

# Correction of Implant Rippling Using Allograft Dermis

The author describes a technique for insertion of allograft dermis to reduce visible rippling of breast implants. The technique, designed primarily for use in soft tissue-deficient patients, may be appropriate for both cosmetic augmentation and reconstruction.

**S**ince the US Food and Drug Administration imposed restrictions on the use of silicone gel-filled breast implants in 1992, the common use of saline-filled implants has made visible rippling a more frequently encountered problem. Implant rippling often occurs in thin patients and in postmastectomy patients with thin skin flaps; however, thin soft tissue cover is not the only contributing factor. The use of stiff, nondistensible or thickly textured implants may cause noticeable rippling.

Overly large implants also tend to ripple more. An extremely large pocket, especially when located inferolaterally, heightens the appearance of rippling. If a patient has thick, nondistensible skin, her soft tissue coverage may be very thin, yet no rippling may be evident. However, in patients with ptosis, multiple striae, and thin, draping skin, visible rippling is more likely.

In breast implant patients with rippling, the use of allograft dermis can reduce the visible rippling and improve the overall aesthetic result. Surgical insertion is performed directly underlying the defect onto a well-vascularized recipient site. No increase in severity of recovery or complication rate was noted in 34 patients undergoing this procedure over the past 3 years. The grafts were both safe and effective.

## Patient Selection

In this series, the cosmetic patients ranged in age from 30 to 50 years; most were postpartum. Each had usually breast-fed 2 or more children. Many had ptosis, or pseudoptosis, with looseness in the periareolar region. Approximately one half of the patients already had implants, generally silicone gel-filled and in the prepectoral region, that had been in place for approximately 15 to 25 years.

Breast reconstruction patients were candidates for reoperation. Many presented with partial pectoral denervation and superomedial rippling. Some also had poor lateral implant coverage. Many had latissimus flaps but incomplete implant coverage. Two were patients who had undergone primary subcutaneous mastectomy. The most difficult case was a patient who had undergone primary delayed reconstruction with very thin skin flaps and a very small latissimus muscle after irradiation; she had a previous abdominoplasty, which eliminated the possibility of a transverse rectus abdominus myocutaneous flap.

## Preoperative Marking

Patients were marked while standing in front of a full-length mirror. When leaning forward accented the rippling, preliminary marking was done in that position. The area of defect was first marked by the patient, as she perceived it, and then modified by the surgeon. Active pectoral muscle contraction was observed for the purpose of judging the extent of pectoral coverage and assessing the need for 1 or 2 sheets of the allograft per side.

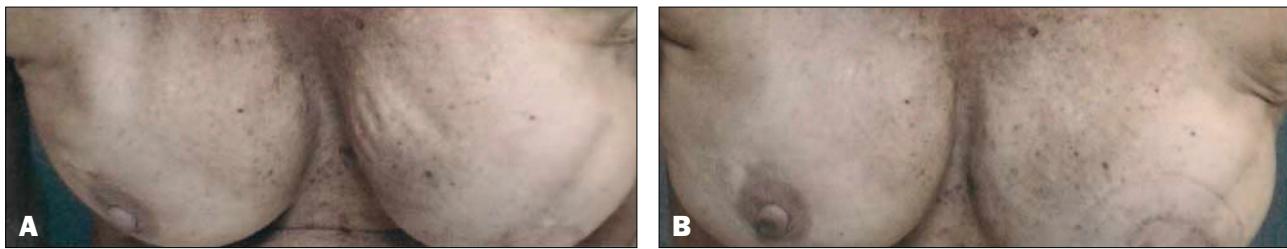
## Technique

Preliminary dissection, including removal of the old implant, was performed. In patients with old silicone implants, a complete capsulectomy was done if free gel was present; otherwise, a segmental capsulectomy in the area underlying the rippling was performed to produce a vascularized recipient site for the allograft.

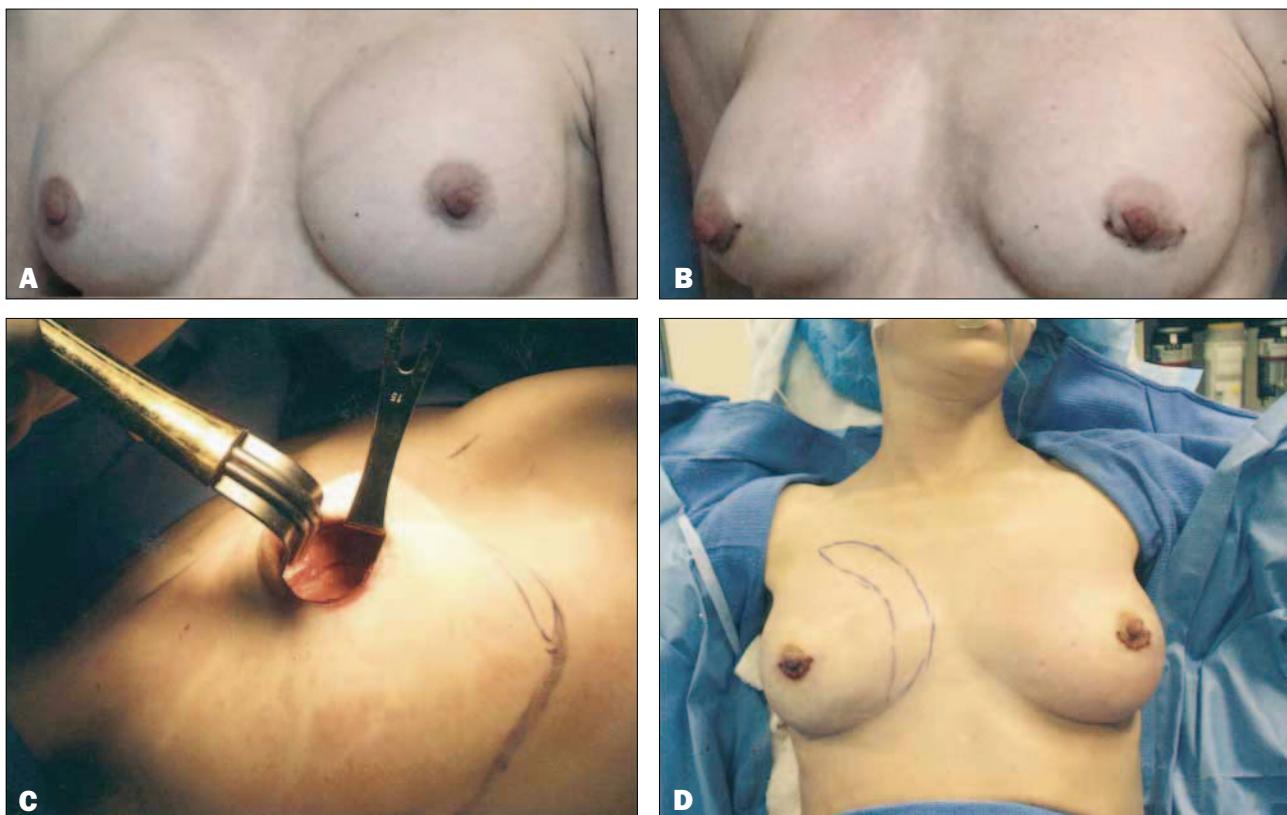
In 24 patients, Alloderm cadaveric dermal graft (LifeCell Corporation, The Woodlands, TX) was used (Figure 1). In 10 patients, Dermaplant (Collagenesis, Beverly, MA) was implanted (Figure 2). In patients with an inferolateral defect, a 4 × 12 and/or 4 × 8-cm segment of allograft was used (Figure 3). A medium thickness was



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**Figure 1.** **A**, Preoperative view of a 57-year-old woman who had bilateral mastectomies and reconstruction with silicone gel-filled implants 20 years earlier. Apparent partial pectoral denervation has created an area of only subcutaneous implant coverage in the superior region. **B**, Postoperative view 6 months after repair of the superior pole of the left breast through use of AlloDerm allograft dermis.

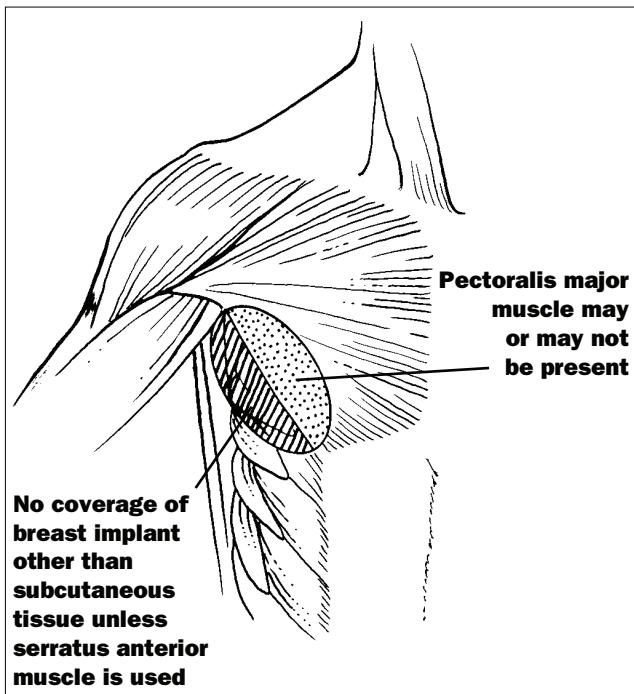


**Figure 2.** **A**, Preoperative view of a 42-year-old woman after breast augmentation with a 325-cc textured saline implant. Disruption of the pectoralis muscle was evident. **B**, Postoperative view 2 months after removal and replacement of her implant with a 285-cc saline smooth implant and repair of the pectoral disruption with Dermaplant allograft dermis. **C**, Intraoperative, Dermaplant is in position. **D**, Intraoperative, area is marked for Dermaplant placement.

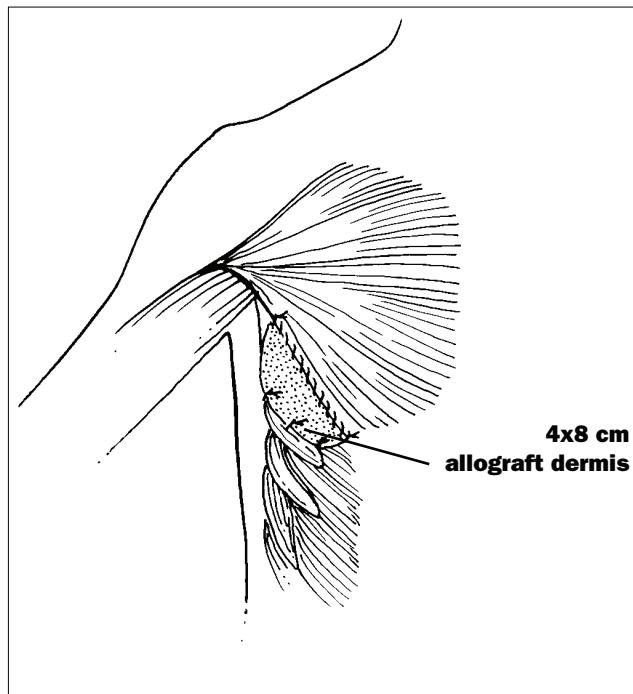
preferred, usually 1 to 1.5 mm. This allowed good coverage but was distensible enough to produce round inferolateral curve and definition.

The graft was soaked in antibiotic solution for approximately 20 minutes. The entire segment was then sutured along the inferolateral pectoral muscle edge with 3-0 Vicryl (ETHICON, Inc., Somerville, NJ). Preplaced

sutures from the lower edge of the graft to the inframammary crease were tied after the implant was inserted. The graft was oriented obliquely parallel to the line of pectoral muscle fibers (Figure 4). In any patient who had a small or high-riding pectoral muscle, 2 pieces of allograft were needed to improve the degree of implant coverage (Figure 5). Patients with larger implants needed more allograft.



**Figure 3.** Inferolateral area of deficiency.

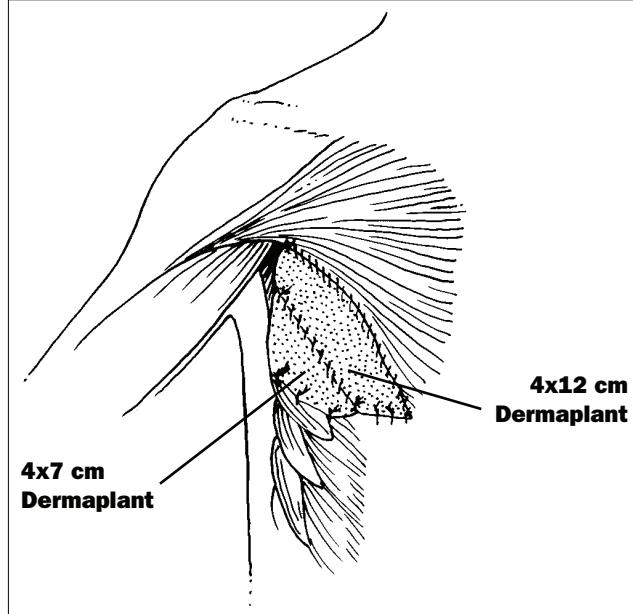


**Figure 4.** Alloderm placement in a patient with good pectoral coverage.

There is an art to placing isolated sutures from the bottom and sides of the graft to the chest wall. Although attaching the upper border of the allograft to the muscle usually required only a straight running seam, the lower stitches were more difficult. They were securely attached to the periosteum of the chest wall with 0 Mersilene permanent sutures. However, because the allograft is so expensive, I wanted to use the minimum amount necessary. Instead of attaching all edges of the lower graft to the chest wall, I was able to achieve secure fixation and still allow for the implant to have a defined curve with only 2 to 3 points of fixation. The sutures were placed inferomedially and inferolaterally from the allograft to the chest wall.

The implant was then inserted with the lower sutures untied. Next, the sutures were tied and the implant position and appearance were checked with the patient sitting. The lower fixation sutures were further tightened and securely tied, and the incision was closed. In most cases, no drain was used.

In patients with superomedial pectoral muscle disruption or absence, an elongated "patch" of allograft was created and sutured along the back side of the defect after capsular elevation. When muscle fibers could be reapproximated before patch placement, a better result was achieved.



**Figure 5.** Alloderm placement in a patient with poor pectoral coverage.

Insertion of the allograft usually required approximately 15 to 30 minutes per side. The cost of the graft is usually less than that of an autogenous tissue transfer, so for some patients covered by insurance, the cost of the allograft was also covered.

## Complications

One patient developed an infection requiring temporary implant and allograft removal. A new segment of graft material was inserted along with a new implant 6 weeks later. The patient has healed without further sequelae. A capsular contracture developed in a postmastectomy patient; she required a surgical capsulotomy 14 months postoperatively.

## Conclusion

Allograft dermis has been used for soft tissue augmentation for more than 7 years by surgeons in a variety of specialties. It has been histologically proved to persist for more than 30 months.<sup>1</sup> The degree and volume of persistence appear to be directly related to the location of implantation. Biopsy and reoperative examination in 3 patients in this series showed prolonged persistence at 18 months.

The procedure, in most cases, achieved improvement, though not total elimination, of visible rippling. Most patients still had persistent palpable rippling. The allograft dermis is not extremely thick and therefore cannot be expected to add more than 2 to 3 mm of measurable thickness to a skin flap. Still, no patient expressed dissatisfaction with the outcome of surgery. When patients were asked to rate their degree of satisfaction on a scale from 0% to 100%, the average rating was 85%. ■

## Reference

1. Alloderm [information brochure]. The Woodlands, TX: Lifecell Corporation; 1999.

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