Clinical case study

Strattice™ Tissue Matrix | For Breast Plastic Surgery

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A KCI Company

Strattice™ Reconstructive Tissue Matrix used in the repair of rippling

Steven Teitelbaum, MD*
Santa Monica, CA

Case summary

A 48-year-old woman with a history of three unsuccessful breast augmentation operations in the preceding six years presents with a chief complaint of severe rippling. Breast examination revealed the inferior border of the pectoralis major muscles (PMMs) to be at the upper poles of the breasts, so that there was minimal muscle coverage of the implants. The management plan included bilateral implant removal and subpectoral replacement with new gel implants and soft-tissue coverage of the implants with Strattice™ Tissue Matrix to bridge the gap between the retracted PMMs and the inframammary folds (IMFs), and to help support and maintain the implants in their subpectoral pockets. At six months postoperatively, the patient was happy with her natural-looking breasts with good symmetry, contour, less visible rippling and implant edges, and without significant animation deformity.

Fig 1 Preoperative stage

Fig 2 Postoperative stage at 6 months

*The author of this case is affiliated with LifeCell™.

Strattice™
RECONSTRUCTIVE TISSUE MATRIX

Patient history

The patient is a 48-year-old, slim, athletic woman who had undergone bilateral augmentation mammoplasty with saline implants six years ago. Her 400 cc saline implants were placed retropectorally through an inframammary incision. She experienced significant rippling and underwent revisionary surgery two years later that involved replacement of her saline implants with anatomic, highly-cohesive, gel implants. Because her PMMs were badly damaged, the surgeon decided to place the new implants subglandularly. However, she still had severe rippling with visible implant edges. Since she had rippling even with these implants, the surgeon believed her rippling would best be reduced by overfilling a saline implant. With the patient's consent, the surgeon replaced her silicone implants with 425 cc high-profile, saline implants and overfilled them to 500 cc such that the rippling was no longer visible. This approach reduced, but did not eliminate, the rippling. However, her breasts appeared round and hard and were uncomfortable.

Presentation

Her concerns at presentation were that her breasts appeared "too large, round, firm, and fake-looking." Breast examination supported the patient's sentiments about her breasts (Figures 1 and 3).

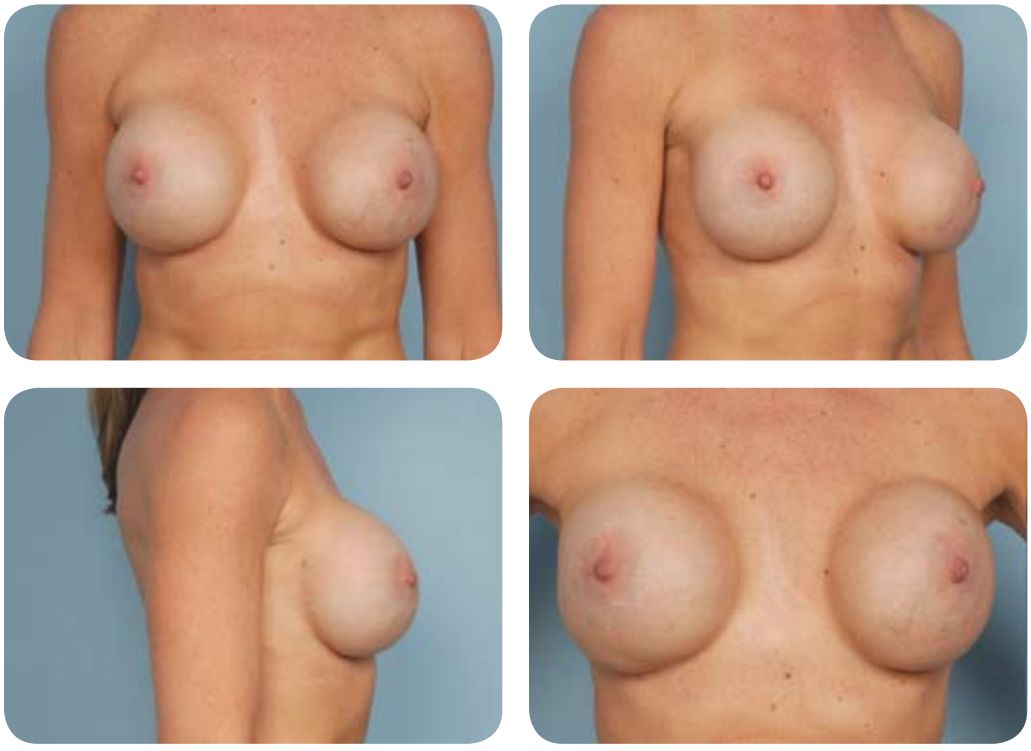

Fig 3 Preoperative stage. Patient is shown with round, firm and overly inflated implants. At lower right, patient is shown maximally flexing her pectoralis major muscles showing animation deformity of the breasts, implant rippling at the lower poles and visible implant edges.

Management plan

The patient's complications were due to severely deficient muscle coverage of her implants. Her PMMs were retracted far superiorly. Even with redissecting a pocket deep to the muscle and using marionette sutures to hold the muscle edge as caudal as possible, it was anticipated that sufficient muscle coverage over the implants would not be maintainable. Thus, to maximize PMM coverage over the implants and to hold the implants subpectorally, the insertion of a sheet of Strattice™ Tissue Matrix to bridge the gap between the retracted PMM and the IMF was planned. The management plan also included replacement of her saline implants with 397 cc, mid-range, projection-responsive, silicone gel implants (Allergan, Irvine, California.)

"…to maximize PMM coverage over the implants and to hold the implants subpectorally, the insertion of a sheet of Strattice™ Tissue Matrix to bridge the gap between the retracted PMM and the IMF was planned."

Repair

Preoperatively, with the patient in the upright position, the course of the PMM was outlined with the patient alternatively flexing and relaxing her PMMs (Figure 4). From the PMM location, the approximate size of Strattice™ Tissue Matrix needed to bridge the gap between the caudal-most extent of the PMM and the IMF was determined.

Fig 4 Preoperative markings. The red lines indicate the course of the pectoralis major muscles (PMMs). The black lines outline the approximate location of the superior border of her breast implants. This shows that even though her implants were supposedly retromuscular, the patient has little or no muscle coverage over the implants.

Repair (continued)

The tissue capsules were accessed via previous inframammary incisions. Capsules were so thin and filamentous that a capsulectomy was neither necessary nor technically practical. The implants were accessed and removed. In the right breast, the PMM was seen to be window-shaded far superiorly, corresponding closely to the red lines in the preoperative markings (Figures 5A and 5B), with just about 3 cm of muscle overlapping the top of the implant (as shown by the black line). In the left breast, two distinct pockets were noted – a submuscular pocket and a subglandular pocket. With minimal muscle coverage of the superior edge of the implant, the muscle had slipped off the implant, allowing the latter to sit in front of the muscle. As the implant was actually subglandular, the location of the muscle was mismarked preoperatively in that the muscle did not end at the top of the implant (Figures 5C and 5D). Rather, there were several more centimeters of muscle lying under the implant. In both breasts, there was insufficient length of the PMM for it to add and maintain adequate coverage over the implants.

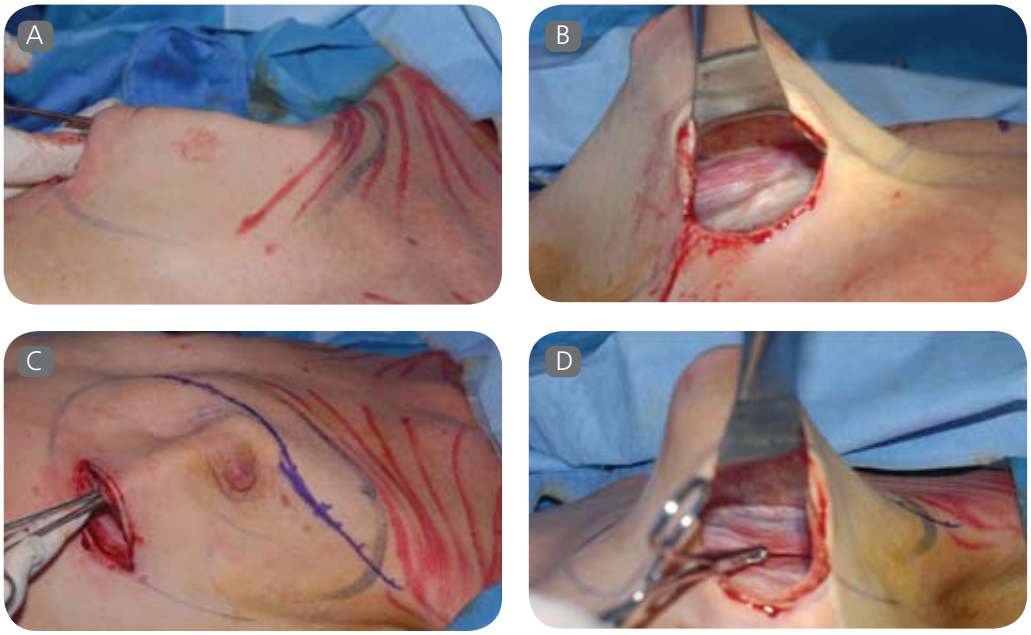

Fig 5 Intraoperative stage. A & B: right breast; C & D: left breast. A: The position of the caudal edge of the pectoralis major muscle (PMM) was as predicted preoperatively. B: The PMM abutted the top of the implant, essentially offering no muscle coverage of the implant. C: The caudal free edge of the PMM is held by the Allis and its course is outlined in blue, below where it was noted preoperatively. D: A subglandular as well as a submuscular pocket was noted in the left breast.

Repair (continued)

Capsulotomies were performed on both breasts superficial and deep to the muscle (Figures 6A and 6B). Superficially, a capsulotomy was performed along the reflection of the capsule between the muscle and the overlying breast gland and deep along the reflection of the capsule between the muscle and the underlying rib cage, thereby creating a new pocket for the implant. Capsule remnants on the exposed muscles were also removed in an effort to mobilize the muscles. A sizer was inserted into each pocket to help determine the appropriate size of Strattice™ Tissue Matrix needed to cover the gap between the PMM and the IMF. In this case, a 10 cm x 16 cm x 2 cm sheet of Strattice™ Tissue Matrix was sufficient (Figure 6C). [*Note: With the introduction of Strattice™ Tissue Matrix Contour pieces, today a Strattice™ Tissue Matrix Contour 2 could be used.*] The Strattice™ Tissue Matrix was inserted into the pocket with its "hypotenuse" running along the border of the PMM. As the muscle was retracted superiorly to the sternum, the Strattice™ Tissue Matrix was positioned far medially in order to gain adequate vertical coverage between the muscle and the IMF. The Strattice™ Tissue Matrix was anchored with an initial 3-O Prolene (Ethicon Inc., Somerville, NJ) suture at its superolateral apex. With the sizer in place as a guide, a second anchoring suture was placed at the inferolateral apex of the Strattice™ Tissue Matrix.

Fig 6 Intraoperative stage. A: Horizontal capsulotomy performed above and below the left pectoralis major muscle (PMM) to increase its mobilization; but, the PMM remained stiff and fixed in position and could not be pulled inferiorly to provide significant implant coverage. B: Capsule superficial and deep to the right PMM was removed; but, the PMM was also stiff and immobile. C: Strattice™ Tissue Matrix shown in its approximate position with an initial 3-O Prolene suture at its superolateral apex.

Repair (continued)

Next, several interrupted sutures were placed between the two anchor sutures along the "hypotenuse" of the Strattice™ Tissue Matrix. After approximate positioning of the Strattice™ Tissue Matrix, running Prolene sutures were used to secure the PMM and the Strattice™ Tissue Matrix junction (Figure 7A) without creating undue tension over the sizer and later the implant. [*Note: If the repair was performed via a periareolar incision, the IMF would be sewn first.*] The "hypotenuse" of the Strattice™ Tissue Matrix was also sutured along the superficial surface of the muscle, thus covering raw ends of the muscle and preventing them from adhering to the undersurface of the breast glands and creating animation deformities. The lateral border of the Strattice™ Tissue Matrix was then sutured to the breast glands and the inferior border to the IMF, leaving a gap for sizer removal (Figure 7B) and replacement with a new 397 cc, mid-range, projection-responsive silicone gel implant. One drain was placed in each breast so that drainage from the space in front of and behind the Strattice™ Tissue Matrix was attained. Suturing of the Strattice™ Tissue Matrix to the IMF was completed (Figure 7C) and final incision closure was performed in standard fashion. To facilitate incorporation of Strattice™ Tissue Matrix, it is important to avoid seroma formation. Drains were maintained for one week until the exudates were light in color and low in quantity.

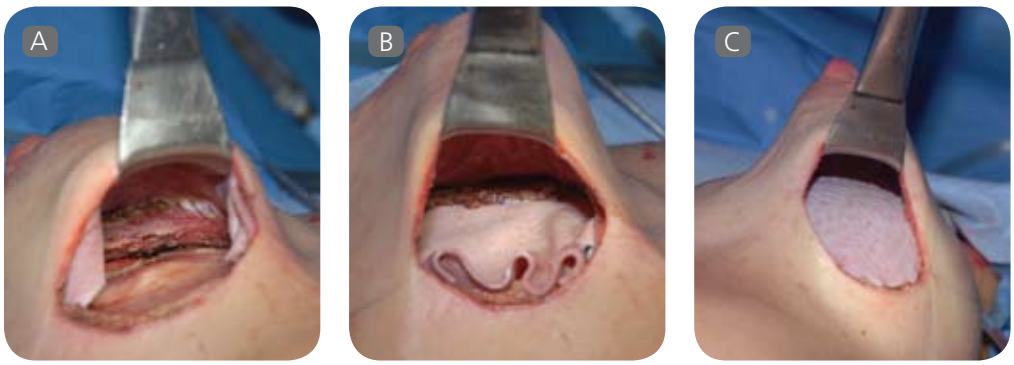

Fig 7 Intraoperative stage. A: With the retractor under the Strattice™ Tissue Matrix, the deep surface of the PMM and Strattice™ Tissue Matrix suture line is visible. Extensive dissection deep to the muscle above created a new pocket for the implant, both below the Strattice™ Tissue Matrix and the PMM. B: With the retractor under the breast gland, the new pocket is visible. C: Strattice™ Tissue Matrix coverage of the implant after suturing of the Strattice™ Tissue Matrix to the IMF inferiorly.

Outcome

The postoperative course was uneventful. At six months postoperatively, the patient achieved the result she desired – more natural-looking and feeling breasts (Figure 8). Placement of her implants behind the Strattice™ Tissue Matrix and PMM layer helped conceal both implant rippling and the visible implant edges, resulting in natural-looking breasts with good symmetry and contour and without significant animation deformities.

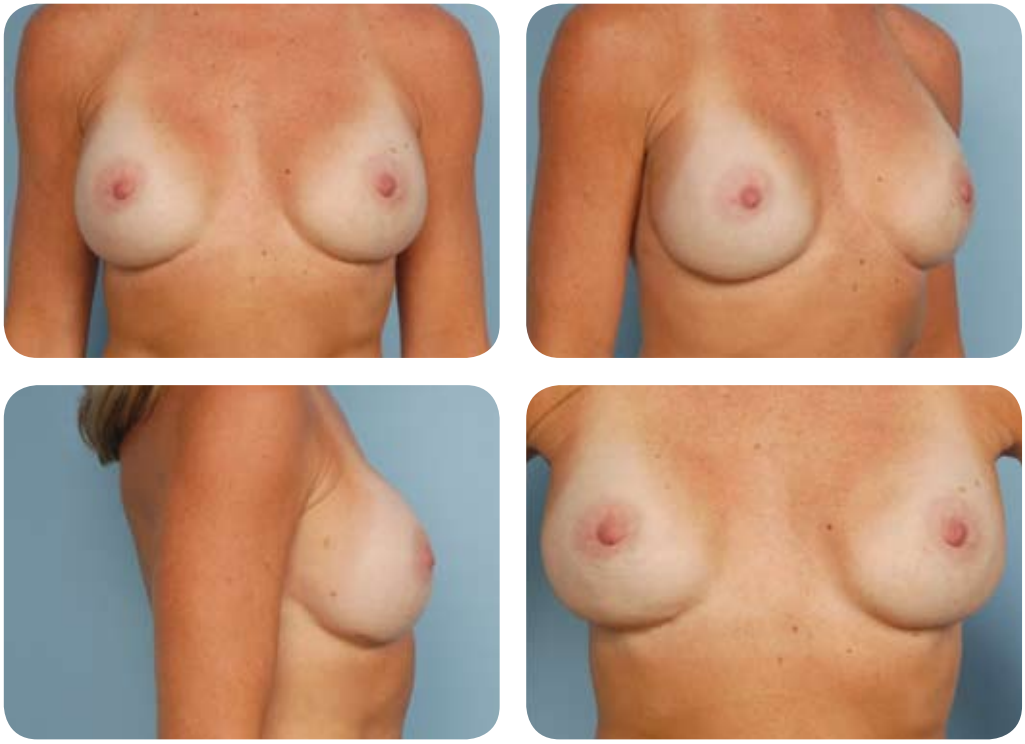

Fig 8 Postoperative stage at six months of follow-up. The implant edges are less visible, rippling is improved and the breasts appear more natural looking. At far right, patient is shown maximally flexing her pectoralis major muscles without significant animation deformity of the breasts.

"Placement of her implants behind the Strattice™ Tissue Matrix and PMM layer helped conceal both implant rippling and the visible implant edges, resulting in natural-looking breasts with good symmetry and contour and without significant animation deformities."

Conclusion

The results obtained in this patient illustrate the potential advantages of using Strattice™ Tissue Matrix for the repair of rippling. In this case Strattice™ Tissue Matrix, used to bridge the gap between the retracted pectoralis major muscles and the inframammary folds, contributed to correcting rippling by:

- Maintaining the implants behind the pectoralis major muscle
- Maximizing muscle overlap over the implants by holding the muscle inferiorly, thereby preventing the muscle from window-shading
- Preventing muscle fibers from attaching to the deep surface of the breast gland, thereby preventing animation deformities
- Providing additional coverage to the lower pole of the breast where the muscle could not reach
- Providing a "hammock," supporting the lower pole of the implants where thinned tissues are susceptible to stretching and bottoming out over time

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"With the introduction of Strattice™ Tissue Matrix Contour pieces, today a Strattice™ Tissue Matrix Contour 2 could be used."

Many variables including patient pathology, anatomy and surgical techniques may influence procedural outcomes. Before use, surgeons should review all risk information, which can be found in the *Instructions for Use* attached to the packaging of each LifeCell™ Tissue Matrix.

LifeCell Corporation
One Millennium Way
Branchburg, NJ 08876
Tel: 908.947.1100
Fax: 908.947.1200

LifeCell™ Customer Support
800.367.5737

www.lifecell.com

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