tolerated in lean women without much breast tissue to start with (the reason for the breast implants). Pain and recovery time increased. Women may begin as cosmetic patients and then become reconstructive patients as their traumatized breasts heal with scarring.[44]

Treatment algorithms are described for the management of the explanted patient.[32,35,50] Avashia,[32] using the Regnault classification,[51] recommended immediate or delayed mastopexy with AFI. Calobrace[50] focused on "decision-making in patients who underwent explantation desiring implant exchange."[25] Tanna[52] discussed multiple contemporary strategies for breast explantation surgery, including BAA.

Regarding the evaluation and classification of the previously augmented breast or PAB, Regnault's Classification[51] fails to account for the effects of an implant on breast contour. The primary author's classification of breast ptosis in a PAB[53] has two stages: stage 1, periareolar skin excision less than 8 cm and stage 2, greater than 8 cm. Stage 2 is analogous to the category requiring NAC elevation greater than 4 cm, as described by Rohrich and Avashia.[32,35] In addition, determination of the new nipple position in relation to the IMF, in the PAB, is inaccurate, because of implant distortion. The authors recommend elevating the NAC until the infraareolar skin is on stretch and the inframammary fold is effaced (Kirwan maneuver).[3]

This article outlines a treatment algorithm for quitting implants,[11] with or without capsule excision (Fig. 1). The capsule is preferentially preserved as a support for the inferior pedicle, depending on the intraoperative findings. No attempt is made to excise an unremarkable subpectoral capsule, close a subpectoral pocket, or reattach the pectoralis major. The inferior pedicle is sutured to the chest wall or pectoralis major depending on the implant pocket. In a dual plane pocket, the absence of subglandular plane dissection preserves perforators to the breast parenchyma and skin while maintaining the retroglandular site for AFI.

The recommended treatment plan is SSAA with or without AFI in stage 1 and stage 2 ptosis.[53] Active smokers are not candidates for surgery. A bucket-handle pedicle is considered in stage 2 patients or patients with indeterminate vascular supply to the NAC because of prior procedures.

The treatment algorithm presented by Avashia[32] recommends either no mastopexy with AFI or an immediate or delayed mastopexy, also with AFI. The decision to delay mastopexy was based on one of the three criteria: (1) smoking status, (2) nipple elevation greater than 4 cm, and (3) breast parenchyma thickness less than 4 cm. In patients with one or more of these three criteria, staging mastopexy was recommended at a minimum of 3 months after explantation.

There was no explanation as to why a minimum time point of 3 months was chosen, versus 3 weeks, which is the usual period for a delay of a randomly based vascular flap. Other than smoking, there is only anecdotal evidence to support the other two criteria. If the concern is the blood supply to the flaps, then it would seem logical that a surgery after a 3-week interval would be the correct time to perform a delayed mastopexy. Elevation of the NAC greater than 4 cm is a relative contraindication to SSAA, with transposition of the NAC on a superior pedicle. However, the exact pedicle can be determined at time of surgery. Further, delayed mastopexy is far from a "benign" procedure and does not necessarily mitigate risk or improve results. Cicatricial scarring after capsulectomy may result in an "imploded" breast creating intractable problems in reshaping the breast envelope with a delayed

mastopexy. These problems would most likely be avoided by replacement with an implant or SSAA, with or without AFI. With delay, there is also an unpredictable decision process in terms of timing. These issues are not to be discounted.

Nahabedian reviews "the old and new scientific evidence focused on the capsule surrounding textured breast implants and whether or not the capsule should be removed en bloc, entirely, partially, or not at all in the setting of explantation."[54] SSAA with a partial or no capsulectomy is recommended. The exceptions being that if capsular pathology is discovered during surgery, such as unusual thickening or granulation tissue, the surgical plan may be altered to include capsulectomy and pathological examination of the tissue.[44] Removing a calcified capsule is warranted. They are uncomfortable for women and have social implications. Affected women may resist hugging other individuals.[44]

This review of patients operated on by the primary author over a 19-year period using a single-stage procedure (SSAA) as described above had consistent results and no significant complications in patients with a variety of capsules, implant types, and pockets. With the current concern regarding breast implants in general and textured implants in particular, the association of BIA-ALCL and scientifically unproven BII, it is anticipated that the number of patients desiring explantation and SSAA will continue to increase. In addition, there is a significant subset of women who have had prior in breast augmentations who no longer feel that their implants are reflective of their lifestyle and body image. Furthermore, age and menopause-related weight gain is often associated with increase in breast volume. They no longer possess the small breasts from when they initially sought augmentation. The weight/age/menopausal-related increase in parenchymal volume is a bonus for SSAA, as it provides a readily available source of autogenous tissue. However, in cases with inadequate breast tissue, simultaneous AFI is recommended.[11]

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