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ORIGINAL ARTICLE
Breast

Contralateral Augmentation with a Transmidline Scarless Technique During Unilateral Breast Reconstruction Using Implants

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Background: Unilateral breast reconstruction can be a challenge when attempting to achieve an aesthetically pleasing and symmetrical breast mound on the contralateral side. This study investigates the outcomes of using a contralateral augmentation transmidline scarless (CATS) technique to simultaneously augment the contralateral breast using implants.

Methods: Between January 2004 and July 2016, patients undergoing unilateral implant-based breast reconstruction and simultaneous contralateral implant augmentation using a transmidline access were studied. Characteristics and complications using this technique were assessed.

Results: Sixty-five (91.5%) of 71 patients used the CATS technique for unilateral breast reconstruction using implants with contralateral breast implant augmentation. The remaining 6 cases used a preexisting chest scar. In the assessment of complication rates between the reconstructed and augmented sides, the reconstructed side had a statistically significant higher rate of implant exposure ($P = 0.04$) and total complications ($P = 0.02$). In comparing the revision rates between these 2 groups, the need for implant change ($P = 0.04$) and the total revision rates ($P = 0.01$) were higher in the reconstructive side. Use of saline implants had a higher rate of chest wall and breast skin necrosis ($P = 0.03$) in comparison with silicone implants. There was not a statistically significant difference in complications when comparing timing of reconstructions (immediate versus delayed).

Conclusions: The CATS technique can be performed safely, with a desirable aesthetic outcome, and also symmetry with minimal risk of symmastia during unilateral breast reconstruction using implant-based reconstruction. *(Plast Reconstr Surg Glob Open 2017;5:e1298; doi: 10.1097/GOX.0000000000001298; Published online 19 May 2017.)*

INTRODUCTION

A major challenge to unilateral breast reconstruction is achieving balance to the contralateral side for shape and size.[1–3] Unlike many procedures, breast reconstruction requires surgeons to match one breast to the opposite one.[1–3] The proximity of the breasts to each other in comparison with other bilateral anatomy can make subtle differences between the sides more detectable. It is important to have a preoperative discussion regarding patients' preexisting asymmetries as part of a well-informed consultation process. Although women seeking unilateral reconstruction desire symmetry and a good aesthetic result, many want to achieve them without scars, stigmata of surgery, and complications.

Traditionally, violation of the medial edge of the breast is avoided during surgical dissection. Aesthetic and reconstructive surgeons have emphasized the importance of maintaining the medial breast border.[4–13] Surgical strategies have been described to correct symmastia; however, it is usually by challenging the boundaries of traditional methods that new advances can be made.[4–13] Plastic surgeons possess the unique skills to reconstitute structures and landmarks when they have been disrupted by abla-

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Received for publication December 24, 2016; accepted February 24, 2017.

DOI: 10.1097/GOX.0000000000001298

Disclosure: *The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.*

tive surgeons. There is potential to achieve a result that is superior to the one preoperatively by providing augmentation to a hypoplastic contralateral breast with a match complementary to the reconstructed side.

The ideal time to perform balancing procedures on the opposite breast remains controversial.[14,15] There are surgeons who perform the balancing procedure at the same time and others who prefer to perform it during another operation.[14,16,17] The ultimate goal in unilateral postmastectomy breast reconstruction is to create a natural appearing breast while adjusting the contralateral breast to create the greatest symmetry.[1–3]

A contralateral augmentation with a transmidline scarless (CATS) technique is used during unilateral breast reconstruction with implants. This is the first study to investigate the safety of simultaneous implant augmentation of the contralateral breast endoscopically through the midline. It is the third installment of a series using CATS that does not leave any additional external scar on the contralateral breast: (1) CATS with unilateral deep inferior epigastric perforator (DIEP) flap and contralateral implant,[18] (2) CATS with differentially split DIEP flaps,[19] and (3) CATS with unilateral implant reconstruction and contralateral implant augmentation, thus completing the compendium of the possible variations of unilateral breast reconstruction and contralateral augmentation using the CATS method.

METHODS

Institution Review Board approval through Chang Gung Memorial Hospital was obtained (IRB 104-7576B). Risks and treatment alternatives were discussed, and informed consent was obtained. Patients who were appropriate candidates for an implant-based reconstruction were considered for an alloplastic reconstruction with or without simultaneous contralateral breast augmentation. Endoscopic contralateral breast augmentation was recommended to suitable patients with contralateral hypoplastic breasts.

From January 2004 to July 2016, patients who underwent unilateral breast reconstructions using implants with simultaneous contralateral were investigated. Patient demographics were prospectively recorded. Inclusion criteria were (1) unilateral breast reconstruction using a prosthetic device, (2) low body mass index less than 25, and (3) DIEP or muscle sparing transverse rectus abdominis muscle flap was not preferred or suitable for the patient. Data regarding the timing of reconstruction (immediate versus delayed) and material of the implant (saline versus silicone) were recorded. The contralateral side was reached through a transmidline approach with a 3-cm opening for saline implants or 5 cm for silicone. This opening facilitated a tunnel to insert a prosthesis into the contralateral side from the ipsilateral pocket. Complications that were assessed included hematoma, infection, skin necrosis, nipple areolar complex (NAC) necrosis, symmastia, capsular contracture (grade III or IV), implant rupture, and implant exposure. Revision rates were recorded for secondary procedures including capsular contracture release, fixation of the midline, latissimus dorsi flap, fat grafting, implant exchange, and implant removal.

Operative Techniques

The surgical steps were carried out in the following order: (1) marking of the patient preoperatively in a standing position (Fig. 1), (2) preparation of the ipsilateral reconstruction breast pocket, (3) endoscope-assisted creation of contralateral breast pocket for implant placement in the submuscular plane (Figs. 2, 4), (4) temporary placement of contralateral and ipsilateral breast sizers (Fig. 3), (5) definitive placement of an implant (saline or silicone) into the contralateral side, (6) final adjustments to achieve symmetry, (7) closure of the midline aperture with reconstitution of medial breast border using sutures (Fig. 4), and (8) definitive placement of the implant into ipsilateral side.

The contralateral breast pocket for implant placement was prepared using an endoscopic approach. Different incisions for access were used including transmidline, preexisting scar, lateral, transareolar-periareolar,[16] and inframammary fold. Explanations of these approaches have previously been described.[16–19] For the transmidline approach, the third to fifth ribs were used as landmarks. This was confirmed on the surface anatomy to be at a suitable level between the breasts. A 3 cm (for saline implants) or 5 cm (for silicone implants) tunnel at the sternal origin of the pectoralis major muscle was created for the endoscopic contralateral breast augmentation. Submuscular dissection of the loose areolar tissue created the optical cavity for insertion of the endoscope. The steps taken to release the muscle fibers to access the contralateral side was performed carefully and achieved with meticulous dissection under visualization with the endoscope. Depending on whether a 3 cm (saline implant) or 5 cm (silicone implant) will be used, the location of dissection and muscle fiber release is isolated only to this 3–5 cm region, which is inferior to the third rib to avoid injury to the intercostal perforators. The pectoralis major muscle is detached off its insertions from third rib to fifth rib. This pocket then allows the surgeon to easily dissect the muscle fibers at the landmark points and then fiber-by-fiber release the medial pectoral muscle

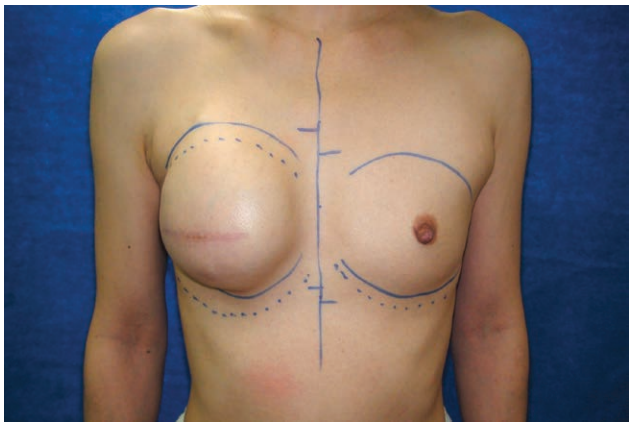

Fig. 1. Preoperative markings for breast exchange of the tissue expander on the right side with a permanent implant while simultaneously augmenting the left breast with an implant using the CATS technique.

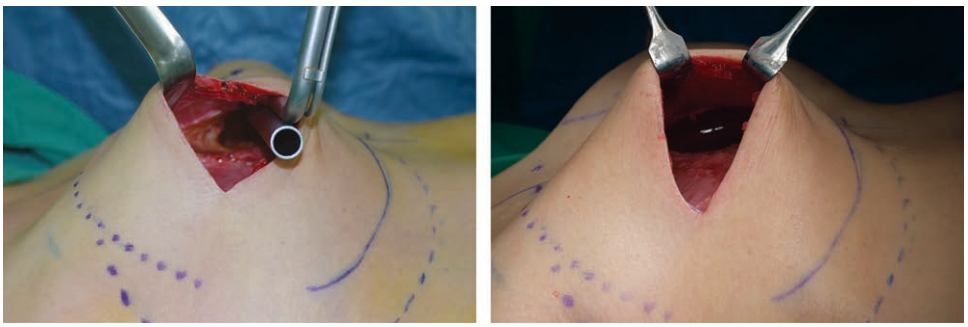

Fig. 2. Development of a 3-cm opening through the transmidline approach and placement of a saline implant (in this patient) in the submuscular plane for contralateral augmentation with a transmidline scarless approach.

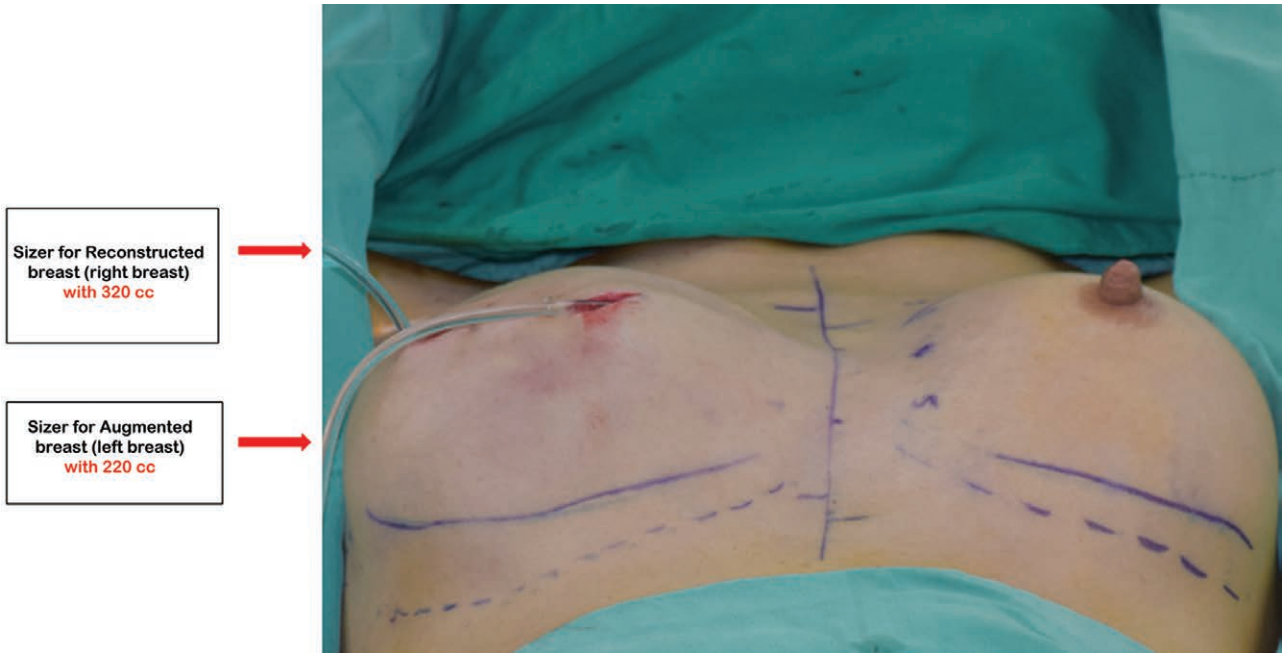

Fig. 3. Placement of 2 sizers into the contralateral and ipsilateral breasts, assessment of symmetry with the patient in an upright sitting position, and decision making for implant size selection.

insertions of the augmentation side to complete the tunnel. On the reconstructive side, the subpectoral pocket is dissected in the standard method using the mastectomy incision. After establishing the optical cavity, the endo retractor (Snowden Pencer, Inc., Tucker, Ga.) is placed, followed by the scope. The pectoralis major fibers along the inferior and lateral quadrants are then transected on the contralateral breast side using the endoscopic Bovie electrocautery with an attached low pressure suction. The endoscopic camera allows direct visualization and precise surgical control. Blunt dissection is avoided to minimize bleeding and to reduce tissue trauma. After establishing the pocket and hemostasis is achieved, a sizer is placed into the pocket and the patient is placed into an upright sitting position on the operating table to determine if the volume and pocket dissection are satisfactory. The permanent implant is selected and inserted into the pocket using Army-Navy retractor assistance. Reconstitution of the midline 3 or 5 cm opening is performed using 3-0 Vicryl horizontal mattress sutures. Two sutures are sufficient to recreate the midline breast borders and to prevent symmastia. These sutures are placed at the dermis and to the periosteum for a strong fixation and reconstitution of the central chest.

The endoscopic dissection through the midline can be achieved in 30 minutes or less. The added cost from sterilization of the endoscopic equipment does not require a substantially increased time or cost to augment the contralateral breast compared with a traditional technique.

Statistical Analysis

Statistical analysis was performed using SPSS 17.0 software (SPSS Inc., Chicago, Ill.). A chi-square test was used to analyze all complication rates. A value of $P \leq 0.05$ was statistically significant. The nonparametric Mann-Whitney test was used for continuous variables.

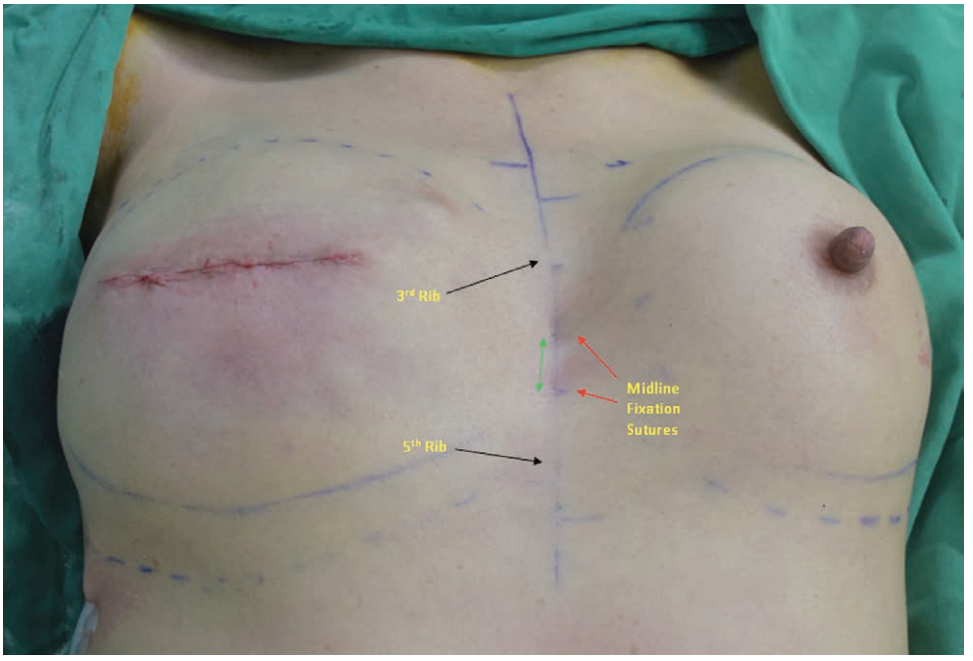

Fig. 4. Surface landmarks for the third and fifth rib (black arrows). Location of midline dissection of the contralateral pectoralis major to create the 3 cm (saline implant) or 5 cm (silicone implant) tunnel at the midline (green arrow). Placement of 2 horizontal mattress sutures at the transmidline incision to fixate the midline area between the breasts (red arrows).

RESULTS

Sixty-five (91.5%) of 71 patients underwent the CATS transmidline approach for unilateral breast reconstructions with simultaneous augmentations of the contralateral side over the 12-year period (Table 1). Other types of incisions used for implant placement on the augmentation side included 5.6% inframammary fold, 1.4% transareolar-periareolar approach,[16] and 1.4% lateral breast. Any incision that was not using the transmidline CATS approach was due to the patient having a preexisting breast scar of that variety. All cases for the reconstruction side were postmastectomy defects.

Breast cancer characteristics showed 33.8% ductal carcinoma in situ, 42.3% stage I, and 23.9% stage II breast cancer. None of the patients were stage III or IV. Thirty-eight percentage of patients received chemotherapy, 15.5% received preoperative radiation, 2.8% had intraoperative NAC radiation, and 2.8% had postoperative radiation (Table 1). Patient risk factors for implant-based reconstruction include 5.6% who were smokers and 21.1% who had radiation therapy (Table 5).

Implant material characteristics included 80% of cases that were silicone and 20% that were saline. However, the material type was not significantly different for either the reconstruction nor augmentation side using CATS. Tex Implant type included 59.2% smooth and 40.8% textured with a statistically significant difference ($P < 0.01$). Specimen weight ranged from 100 to 575 g, and the operative time ranged from 120 to 360 minutes; however, there was not a significant difference for these variables (Table 2).

Assessment of complications using the CATS technique found 6 cases of acute and 17 cases of chronic complications. Within the acute complications, there were 1.5% hematomas, 1.5% infections, 0.8% of mastectomy skin necrosis, and 0.8% of NAC necrosis. Subtotal assessment of these acute complications comparing the reconstruction and augmentation sides was not statistically significant ($P = 0.09$) (Table 3). Of the chronic complications, there were 3.1% symmastia, 5.4% capsular contractures Baker grade III or IV, 1.5% implant rupture, and 3.1% implant exposure. Subtotal assessment of these chronic complications were involved in 13.1% of the cases and was not statistically significant ($P = 0.07$) as a group (Table 3). Assessing these chronic complications individually demonstrated that only implant exposure was statistically significant ($P = 0.04$). In comparing the total complications (i.e., both the acute and chronic complications), the reconstructed side had a statistically significant higher rate than the augmented side ($P = 0.02$).

Revision procedures included 6.2% release of capsular contracture grade III–IV, 3.1% midline fixations, 2.3% requiring latissimus dorsi pedicled flap, 0.8% fat grafting cases, 3.1% implant changes, and 3.5% removal of implants. The 2 explantation cases on the augmentation side was due to patient's request to have the implants removed bilaterally (i.e., from the augmentation side and reconstructed side), which accounts also for 2 of the 3 explantations on the reconstructed side. The remaining 1 of the 3 explantations of the reconstructed side was due to implant exposure. Despite having the reconstructed implant removed, the patient did not want the augmentation side removed. The total revision rate of 19.2% was statistically significantly higher ($P = 0.01$) in the reconstruction side. Among the different types of revisions, only change

Table 1. Demographics of Patients with Unilateral Breast Reconstruction and Contralateral Augmentation with Implants

				Stage					Adjuvant Therapy				Reconstruction Time		
										Radiation					
Implant Reconstruction Method	No. Cases N (%)	Age (y) Mean ± SD (Range)	BMI (kg) Mean ± SD (Range)	DCIS N (%)	I N (%)	II N (%)	III N (%)	IV N (%)	Chemotherapy N (%)	Preoperative XRT N (%)	IORT N (%)	Postoperative XRT N (%)	Immediate-Direct Implant N (%)	Immediate Tissue Expander N (%)	Delayed TE/Implant N (%)
Saline	13 (18.3)	39.54±8.7 (27–50)	19.3±1.04 (17.3–20.3)	3 (23.1)	4 (30.8)	6 (46.2)	0	0	8 (61.5)	2 (15.4)	0	0	7 (53.8)	0	6 (46.2)
Silicone	58 (81.7)	42.53±9.1 (26–62)	20.2±2.21 (16.4–24.8)	21 (36.2)	26 (44.8)	11 (19)	0	0	36 (62.1)	9 (15.5)	2 (3.4)	2 (3.4)	25 (43.1)	10 (17.2)	23 (39.7)
Total	71	41.99±9 (26–62)	20.8±2.08 (16.4–24.8)	24 (33.8)	30 (42.3)	17 (23.9)	0	0	44 (38)	11 (15.5)	2 (2.8)	2 (2.8)	32 (45.1)	10 (14.1)	29 (40.8)
P		0.33	0.34			0.09			0.9		0.5			0.86	

BMI, body mass index; DCIS, ductal carcinoma in situ; IORT, intraoperative radiotherapy to the NAC; TE, tissue expander; XRT, radiotherapy.

Table 2. Case Characteristics Using the CATS Technique for Unilateral Breast Reconstruction and Contralateral Augmentation with Implants

	CATS Trans Midline	Implant		Specimen Weight (g) (Immediate Reconstruction Only)	Reconstruction Side (cc)	Augmentation Side (cc)	Operation Time (Min)	Follow-Up (mo)
Implant Reconstruction Type	No. Cases N (%)	Smooth N (%)	Texture N (%)	Mean ± SD (Range)	Mean ± SD (Range)	Mean ± SD (Range)	Mean ± SD (Range)	Mean ± SD (Range)
Saline	13 (20)	13 (100)	0	415±226.2 (255–575)	296.1±68.2 (170–400)	183.5±28.3 (140–240)	209.6±49.1 (157–299)	128.1±20.5 (63–146)
Silicone	52 (80)	27 (51.9)	25 (48.1)	195.8±62.7 (100–320)	327.2±53.5 (210–460)	192.9±38.1 (150–330)	191.5±49.7 (120–360)	47.6±26.6 (1–108)
Total	65	40 (59.2)	25 (40.8)	218.9±105.4 (100–575)	320.9±57.5 (170–460)	191.3±36.6 (140–330)	194.2±49.6 (120–360)	63.7±41.2 (1–146)
P		< 0.01*		0.07	0.2	0.7	0.32	< 0.01*

*$P \leq 0.05$

Table 3. Complication Rates of Using the CATS Technique

		Acute Complications					Chronic Complications					
Implant Reconstruction Method	No. Cases N (%)	Hematoma N (%)	Infection N (%)	Chest Wall Necrosis N (%)	NAC Necrosis N (%)	Subtotal Complications N (%)	Symmastia N (%)	Capsular Contracture (Grade III or IV) N (%)	Implant Rupture N (%)	Implant Exposure N (%)	Subtotal Complications N (%)	Total Complications N (%)
Reconstruction side	65 (50)	1 (1.5)	2 (3.1)	1 (1.5)	1 (1.5)	5 (7.7)	2* (3.1)	4 (6.2)	2 (3.1)	4 (6.2)	12 (18.5)	17 (26.2)
Augmentation side	65 (50)	1 (1.5)	0	0	0	1 (1.5)	2* (3.1)	3 (4.6)	0	0	5 (7.7)	6 (9.2)
Total	130	2 (1.5)	2 (1.5)	1 (0.8)	1 (0.8)	6 (4.6)	4 (3.1)	7 (5.4)	2 (1.5)	4 (3.1)	17 (13.1)	23 (17.7)
P		1	0.15	0.3	0.3	0.09	1	0.69	0.15	0.04†	0.07	0.02†

*Same patient.
†$P \leq 0.05$

Table 4. Revision Rates and Procedures of Using the CATS Technique

Implant Reconstruction Method	No. Cases	Revision Procedures: Release of Capsular Contracture Grade III or IV	Midline Fixation	LD Flap	Fat Grafting	Implant Change	Implant Removal	Total Revision
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Reconstruction side	65 (50)	5 (7.7)	2* (3.1)	3 (4.6)	1 (1.5)	4 (6.2)	3 (4.6)	18 (27.7)
Augmentation side	65 (50)	3 (4.6)	2* (3.1)	0	0	0	2 (3.1)	7 (10.8)
Total	130	8 (6.2)	4 (3.1)	3 (2.3)	1 (0.8)	4 (3.1)	5 (3.5)	25 (19.2)
P		0.47	1	0.08	0.31	0.04†	0.64	0.01†

*Same patient.
†$P \leq 0.05$
LD, latissimus dorsi (pedicled).

of implant ($P = 0.04$) was statistically significant between the reconstructed and augmented sides (Table 4).

When comparing implant material type using the CATS reconstructive method, the incidence of chest wall skin necrosis was the only variable that was statistically significantly higher in the saline group ($P = 0.05$) in comparison with the silicone group (Table 5). This may be attributed to the early experience of the surgeon.

Employing the CATS technique, the timing of reconstruction: (1) immediate direct to implant, (2) immediate tissue expander, and (3) delayed using a 2-staged method with tissue expander and implant had no statistically significant difference in neither acute nor chronic complications between them.

The average follow-up period for saline implants was 128 months (10 years) and for silicone implants was 48 months (4 years), which was statistically significantly different ($P < 0.01$). The average follow-up for both saline and silicone implants was 64 months (5.3 years). Certainly, capsular contracture rate can be higher many years postoperatively than within the first few years. The follow-up is longer for saline implants based on implant availability as well as patient and surgeon preference at the time of selecting the type of implant to use. Silicone implants were used more often later on in this study period as acceptance grew and availability was restored at our institution and by the national Department of Health.

The use of saline implants or silicone in either a 1-stage or 2-stage approach using the CATS technique yields pleasing postoperative results with the added benefit of not having any external scar on the contralateral breast (Figs. 5, 6).

DISCUSSION

Achieving breast symmetry in the contralateral breast in unilateral breast reconstruction has been a highly sought-after goal that has eluded even the most skilled plastic surgeons.[1–3] Most breast reconstruction patients can appreciate the need for symmetry but are often hesitant about surgery to the contralateral virginal breast. The CATS technique of a simultaneous contralateral balancing breast augmentation using a scarless transmidline approach has been demonstrated to be an excellent solution to meet the demands and objectives of both the patient and the surgeon.[18,19]

To determine if the complication rates using this technique were comparable with the traditional methods of breast augmentation and reconstruction, the rates of common complications were obtained from the United States Food and Drug Administration (FDA) physician labelling data for comparison.[20] For augmentation procedures, rates of complications were hematoma 1.5% (FDA, <1–2.6%), infection 0% (FDA, <1–1.7%), chest wall/skin necrosis 0% (FDA, 0 to <1%), NAC necrosis 0% (no rate reported by FDA for comparison), symmastia 3.1% (no rate reported by FDA for comparison), capsular contracture 4.6% (FDA, 6–15.5%), implant rupture 0% (FDA, 0.5–11.3%), implant exposure 0% (FDA, 0–0.4%).[20–27] For reconstruction procedures, the rates of complication were hematoma 1.5% (FDA, <1–1.5%), infection 3.1% (FDA, <1–9%), chest wall/skin necrosis 1.5% (FDA, <1–3.6%), NAC necrosis 1.5% (no rate reported by FDA for comparison), symmastia 3.1% (no rate reported by FDA data), capsular contracture 6.2% (FDA, 8.3–30%), implant rupture 3.1% (FDA, 0.9–11.4%), implant exposure 6.2% (FDA, 0.9–2.6%).[20–27] The rate of complications using the CATS technique compared with the FDA data demonstrated that complications are either comparable or less frequent. The only complication rate that was higher using the CATS technique was implant exposure on the reconstruction side, which may be due to the effects of radiation (i.e., 21.1% of study patients) and aggressiveness of the resection by the mastectomy surgeon. The FDA data include the most commonly and widely used implant brands and types. The infrequency of symmastia is evidenced by the paucity of studies regarding its prevention, correction, and most importantly its incidence.[6] The rate of symmastia is not reported in FDA resources for Allergan, Mentor, nor Sientra premarket approval studies for implants.[20–27] As such, there is not a representative national or global incidence rate of symmastia to compare those of this study with.

There are many advantages to the CATS technique. The contralateral breast gains volume and projection without an additional scar. There is an improved aesthetic and it can be achieved in an invisible manner. It is clinically difficult to detect that the contralateral breast has been augmented at all without deep palpation of that side. Achieving symmetry of the contralateral breast at the same time affords the patient the luxury of only 1 general anesthesia,

Table 5. Comparison of Saline Versus Silicone Implant Using the CATS Technique—Complication Rates

		Risk Factor		Acute Complications					Chronic Complications					
Implant Reconstruction Method	No. Cases	Smoke	R/T	Hematoma	Infection	Chest Wall Necrosis	NAC Necrosis	Subtotal Complications	Symmastia	Capsular Contracture	Implant Rupture	Implant Exposure	Subtotal Complications	Total Complications
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Saline	26 (20)	0	2 (7.7)	0	0	1 (3.8)	0	1 (3.8)	0	1 (3.8)	1 (3.8)	2 (7.7)	4 (15.4)	5 (19.2)
Silicone	104 (80)	3 (2.9)	11 (10.6)	2 (1.9)	2 (1.9)	0	1 (1)	5 (4.8)	4 (3.8)	6 (5.8)	1 (1)	2 (1.9)	13 (12.5)	18 (17.3)
Total	130	3 (2.3)	13 (10)	2 (1.5)	2 (1.5)	1 (0.8)	1 (0.8)	6 (4.6)	4 (3.1)	7 (5.4)	2 (1.5)	4 (3.1)	17 (13.1)	23 (17.7)
P				0.48	0.48	0.05*	0.62	0.83	0.31	0.70	0.29	0.13	0.7	0.82

*$P \leq 0.05$

R/T, radiation therapy.

1 postoperative recovery period and, ultimately, saves the patient additional hospital and anesthetic costs. This is especially meaningful in some countries if the breast reconstruction is not covered by health insurance. The use of a transmidline approach and an endoscope minimizes the retraction needed in comparison with traditional methods. Tissue ischemia and necrosis can result with traditional augmentation approaches if the surgeon or assistant are too overzealous with their retraction along the incision.[28,29] Aggressive and prolonged retraction at the skin incision edge can disrupt blood flow to the skin when the pressure is in excess of the mean arterial pressure.[30] Studies comparing laparoscopic versus open techniques for surgical treatment of abdominal hernias have noted less skin necrosis with a laparoscopic method.[31] Postoperative bruising and erythema at the incision site is nonexistent. Trimming of unhealthy overretracted skin at the time of surgical closure is not necessary with this method.

There are some disadvantages to using the CATS technique. One primary concern of using a transmidline approach is iatrogenic symmastia. However, we found that using this technique along with surgically reconstituting the midline using sutures has not resulted in significant symmastia. The size of the opening is kept to a minimum to facilitate the endoscope and can yield an excellent aesthetic result. Another concern is the access for revision procedures. Should the patient develop any capsular contracture, implant rupture/malposition, or if the patient desires a change in size or removal of the implant, it may require a separate incision. Access to the contralateral breast pocket for capsulotomy, capsulectomy, implant replacement/exchange/removal is difficult to achieve again with the transmidline approach unless the ipsilateral breast pocket is reopened. Generally, this is not an issue because the ipsilateral side needs to be opened as well. Because this technique limits the opening to 3–5 cm, it is not possible to take out the implant from that same sized incision unless it is a saline implant or the width of the tunnel is extended. However, some of the same criticisms of needing a separate incision for revision and secondary surgery can be applied to transaxillary augmentation. Despite this limitation, it is still a popular and widely used technique.[32,33] In fact, some surgeons perform revision surgery through the same transaxillary incision.[33] Intraoperatively, after a sizer has determined the desired volume, the surgeon cannot change the implant once the permanent implant has been inserted into the pocket without widening the tunnel if a silicone implant is used. This "one-shot" opportunity requires careful planning and decision making by the surgeon. Finally, the use of the endoscope is a skill that many plastic surgeons may not be familiar with or do not perform routinely. Therefore, there is an extra element of complexity that will require additional training and repetition to achieve consistent and desirable results.

CONCLUSIONS

The CATS technique is an excellent option for unilateral implant-based breast reconstruction while simultaneously implant-augmenting the contralateral breast

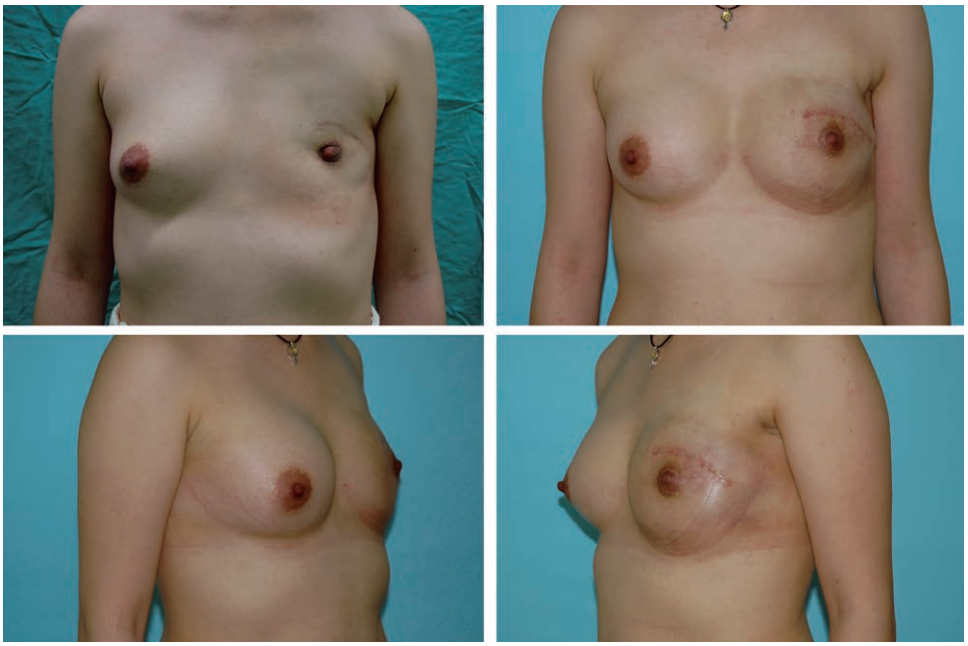

Fig. 5. Preoperative and 1 month postoperative photographs of a patient with 360 cc saline implant for left reconstruction and 185 cc saline implant for contralateral augmentation using this CATS technique.

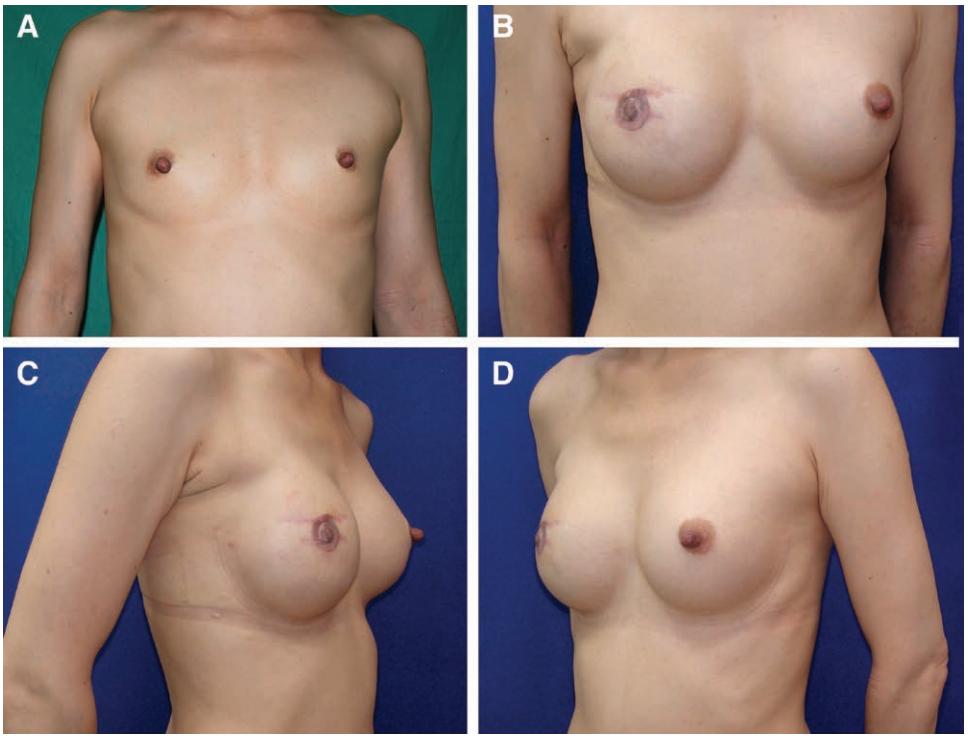

Fig. 6. Preoperative (A) and 20 months' postoperative (B-C) photographs of a patient with silicone implants using a 2-stage implant reconstruction with the CATS technique: right breast skin-sparing mastectomy and immediate tissue expander insertion with subsequent exchange of a tissue expander for a permanent 320 cc silicone implant and simultaneous contralateral augmentation with a 220 cc silicone implant.

without an additional scar. This is the first study to describe this particular approach where implants are used for both breasts, and it is the third installment of 2 previous published studies using a transmidline access method. A desirable aesthetic result is achievable with a low risk of symmastia with this procedure.

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