

Allograft Based Breast Reconstruction: Opportunity for a Second Look

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INTRODUCTION:

Recently, the use of acellular dermal allograft in prosthetic based breast reconstruction has been introduced [1-3]. Of the many benefits cited by using this technique are: its ability to create a large sub-muscular pocket (capable of supporting a substantially inflated tissue expander or full permanent implant); the ability to establish a durable and well placed inframammary and lateral mammary fold; the strong lower pole support achieved; and, the establishment of an interface between the prosthetic device and skin flap along the lower and inferior lateral poles [1-3]. As experience has grown, allograft based breast reconstruction has come to be considered a useful adjunct in immediate prosthetic breast reconstruction with a low complication rate that helps to reconstruct an aesthetically pleasing breast, and facilitates expeditious completion of the reconstruction [4].

Because this form of breast reconstruction requires return to the operating room for exchange of tissue expander for permanent implant, surgeons employing this technique are presented with an opportunity to evaluate the “take” of the acellular graft material once it has had the opportunity to mature in situ. This “second-look” evaluation may include visual inspection only, or it may include a more thorough analysis including histology with routine and/or special stains. We present here one such second-look analysis at which visual inspection was obtained and documented with digital photography and a more thorough evaluation of the acellular graft material was performed utilizing histology with H&E stains for collagen and vascular ingrowth and Verhoeff-van Gieson stains for elastin.

CASE REPORT:

C.S. is a 39 year old female who underwent a therapeutic right mastectomy in 2006 and a prophylactic left mastectomy in 2007. At the time of her prophylactic mastectomy in 2007, she underwent immediate reconstruction of the left breast and delayed reconstruction of the right breast simultaneously utilizing commercially available acellular dermal graft (Flex HD®, ETHICON Inc., Somerville, NJ and Musculoskeletal Transplant Foundation, Edison, NJ). The postoperative course was unremarkable and she was inflated to her goal of 600 cc on each side without complication. She elected to defer her exchange for permanent implants until the Fall of 2008 for social reasons. The patient then underwent an unremarkable exchange for permanent silicone breast implants. At exchange, the previously placed acellular dermal graft was inspected and demonstrated excellent incorporation.

The external appearance of the graft material is seen in FIGURE 1, which demonstrates the well incorporated graft material comprising the entire inferior and lateral pole as well as the inframammary and lateral mammary fold. Note the lack of a distinct muscle/graft interface [FIGURE 1].



FIGURE 1

Also shown is the intra-capsular view of the inferior and lateral pole following removal of the tissue expander prior to the placement of the permanent implant [FIGURE 2]. Note the glistening white character of the capsule and punctate vascularity.



FIGURE 2

Histological analysis of the material was also requested and demonstrated connective tissue with fibrosis and hyalinization. The lining of the graft is shown [FIGURE 3] and was reported to be indistinguishable from the histology of fibrous implant capsules of patients without allografts. Note also the numerous blood vessels and cellular nuclei in the graft material [FIGURE 3].

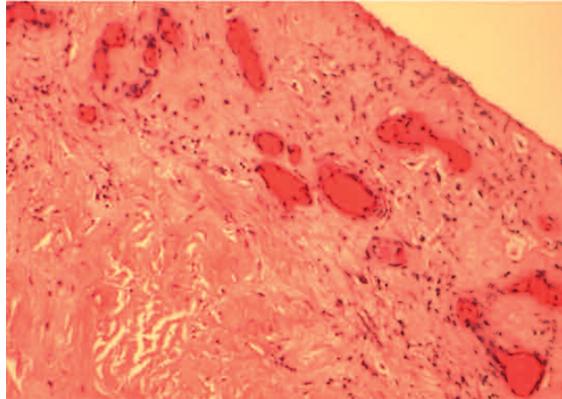


FIGURE 3

Elastin (Verhorff-van Gieson) stain of this material was also performed and reflects the presence of elastin fibers in the graft material [FIGURE 4].

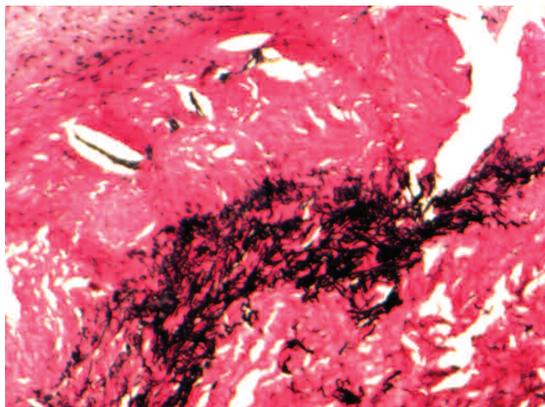


FIGURE 4

CONCLUSION:

The use of acellular dermal graft material in implant based breast reconstruction offers many advantages. As experience continues to be gained, the ideal intraoperative and histologic characteristics desirable in such products will be better appreciated.

REFERENCES:

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4. Spear SL, Parikh PM, Reisin E, Menon NG. Acellular dermis-assisted breast reconstruction. *Aesthetic Plast Surg*. 2008 May;32(3):418-25.

Dr. Newman serves as a paid consultant for ETHICON, Inc.

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Many variables including patient pathology, anatomy, and surgical techniques may influence procedural outcomes. Before use, physicians should review all risk information, which can be found in the Instructions for Use.

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