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Breast

Lateral Inframammary Approach for Asian Augmentation Mammaplasty

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Background: The inframammary fold (IMF) approach for augmentation mammaplasty is less popular in Asia. The incision was modified to lateral IMF (L-IMF) for easy access and better outcome. The aim of this study was to evaluate if L-IMF approach is feasible in Asian women.

Methods: Between 2002 and 2016, 53 patients with 96 augmentation mammaplasties were performed using lateral (L-IMF, 31 cases, 56 breasts) and traditional IMF approaches (T-IMF, 22 cases, 40 breasts). Surgical outcome was compared between L-IMF and T-IMF groups. Scar was assessed using photographic images by 4 assessors with a modified Manchester Scar Score, and telephone surveys available in L-IMF group.

Results: The average age was 41 ± 10.7 years (range, 20–73 years). There were no statistical differences in demographics in both groups besides of implant type ($P < 0.01$). At a follow-up of 80.1 months (range, 20–173 months), the capsular contracture rate and overall complication rate were statistically lower in L-IMF group, 3.6%, and 3.6%, than in T-IMF group, 15%, and 20% ($P = 0.05$, and $P < 0.01$, respectively). The modified Manchester Scar for L-IMF scars was 8.47 ± 2.4. The average score of 24 of 31 patients with L-IMF incision was 3.8 ± 0.96/5 points with patient-reported questionnaire. Nineteen patients (79.2%) would recommend or strongly recommend the procedure to friends.

Conclusions: The scar of L-IMF group healed satisfactorily with lower capsular contracture and overall complication rates than T-IMF group. Patients were satisfied with the outcome of breast augmentation and scar appearance using L-IMF approach. *(Plast Reconstr Surg Glob Open 2018;6:; doi: 10.1097/GOX.0000000000001723; Published online xxx xxx 2018.)*

INTRODUCTION

The demand for breast augmentation is rising in Asia. Implant-based augmentation is the most popular method because toxic injectables such as liquid silica gels and polyacrylamide were banned due to the harm they caused.[1,2] Complications of breast augmentation are indiscriminate of race but may reflect distinctive characteristics of Asian women. Asians heal differently[3] and their priorities[4] must be acknowledged. Asians are prone to hypertrophic and prolonged hyperemic scarring,[3,5] and they choose smaller implants. Women are stereotypically slimmer, with smaller breasts, smaller areolae, and larger nipples than their Western counterparts.[2,6–8] In Asian culture, there is a generalized aversion to visible scars, including scars on the breast.

The inframammary fold (IMF) approach to breast augmentation has not gained widespread popularity in Asia.[4,9] More than 80% of naive patients in a recent Chinese study preferred an axillary incision for fear of a visible scar.[4] After patients were provided evidence-based educational materials, that figure dropped to 54%, but the evidence was based on Western experience. The IMF approach is most common in the West and is widely supported in the literature.[10] In Asia, axillary and areolar approaches are typically used.[2,11,12] Women who seek augmentation mammaplasty using incisions other than the IMF may be making the right choice, but for the wrong reason. The Asian literature condemns the IMF approach for implant malposition, but seldom identifies unfavorable scarring.[13,14]

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Asians are predisposed to hyperpigmented and hypertrophic scars, but no literature supports the possibility that IMF scars are more problematic than in other populations. Scars are seldom identified as a source of patient concern.[10,15–18] A bigger risk in disrupting the IMF is a predisposition to implant malposition and the development of a "double bubble" deformity.[13,14] The senior author modified the traditional IMF (T-LIMF) approach to lateral IMF (L-IMF) for Asian women since 2012. The purpose of this study was to investigate the outcomes of a modified L-IMF for augmentation mammaplasty in Asian women.

PATIENTS AND METHODS

Between 2002 and 2016, 53 patients with 96 breast augmentations using inframammary incisions by the senior author at a single hospital in 2 periods. From August 2002 to February 2011, the T-IMF incision was used in 22 patients with 40 augmentation mammaplasties; there were 9 primary patients and 13 secondary patients. Diagnoses in primary cases were bilateral micromastia (7 patients) and anterior thoracic hypoplasia (2 patients). Secondary patients were for capsular contracture (7 patients), malposition (3 patients), implant rupture (2 patients), and change in implant size (1 patient). Between September 2012 and May 2016, 31 patients with 56 augmentation mammaplasties were performed using the L-IMF approach (Table 1). There were 18 primary patients and 13 secondary patients. Diagnoses in primary cases were bilateral micromastia (13 patients), asymmetry (2 patients), anterior thoracic hypoplasia (2 patients), and Poland's syndrome (1 patient). Secondary patients were performed for capsular contracture (8 patients) and implant rupture (5 patients).

T1

Operative Technique: L-IMF Approach

All operations were performed under general anesthesia by the senior author. Preoperative intravenous Gram-positive coverage (cefazolin, 500 mg) was given. The bilateral IMFs, upper poles and midline were marked preoperatively on a standing position. When the IMF was indistinct or underdeveloped (in primary cases), the new IMF was set at 7 cm inferior to nipple at 6 o'clock. In revision augmentation cases, when the IMF was not ideal to the capsular or foreign body 7 cm inferior to nipple at 6 o'clock was also marked (Fig. 1). Between the "4–5" or "7–8" o'clock positions of the left or right IMF marking, a 3-cm incision was adequate for saline implants. The incision was 4 cm for primary augmentation, and 5 cm for revision augmentation using silicon implant.

F1

In most cases, when the implant was placed in underneath the muscle, pectoralis fascia was incised to develop the subpectoral plane. Delicate dissection with headlight illumination and 2.5× loupe magnification was performed along the inferior pole to assure minimal disruption to existing IMF structures.[19] Inferior fibers of the pectoralis major origin were divided at the IMF marking 3~9 o'clock on the both breasts. Meticulous hemostasis was obtained, and the implant was peppered with a vial of cefazolin powder before no-touch insertion.[20] Drains were not routinely placed in primary cases; closed suction drains were placed in select revision augmentation cases. The dermis was secured to the underlying rib periosteum in 3 stitches at 4, 6, 8 o'clock, using preoperative incision marking with 2-0 PDS. (PDS II, Ethicon, Somerset, N.J.) Dermal and subcuticular polydioxanone sutures were placed in a 2- layered fashion, and Steri-Strips were applied. A compressive wrap was applied, and patients were instructed to initiate breast massage at 3 days postoperatively.

Complications

The incidence of malposition, double-bubble deformity, and capsular contracture Baker class II was reviewed retrospectively based on clinical charts. All other complications, including hematoma, seroma, and infection, were identified as well. Data were compared by independent *t* test using SPSS software (Version 17.0; SPSS, Inc., Chicago, Ill.). Statistical significance was established with values of $P < 0.05$.

Scar Assessment

The first group patients were all loss of follow-up. The cosmetic results of L-IMF scars were assessed with photographic images and telephone-based surveys. Scars were evaluated in patients with 6 or more months of follow-up using a modified Manchester Scar Scale (MSS) by 4 independent investigators. Using 1 slide per patient, high-definition frontal and oblique views were projected onto a large screen. Investigators were allotted 30 seconds to assign a visual analog score (VAS, score range, 0–10) and to evaluate color (1–4), texture (1–2), contour (1–4), and soft-tissue distortion (1–4). The lower the score, the better the outcome; for example, the best possible composite score is 4 and the worst is 24. Composite scores were obtained for 4 evaluators, and interrater reliability was estimated with the 2-way random intraclass coefficient (ICC) for consistency. VAS, color, texture, contour, distortion, and composite scores were averaged to assign an overall MSS for each patient. We defined a dyspigmented scar as an average rating of 3 (obvious mismatch) or 4 (gross mismatch), when rounded up. A hypertrophic scar had an average rounded contour score of 3; keloids had an average rounded score of 4. All analyses were performed using SPSS Version 22.0 (SPSS, Inc., Chicago, Ill.), and significance was established at $P < 0.05$.

Patient Satisfaction

Via a voluntary telephone survey, patients with L-IMF scars were asked about satisfaction, quality of life, perceived attractiveness, and noticeability. Patients beyond 6 months of follow-up were also asked to evaluate the overall appearance of scars with a 5-point Likert-type scale: 1 (very bad scar worthy of revision), 2 (bad scar but not worthy of revision), 3 (acceptable but visible scar), 4 (good scar but still visible), or 5 (inconspicuous scar). Respondents were also asked about sensitivity of nipples: whether they could feel when their nipple was touched, if that generated arousal, and whether there was a change compared with before surgery (Table 5).

T5

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Table 1. Demographics of 31 Consecutive Patients Underwent Lateral IMF Incision for Primary and Revisional Augmentation

	Age (y)	Type	Diagnosis	Implant Fill	R Implant Volume (mL)	L Implant Volume (mL)	Surface	Shape	Manufacturer	Plane	Follow-up (mo)	Complications
AQ5												
AQ6	50	Primary	R balancing after CBR	Silicone	190	NA	Smooth	Round	McGhan	SM	9	—
	48	Primary	L balancing after CBR	Silicone	NA	210	Textured	Round	McGhan	SM	26	—
	39	Primary	R Poland syndrome L micromastia	Silicone	275	175	Smooth	Round	Mentor	SM	31	—
	34	Primary	Micromastia	Silicone	270	270	Smooth	Round	Mentor	SM	6	—
	39	Primary	ATH micromastia	Silicone	250	200	Smooth	Round	Mentor	SM	15	—
	35	Primary	Micromastia	Silicone	300	300	Smooth	Round	Mentor	SM	15	—
	27	Primary	Micromastia	Silicone	300	300	Textured	Round	McGhan	SM	6	Capsular contracture, 6 mo
	32	Primary	Micromastia	Silicone	275	250	Smooth	Round	Mentor	SM	6	—
	29	Primary	Micromastia	Silicone	300	300	Smooth	Round	Mentor	SM	5	—
	35	Primary	Micromastia	Silicone	300	300	Smooth	Round	Mentor	SM	6	—
	24	Primary	Micromastia	Silicone	340	300	Smooth	Round	McGhan	SG	10	—
	21	Primary	Micromastia	Silicone	260	260	Smooth	Round	McGhan	SM	8	—
	29	Primary	ATH micromastia	Silicone	320	240	Smooth	Round	McGhan	SM	54	—
	41	Primary	Micromastia	Silicone	240	200	Smooth	Round	McGhan	SM	70	—
	38	Primary	Micromastia	Silicone	320	260	Smooth	Round	Allergan	SM	13	
	44	Primary	Micromastia	Silicone	280	280	Smooth	Round	Allergan	SM	12	
	45	Primary	Micromastia	Silicone	300	300	Smooth	Round	Allergan	SM	11	
	35	Primary	Micromastia	Silicone	300	300	Smooth	Round	Allergan	SM	11	
	44	Secondary	R capsular contracture	Silicone	275	NA	Smooth	Round	Mentor	SM	6	—
	46	Secondary	B capsular contracture	Silicone	360	360	Smooth	Round	Allergan	SM	29	—
	47	Secondary	R implant rupture	Silicone	300	300	Smooth	Round	Mentor	SG	30	—
	72	Secondary	B implant rupture B capsular contracture	Silicone	240	240	Textured	Round	McGhan	SM	27	—
	73	Secondary	B capsular contracture	Silicone	250	NA	Smooth	Round	NM	SM	6	—
	43	Secondary	L implant rupture	Silicone	300	300	Smooth	Round	McGhan	SM	17	—
	56	Secondary	L capsular contracture	Saline	NA	300	Smooth	Round	NM	SM	6	—
	25	Secondary	B capsular contracture	Silicone	250	250	Smooth	Round	Mentor	SM	4	—
	49	Secondary	L capsular contracture double-bubble deformity	Silicone	300	NA	Smooth	Round	McGhan	SM	50	—
	40	Secondary	Implant rupture (left)	Silicone	240	240	Smooth	Round	Allergan	SG	50	—
	41	Secondary	Implant rupture (right)	Silicone	300	300	Textured	Round	Allergan	SM	23	
	37	Secondary	B capsular contracture	Silicone	210	270	Smooth	Round	Allergan	SG	14	
	33	Secondary	B capsular contracture	Silicone	280	270	Textured	Round	Allergan	SG	12	
Mean ± SD	40.4±11.9	Primary: 18; secondary: 13		Saline: 1; silicone: 30	280.17±36.9	269.44±41.2	Smooth: 26; textured: 5			SM: 26; SG: 5	20.5±18.9	

ATH, anterior throacic hypoplasia; CBR, contralateral breast reconstruction; L, R, B, left, right, bilateral; NM, not mentioned in clinic chart; SM, submuscular; SG, subglandular.

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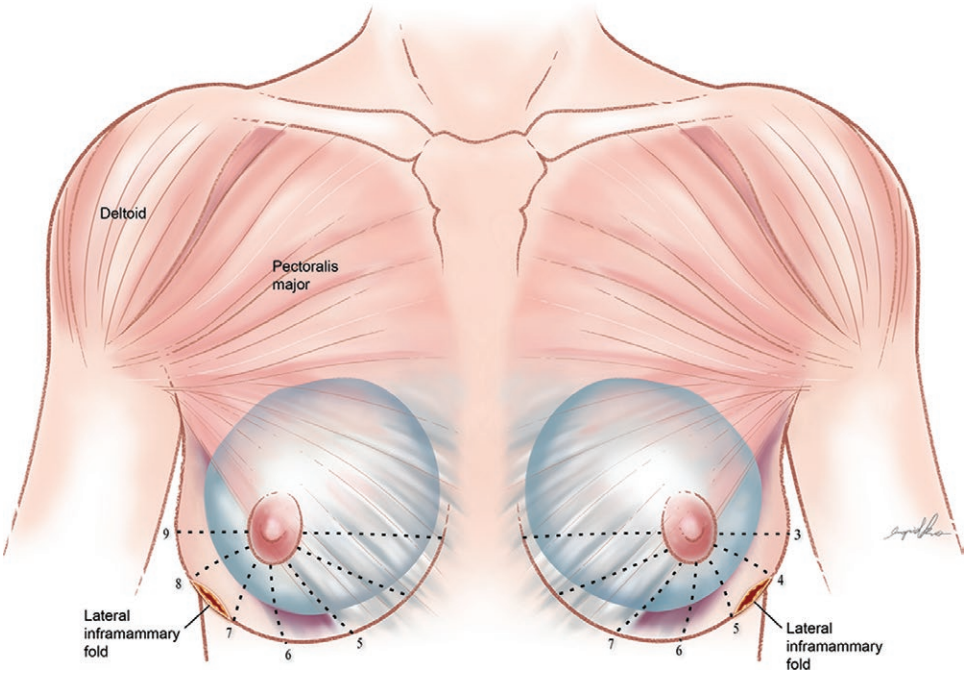

Fig. 1. Between the "4–5" or "7–8" o'clock positions of the left or right IMF marking, a 3-cm incision was adequate for saline implants. The incision was 4 cm for primary augmentation, and 5 cm for revision augmentation using silicon implant. The new IMF was set at 7 cm inferior to nipple at 6 o'clock.

RESULTS

The mean age of women in 53 patients treated was 41.0 ± 10.7 years old (range, 20–73 years old) at the time of surgery. Differences in characteristics of the L-IMF and T-IMF groups are summarized in Table 2. The operation time in both groups was not statistically different, 173.6 ± 59.7 minutes in T-IMF group, and 168.3 ± 50.2 minutes in L-IMF group ($P = 0.67$). The differences between the 2 groups were the follow-up time, which was longer in the T-IMF group ($P < 0.01$) and the higher rate of saline implants in the IMF group ($P \leq 0.01$). Eleven breasts received silicone implants in T-IMF group, and 55 in the L-IMF group (83.3%). Thirty breasts received saline implants, 29 in the T-IMF group (96.7%), and 1 in L-IMF group. All but one patient in group L-IMF treated with saline implants underwent the operation before the FDA moratorium was lifted in 2006. Implants were 279 cc on average (range, 170–500 cc). Round implants were used in every case. Seventy-eight of 96 implant shell surfaces (81.3%) were smooth; 18 had a textured surface (18.7%). Implants were placed in the subpectoral plane in 82 of 96 breasts (85.4%) and in the subglandular plane in 14 breasts (14.6%).

There were no hematomas, seromas, or infectious complications in either group (Table 3). Ten breasts had complications, including 2 in the L-IMF group capsular contracture (3.6%), and 8 in the T-IMF group (20%, $P = 0.05$). Of the latter, there was 6 breasts of capsular contracture, 1 breast of wound dehiscence, and 1 breast of double-bubble ($P = 0.23$). All 10 breasts required additional surgery. Implants were replaced in 2 of 8 capsular releases, and 1 case of wound dehiscence required debridement and closure. One patient with unilateral capsular contracture had ipsilateral contracture recurrence and contralateral contracture development. No implant downward displacement below the neo-IMF in both groups.

Scar Appearance

L-IMF scar appearance was evaluated in photographs taken at the most recent follow-up for 24 women (71.0%) with 6 or more months of follow-up. The mean follow-up time for this group was 20.5 ± 18.9 months (range, 6–70 months). There were no keloids. Six women (19.4%) had scars that qualified as dyspigmented, and 1 woman (3.2%) had both dyspigmented and hypertrophic scars. Representative postoperative results are shown in Figures 2–4. Among the 4 observers, inter-rater reliability was estimated to be ICC (2,4) = 0.849. Results of the MSS evaluation are summarized in Table 4. The MSS for L-IMF scars studied was 8.47 ± 2.4.

Outcomes of Patient-reported Questionnaire

Patients' survey results are summarized in Table 5. Twenty-four of 31 women in the L-IMF group with 6 months' or more follow-up (77.4%) were reachable during the period of data collection, and all volunteered to take the survey. Seven women could not be reached. The average score of patients with L-IMF incisions was 3.8 ± 0.96/5 points. Nineteen of the 24 (79.2%) women agreed or strongly agreed that they were satisfied with

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AQ8

Table 2. Comparisons between Lateral and Traditional IMF Cohorts

Parameter	No. of Patients	No. of Breasts	Age	Augmentation		Implant Style				Implant Placement		Operative Time
				Primary Augmentation	Revisional Augmentation	Silicone	Saline	Smooth Surface	Textured Surface	Submuscular Pocket	Subglandular Pocket	
	N (%)	N (%)	Mean ± SD (range)/y	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	Mean ± SD (range)/min
L-IMF	31	56	40.4±11.9 (21–73)	34 (60.7)	22 (39.3)	55 (98.2)	1 (1.8)	45 (80.4)	11 (19.6)	46 (82.1)	10 (17.9)	168.3±50.2 (98–325)
T-IMF	22	40	41.8±8.9 (20–56)	18 (45)	22 (55)	11 (27.5)	29 (72.5)	33 (82.5)	7 (17.5)	36 (90)	4 (10)	173.6±59.7 (90–327)
Total	53	96	40.9±10.7 (20–73)	52 (54.2)	44 (45.8)	66 (68.8)	30 (31.2)	78 (81.3)	18 (18.7)	82 (85.4)	14 (14.6)	170.2±53.4 (90–327)
P			0.24	0.22		**< 0.01**		0.91		0.46		0.67

Table 3. Comparisons of Complications between Lateral and Traditional IMFs

Parameter	No. of Patients	No. of Breasts	Capsular Contracture	Wound Dehiscence	Malposition		Hematoma	Seroma	Infection	Total Complications	Follow-up
					Asymmetry	Double-bubble					
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	Mean ± SD (Range)/mo
L-IMF	31	56	2 (3.6)	0	0	0	0	0	0	2 (3.6)	45.6±17.5 (20–74)
T-IMF	22	40	6 (15)	1 (2.5)	0	1 (2.5)	0	0	0	8 (20)	128±40.6 (60–173)
Total	53	96	8 (8.3)	1 (1)	0	1 (1)	0	0	0	10 (10.4)	80±50.5 (20–173)
P			**0.05**	0.23	—	0.23	—	—	—	**< 0.01**	**< 0.01**

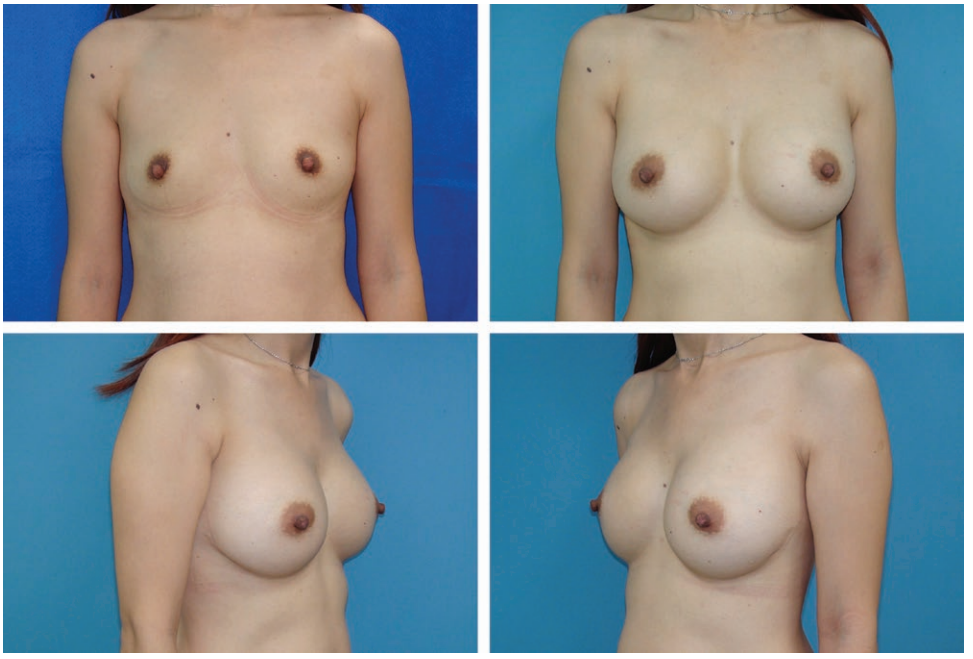

Fig. 2. Preoperative (A) and 36 months' postoperative (B–D) photographs. The 35-year-old woman who underwent primary breast augmentations. The L-IMF incision 4 cm was made. Bilateral smooth silicon implants 300 cc were inserted. Fixation of new IMF-7 cm away from nipple was made.

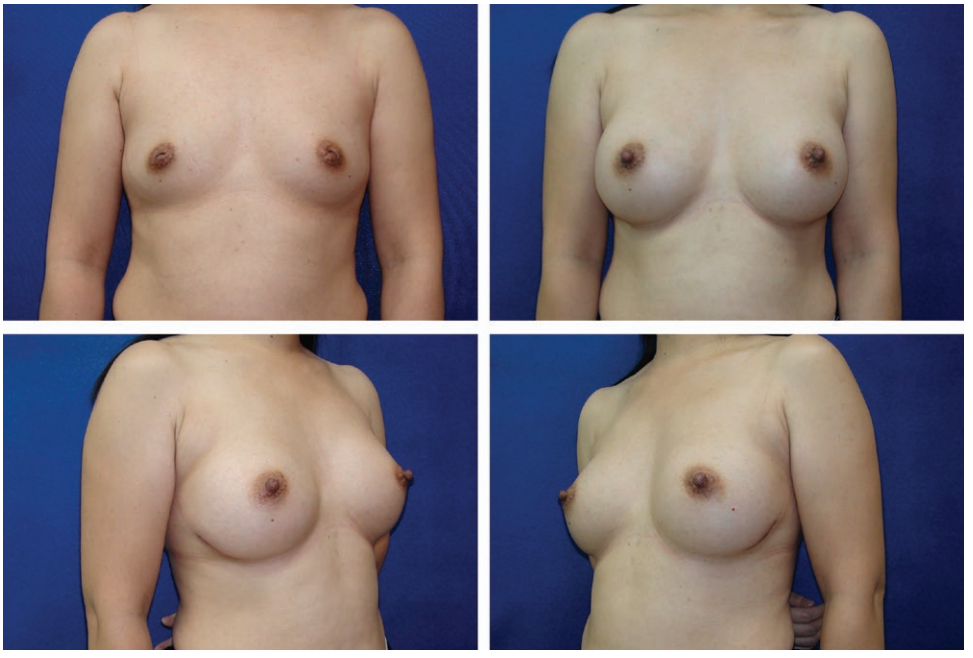

Fig. 3. Preoperative (A) and 11 months' postoperative (B–D) photographs. The 45-year-old woman who underwent primary breast augmentations. Via L-IMF incision was made. Bilateral smooth silicon implants 300 cc were inserted and bilateral nipple retractions were released.

the results of surgery. Nineteen patients (79.2%) would recommend or strongly recommend the procedure to friends. Quality of life was somewhat or significantly improved in 16 women (66.7%). Thirteen women (54.2%) agreed or strongly agreed that their sexual attractiveness improved as a result of surgery. One woman (4.1%) desired revision for unsightly scars. Five women (20.8%) and their partners did not notice a scar. Eighteen women (75%) noticed the scars, but their partner did not. The partner was said to notice the scars in only 1 case (4.1%). Two women (8.3%) stated that 1 or both nipples were more sensitive after surgery, and 5 (20.8%) reported a

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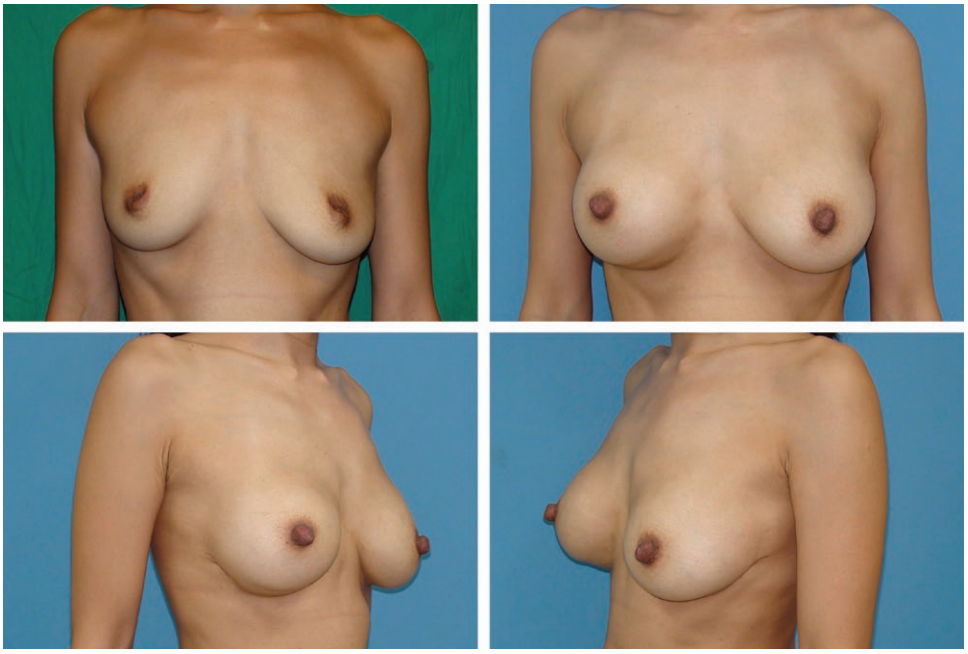

Fig. 4. Preoperative (A) and 10 months' postoperative (B–D) photographs. The 41-year-old woman who underwent primary breast augmentations. Via L-IMF incision was made. Right side smooth silicon implant 240 cc and left side with 200 cc were inserted and bilateral nipple retractions were released.

Table 4. MSS Scale for L-IMF Scars for 24 of 31 Consecutive Patients Underwent Augmentation or Revisional Mammaplasty

Parameters	Range*	Average score†
VAS	0–10	2.35 ± 1.1
Color‡	1–4	2.21 ± 0.6
Texture§	1–2	1.15 ± 0.3
Contour¶	1–4	1.62 ± 0.5
Distortion‖	1–4	1.15 ± 0.3
MSS	0–24	8.47 ± 2.4

*The lower the score the better cosmetic appearance of the L-IMF scars.
†Of 4 observers, ICC (2,4) = 0.849.
‡1 = perfect; 2 = slight mismatch; 3 = obvious mismatch; 4 = gross mismatch.
§1 = matte; 2 = shiny.
¶1 = flush with surrounding skin; 2 = slightly proud or indented; 3 = hypertrophic; 4 = keloid.
‖1 = none; 2 = mild; 3 = moderate; 4 = severe.

decrease in sensation, which was improved after 1 year of follow-up.

DISCUSSION

An increase in regulatory oversight and the phasing out of injectable silicon gels and poly-acrylamides is invigorating the breast implant industry in the Far East. Given a rising demand for breast implantation, it behooves the Asian plastic surgery community to document and publish pertinent experience, and to establish evidence-based guidelines for augmentation mammaplasty in Asians. The Western experience would suggest that the axillary approach is imperfect and increases risk for capsular contracture.[21] Alternatives such as periareolar and IMF approaches deserve reevaluation and refinement in Asian community. Although some women will not overcome their hesitation of having a scar on their breast, we demonstrated the general satisfaction of women that have them and described other outcomes when the L-IMF approach is used.

Whether IMF scarring is sufficiently problematic that it should be avoided has yet to be determined. Every procedure necessitates a scar, and the promise of "invisible scarring" may be misleading when a scar is placed in the axilla.[22] There is not enough evidence in the Asian literature to determine whether Asian women are at risk for undue scarring when an incision is placed along the IMF. The scar is concealed behind the lower breast mound when standing and is not in a high-risk location such as the sternum, shoulder, cheek, and earlobe, which where the common sites of keloid. Without evidence of satisfactory results, it will remain difficult to convince women to overcome a longstanding cultural dogma.[4]

Ill-defined IMFs and tight skin envelopes characterize Asian breast anatomy.[2,14] The L-IMF incision was intended to preserve IMF structures that define breast shape and limit implant migration and deformity. We did not observe caudal migration with the IMF incision, though it has been reported.[13] When the IMF approach is used, special care is taken to suture the inferior pectoralis fascia to the periosteum; Kim et al.[13] attributed caudal migration after IMF augmentation to attenuation or inadequate repair of the IMF and an inappropriately designed nipple-to-IMF distance. Small breasts are akin to a foreshortened nipple-IMF distance;[13] this may reduce tolerance to imperfect incision placement and increase risk of a double-bubble deformity.[23]

Table 5. Telephone Survey, Results for Women with The L-IMF Scars in 24 of 31 Consecutive Patients Underwent Augmentation or Revisional Mammaplasty

	No. Responses (%)					
	Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree	
No of Patient (%)	1	2	3	4	5	Average ± SD
You are satisfied with the cosmetic result of surgery	0	1 (4.1)	4 (16.7)	13 (54.2)	6 (25)	4.0±0.8
You would recommend this procedure to others	1 (4.1)	0	4 (16.7)	9 (37.5)	10 (41.7)	4.1±1.0
Breast implants have improved your quality of life	0	0	8 (33.3)	6 (25)	10 (41.7)	4.1±0.9
The implants have improved your sexual attractiveness	0	2 (8.2)	9 (37.5)	6 (25)	7 (29.2)	3.8±1.0
Do you notice a scar? Does your partner?	Both my partner and I notice. 1 (4.1)	I notice but my partner does not. 18 (75)		Neither my partner nor I notice. 5 (20.8)		
Have you noticed changes in tactile or erogenous sensation?	Both sides decreased 5 (20.8)	One side decreased 0	No change 17 (70.8)	One side increased 1 (4.1)	Both sides increased 1 (4.1)	
Overall, how would you would rate the scars:	Terrible scar. It needs revision. 1 (4.1)	Bad scar, but no need for revision. 2 (8.2)	Satisfactory scar. 14 (58.3)	Good scar but still visible. 5 (20.8)	I can barely see a scar. 2 (8.2)	Average ± SD 3.2±0.9

We expect L-IMF incision providing excellent visualization of the caudal margin of the pectoralis and pectoralis insertions at axilla. Placement of the incision where the patient's favorite underwire bra leaves an impression, or following a simple "4–5," "7–8" rule, minimizes guesswork and obviates the need for otherwise complicated analyses.[24,25] When the patient is marked in the standing position with indelible ink and the wound is closed and fixed to underlying periosteal structures, migration of the incision should not be expected. The same holds true for T-IMF incisions, but gravitational forces are less influential for L-IMF incisions, special with the fixation of new IMF to the periosteum. However, if the scar in L-IMF is not aligned and parallel with the breast boundary or bra line, it may become a conspicuous scar.

Cachay-Velásquez and Ale[26] presented a similar technique in 1990 ("the lateral approach") using a cone-shaped template.[26] In a series of 66 patients, the authors reported a 12.1% capsular contracture rate over 5 years, though follow-up time, indications, and comparative data were lacking. The authors treated patients at an Argentinian center and did not mention unfavorable scarring in a Latin population.[27] The authors identified the advantages of that approach: protection of essential structures, invisible scars on frontal view, direct access, and minimized pectoralis trauma. We suggested to use a bra stainless stent as a template to obtaining symmetric results.

There was a significant disparity in capsular contracture rates in the L-IMF and T-IMF groups. The T-IMF incision was used predominately early in the senior author's career, and the L-IMF incision was used later. Incidentally, saline implants were predominantly used in the T-IMF group and silicone implants were used in the L-IMF group. Because there is little evidence to support a relationship between implant fill and capsular contracture rate,[15] the differences are reassuring, but may be attributable to personally inadequate dissection at anterior axillary line in the T-IMF group.

There are important limitations of this study. Because caudal migration in both approaches were low, we were unable to determine whether the L-IMF confers a risk reduction of implant malposition. Nipple sensation was determined on the basis of a telephone interview, and proper diagnostic testing should have been performed in women who stated that there were sensory changes in 1 or both nipples. Comparative study for L-IMF and IMF incisions, in sensation change would have provided an important reference in the future.

Five women with the L-IMF incision reported some degree of decreased or hypersensation in their nipples. It is well known that the sensory nerves to the nipple arise from the lateral chest wall. The L-IMF incision may injure sensory nerve fibers that would be spared with the delicate lateral dissection instead of bovine coagulation. No patients reported complete anesthesia, but the magnitude of sensory change warrants further study. Until that occurs, the authors recommend meticulous dissection under loupe magnification, taking special care to identify and preserve nerve fibers if and when they are encountered.

This series demonstrates that the L-IMF approaches are safe and feasible and are not risky in Asian women when special care is taken to respect anatomical boundaries and reapproximate tissues with care. With adequate repair of dermal-periosteum, neither IMF or L-IMF approaches resulted in malposition. The L-IMF places the scar in a conspicuous location in Asian women; yet only 1 (4.2%) was compelled to revise her scar. Zelken and Cheng[12] performed a systematic review of the Asian breast augmentation literature and found that scarring was seldom reported. In studies that did report scarring, scar revision was performed in 4.8% of 511 cases with inconspicuous axillary, peri-nipple, and trans-umbilical approaches. Should an unsightly scar occur, we believe the

location and shape of the L-IMF scar makes it the easiest to revise.

CONCLUSIONS

The scar of L-IMF group healed satisfactorily with lower capsular contracture and overall complication rates than T-IMF group. The L-IMF placement of the scar along the lower lateral bra line minimized the disruption of native structures with direct and easy access, minimalized pectoralis major trauma, and the scar was easily concealed. The L-IMF approach for augmentation mammaplasty resulted in a favorable scar without implant malposition and a low complication rate on the basis of clinical, photographic, and survey-based assessments.

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