

# Minimally Invasive Closure for Recurrent Pilonidal Sinus Using Extracellular Matrix Graft: A Case Report

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## INTRODUCTION

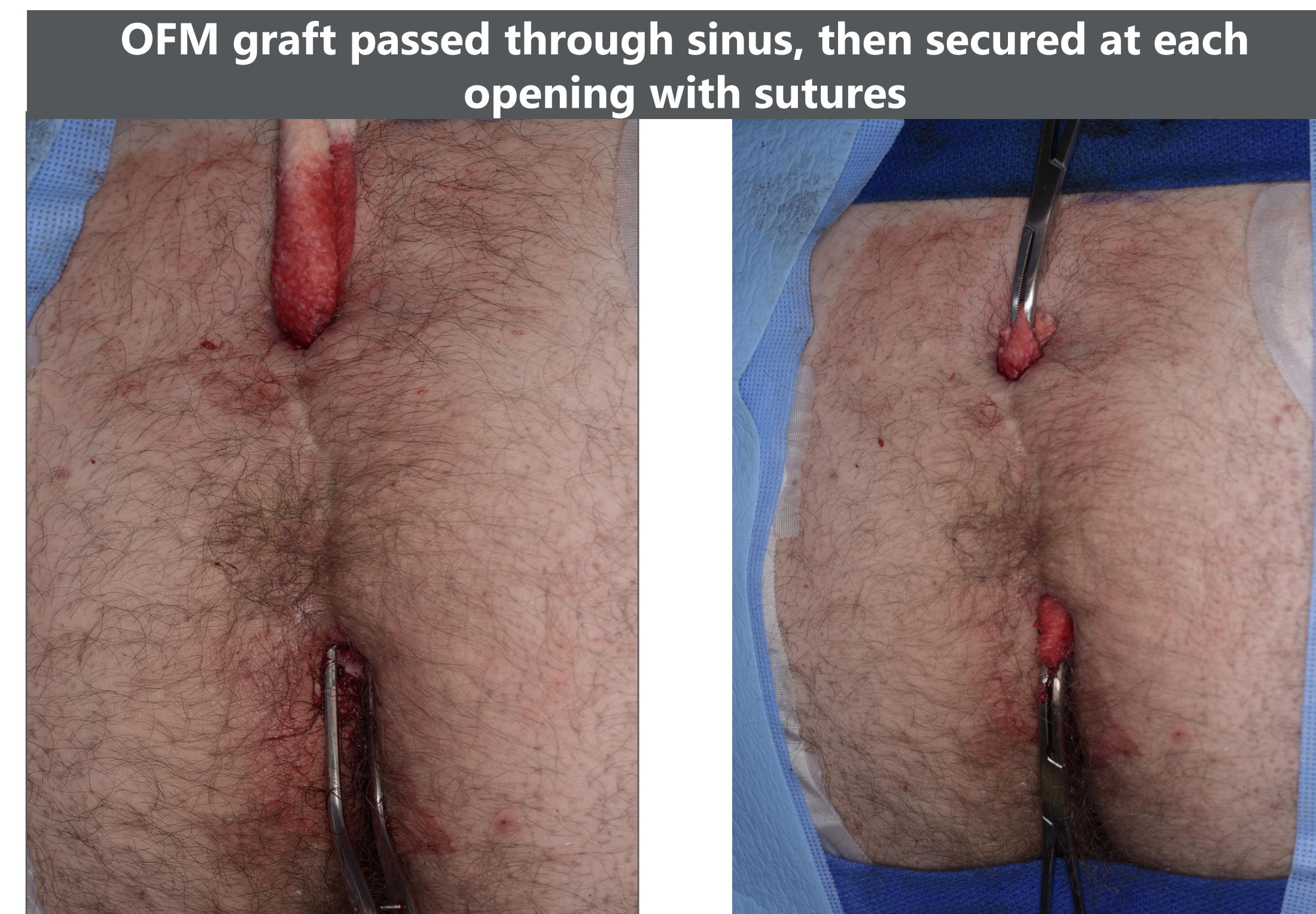
Pilonidal sinus disease (PSD) presents as a cyst of the upper gluteal cleft causing pain, swelling and tenderness that typically affects otherwise healthy young adults. Recurrent PSD leads to extended inflammation and scarring causing a chronic non-healing wound with sinus cavities under the skin. Severe or recurrent PSD requires surgical intervention involving the removal of diseased tissue via wide excision and primary closure, though complication rates (e.g. infection, dehiscence, recurrence) are often high [1]. Ovine forestomach matrix (OFM) decellularized extracellular matrix graft<sup>†</sup> has been widely used in wound management and implant applications [2-5]. OFM is a biomimetic of tissue ECM and is anti-inflammatory [6, 7], stimulates angiogenesis [8], promotes scaffold infill and undergoes complete remodeling [8]. OFM has previously been used in the reconstruction of PSD [9], following wide excision of the diseased tissue and fasciocutaneous flap closure. In these instances, the aim of the OFM graft is to reduce surgical complications by quenching tissue inflammation, filling surgical dead space and rapidly forming well vascularized new tissue within the defect. In this case report we present an alternative method for recurrent PSD closure using a minimally invasive technique of initial closed wound debridement (Gips method) followed by interval placement of passing the OFM matrix graft<sup>†</sup> through the PS sinus.

## PATIENT HISTORY AND SURGICAL METHOD

23-Year-old male who is an active-duty Navy member and has a 4+ year history of PSD. Prior management had included several incision and drainages, as well as a full excision and Karydakias flap 2 years ago. 4 Weeks prior to the planned surgery the patient had an incision and drainage with placement of a drain. Prior to the OFM graft placement, a curettage of the 8 cm long sinus was performed. Then, an OFM graft (10 x 10 cm, 5-layer) was rolled following rehydration, passed through the sinus tract and anchored to the openings with suture. The wound was dressed with a petrolatum-based contact layer and dry gauze.

## RESULTS AND DISCUSSION

At day 19 the openings of the sinus tract had completely healed; the patient was experiencing no pain or drainage. A bedside ultrasound was performed and revealed no fluid in the sinus tract. At long-term 23-week follow-up there was no recurrence and the sinus tract remained closed with no complications. This promising result provides preliminary insights into the successful management of recurrent PSD which can otherwise lead to lengthy hospital stays, longer recovery times and significant cost in otherwise healthy individuals who might have required a larger dissection from revision surgery.



## REFERENCES AND DISCLOSURES

<sup>†</sup>Myriad Matrix, Aroa Biosurgery Limited, New Zealand. 1. Yoldas, T., et al., *Recurrent pilonidal sinus: lay open or flap closure, does it differ?* Int Surg, 2013. **98**(4): p. 319-23. 2. Bohn, G.A. and K. Gass, *Leg ulcer treatment outcomes with new ovine collagen extracellular matrix dressing: a retrospective case series.* Adv Skin Wound Care, 2014. **27**(10): p. 448-54. 3. Liden, B.A. and B.C. May, *Clinical outcomes following the use of ovine forestomach matrix (endoform dermal template) to treat chronic wounds.* Adv Skin Wound Care, 2013. **26**(4): p. 164-7. 4. Ferreras, D.T., S. Craig, and R. Malcomb, *Use of an ovine collagen dressing with intact extracellular matrix to improve wound closure times and reduce expenditures in a US military veteran hospital outpatient wound center.* Surg Technol Int, 2017. **30**: p. 61-69. 5. Ferzoco, F.J., *Early experience outcome of a reinforced Bioscaffold in inguinal hernia repair: A case series.* International Journal of Surgery Open, 2018. **12**: p. 9-11. 6. Negron, L., S. Lun, and B.C.H. May, *Ovine forestomach matrix biomaterial is a broad spectrum inhibitor of matrix metalloproteinases and neutrophil elastase.* Int Wound J, 2012. **11**(4): p. 392-397. 7. Street, M., et al., *Augmentation with an ovine forestomach matrix scaffold improves histological outcomes of rotator cuff repair in a rat model.* J Orthop Surg Res, 2015. **10**: p. 165. 8. Irvine, S.M., et al., *Quantification of in vitro and in vivo angiogenesis stimulated by ovine forestomach matrix biomaterial.* Biomaterials, 2011. **32**(27): p. 6351-61. 9. Chaffin, A.E. *A Surgical Technique for Flap Reconstruction of Pilonidal Sinus Using Extracellular Matrix Graft (Oral Presentation).* in *44th Annual John A. Boswick Burn & Wound Symposium.* 2021. Maui, HI.