

## **Meshed Acellular Dermal Matrix with Overlying Split Thickness Skin Graft for Scalp Reconstruction**

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**Disclosure/Financial Support:** The author has no financial interest in any of the products, devices, or drugs mentioned in this manuscript.

**INTRODUCTION:** Early surgical intervention by drilling into the exposed skull outer table stimulating granulation tissue outgrowth was originated by French military surgeon, Augustin Belloste in 1696.<sup>1</sup> Application of skin graft directly on granulation tissue, however, can result in a reconstruction that is vulnerable to even minor trauma. In a commonly used modern technique, bilaminate artificial dermis (Integra<sup>®</sup>) is applied on granulation tissue followed by skin grafting to provide stable scalp reconstruction.<sup>2,3</sup> In 2012 Ellis and Kubler described the use of meshed Acellular Dermal Matrix (ADM) as a base for skin grafting of exposed hand tendons.<sup>4</sup> If ADM could be applied to bare tendon, it seemed reasonable that it could also serve as a base for skin grafting exposed bone in scalp defects. This is the first report of the use of meshed ADM on bare skull bone.

**RESULTS:** A 75-year-old man underwent Mohs surgery to remove an extensive basal cell carcinoma of his scalp, resulting in a 12x10 cm defect with areas of bare skull. He was initially treated with pulsed lavage to remove fibrinous exudate and application of a Negative Pressure Wound Care (NPWC) device (Wound VAC<sup>®</sup>) to stimulate granulation tissue. His reconstruction was performed in three stages as an outpatient. Surgery was done at three-week intervals. First the remaining areas of bare bone, constituting 40% of the wound surface, were burred until pinpoint bleeding was encountered. The NPWC device was reapplied. At the next stage 94 cm<sup>2</sup> of meshed 1mm thick ADM (Alloderm<sup>®</sup>) was secured to the wound with the basement membrane side facing away from the granulation tissue. After another 2 ½ weeks the ADM was vascularized and had granulation tissue growing through the slits. Split thickness skin grafts 0.013 of an inch thick were applied completing the reconstruction. The skin grafts healed uneventfully and have remained stable during the three years of follow up.

**CONCLUSION:** Since this patient was treated a study in mice has demonstrated that perforation of ADM increases the rate of cellular invasion.<sup>5</sup> Meshed ADM can provide an additional option for reconstruction of extensive scalp defects with exposed bone. It provides excellent contour restoration and stable long-term reconstruction. In future cases it may be possible to shorten the time frame of the reconstructive process.

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