

The Suture Tab Technique: Securing Implant Position in Prepectoral Breast Reconstruction

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Summary: Human acellular dermal matrix (ADM) can augment prepectoral prosthetic-based direct-to-implant breast reconstruction by providing an additional soft-tissue layer between breast implant and skin, as well as to reinforce the inframammary fold and breast pocket. Utilizing ADM in this way has helped reduce rates of implant rippling, capsular contracture, and implant extrusion. Difficulty in securing ADM-wrapped implants has caused many surgeons to improvise techniques for secure implantation. Here, we describe a simple technique for creating suture tabs within the ADM for efficient fixation of the ADM-implant construct to the chest wall. (*Plast Reconstr Surg Glob Open* 2018;6:e2005; doi: 10.1097/GOX.0000000000002005; Published online 12 December 2018.)

BACKGROUND

Implant-based breast reconstruction remains the most popular option selected by women facing mastectomy.^{1,2} Traditional reconstructive practice has involved subpectoral implant placement to ensure adequate soft-tissue coverage of the implant and to minimize the risk of implant extrusion.¹ Recent advances in mastectomy and reconstructive techniques have led to increased preference for prepectoral implant placement.³ Such prepectoral prosthetic-based breast reconstruction (PBBR) purports several advantages over partial or total submuscular reconstruction, including a shorter operation with greater ease of dissection, as well as reduced postoperative pain and faster recovery.^{1,3} Aesthetic outcomes may be improved as well due to elimination of the risk of animation deformity over the implant with movement of the pectoralis muscle.¹

Given the lack of durable muscular coverage in prepectoral reconstructions, soft-tissue coverage can be augmented with human acellular dermal matrix (ADM) draped over the implant to emulate pectoralis coverage and to serve as an additional layer between implant and skin.^{1,4,5} Further, ADM can be used to reinforce the reconstructed breast pocket inferiorly and laterally, allowing for improved implant and inframammary fold control.⁶⁻⁸

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The use of ADM has thus been expanded to complement implant-based reconstruction in a diverse set of patients, and its use has led to reduced rates of implant rippling, reduced capsular contracture, and improved aesthetic outcomes in both primary and revision PBBR.^{7,9-14}

Utilizing ADM in single-stage direct-to-implant breast reconstruction allows the added benefit of serving as a suturing point with which to secure the implant to the chest wall in the desired anatomical position. This eliminates the need to rely on the anatomical pocket left after mastectomy, which can be highly variable and inconsistent with the shape and positioning of the previously intact breast. Theoretically, chest wall fixation of the ADM-wrapped implant should serve to minimize implant migration postoperatively. Analogously, the use of tabbed tissue expanders in 2-stage breast reconstruction sutured into place on the chest wall has been shown to significantly reduce postoperative expander migration in all directions.¹⁵ Similar tabs are unavailable on breast implants and wrapping the implant in ADM can lead to difficulty and complexity in securing proper suture holds and anchor points, which has led many surgeons to improvise techniques for efficient ADM placement.¹ Tissue expander tabs can be mimicked when using ADM, however, by including a slight excess of ADM at specific points to serve as tabs for suturing to the chest wall. Here, we describe our simple surgical technique for creating such suture tabs during implant-ADM wrapping and fixation to the chest wall.

The Suture Tab Technique

A sheet of DermAcell Microperforated ADM (NOVADAQ, Stryker, Kalamazoo, Mich.) is prepared and laid

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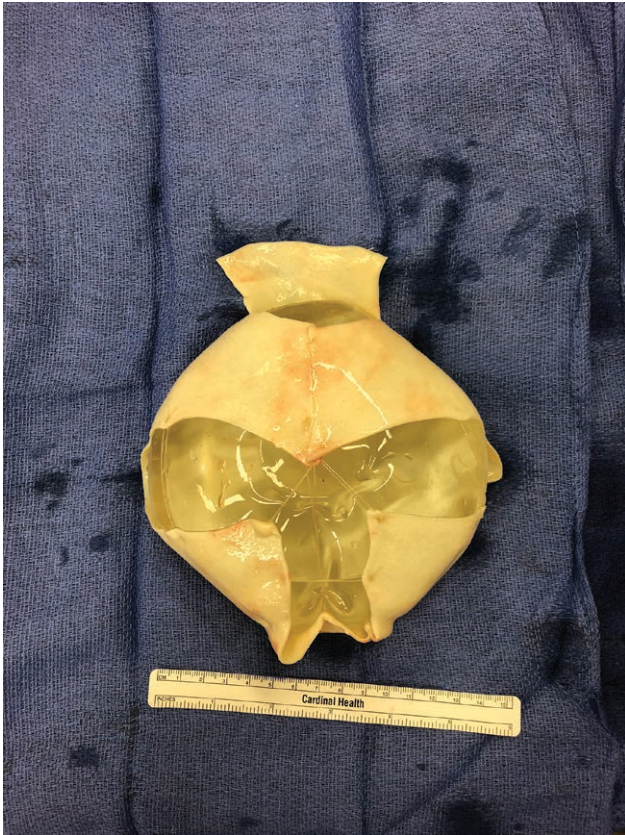


Fig. 1. Posterior view of silicone breast implant wrapped in ADM, with suture tab extended superiorly.



Fig. 2. Anterior view of silicone breast implant wrapped in ADM, with suture tab extended superiorly.

dermal side down in a sterile field, with the long axis directed vertically.¹⁶ The breast implant is placed face down on the sheet of ADM and is positioned toward the inferior margin of the ADM so that at least 1 cm of ADM excess is present superiorly. This end of the ADM is incised 4 cm lengthwise into thirds such that this longer end contains 3 equally wide tabs. The outer 2 tabs are lifted around the implant and sutured together using 3-0 Vicryl suture to secure the ADM around the implant, and the middle tab is left free for eventual use in securing the ADM-implant construct to the chest wall. The 2 inferior corners of ADM are equally lifted around the implant, sutured together, and sutured to the upper outer tabs using 3-0 Vicryl (Fig. 1).

The above procedure effectively creates a superior ADM tab that may be used to support the implant. The implant is now prepared and can be flipped over and positioned into the postmastectomy breast pocket (Figs. 2, 3). The superior ADM tab is sutured to a slip of pectoralis major muscle, which is raised for this purpose, and the medial and lateral ADM excess is sutured to the chest wall with interrupted 3-0 Vicryl suture, generating the desired level of the lateral breast margin and inframammary fold. These tabs serve to maintain vertical positioning and to reinforce and secure inferolateral stability, minimizing implant motion with gravity. Any remaining free sections of ADM can then be sutured to the chest wall as desired. A

15F Blake drain is placed in the breast pocket superficial to the ADM-wrapped implant and is brought out laterally through the skin before wound closure with 3-0 Monocryl suture.

DISCUSSION

The creation of suture tabs via the above-described technique allows for simple and reliable implantation of the ADM-wrapped breast implant. Superior suture tabs are created preferentially, as vertical movement has been shown to be greater than horizontal movement among breast implants.⁶ Similarly, stabilization of the inferolateral position is of great importance, as there the effects of gravity and thus the potential for implant migration are most pronounced. The creation of additional suture tabs is possible given enough ADM material, but we have found it to be unnecessary for the stability of the implant-ADM construct within the breast pocket.

The benefits of ADM in PBBR have been widely reported. DermAcell Microperforated ADM was chosen and is used at our institution due to potentially reduced postoperative breast redness compared with other ADM products, though it should be noted that all ADM products currently available are generally regarded as very safe.^{8,17} A recent prospective multicenter study of 1,297 patients found no significant increase in complications or reconstructive failure with the use of ADM, demon-



Fig. 3. Breast implant secured in left breast, with ADM visible before skin closure.

strating its primary downside remains its high cost.⁸ As such, ADM size-selection should be appropriately matched to breast implant size. When considering the potential monetary and psychological cost of revision procedures due to aesthetic dissatisfaction, implant rippling, or implant extrusion, it is understandable why the use of ADM to attempt to prevent these occurrences is ever growing. With this continued expansion will come novel techniques to simplify implantation and fixation, and we believe describing these techniques continues to be useful in maximizing resource utilization and efficiency.

CONCLUSIONS

The suture tab technique presented here offers a simple and reliable method for securing breast implants wrapped in ADM to the chest wall in prepectoral, direct-to-implant, prosthetic based breast reconstruction, allowing for optimal implant positioning and reinforcement intraoperatively, and likely minimizing implant migration postoperatively.

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