Scrotal Reconstruction with Integra Following Necrotizing Fasciitis

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Abstract

Scrotal loss from Fournier’s gangrene can be a devastating injury with esthetic and functional consequences. Local reconstructive options can be limited by the presence of infection or the loss of neighboring tissue from debridement. Integra™ bilayer matrix wound dressing is a well-established reconstructive modality, but only one report exists of its use in scrotal reconstruction and this was not in the setting of Fournier’s gangrene. We report the successful use of Integra and a subsequent split-thickness skin graft for reconstruction of the anterior scrotum and coverage of the exposed testes in a 43-year-old man who developed Group A Streptococcus necrotizing fasciitis of his right lower extremity, groin, and scrotum requiring serial operative debridements. Stable testicular coverage was achieved with closely matched skin and minimal donor-site morbidity. Further study and a larger sample size will be necessary to better understand the advantages and disadvantages of scrotal reconstruction with Integra.

Keywords: Dermal regeneration template, genitalia, Integra, necrotizing fasciitis, scrotum

Introduction

Scrotal loss is a serious problem that may lead to esthetic and functional issues. Scrotal loss from Fournier’s gangrene results in several challenges. The surrounding soft tissue may be inflamed or may have been debrided in the setting of infection, which can limit local flap options. Modalities such as skin grafting alone may lack stable coverage, and flaps may be bulky. We report a case of complete loss of the anterior scrotum due to Fournier’s gangrene and its reconstruction with Integra™ bilayer matrix wound dressing (Life Sciences Corporation, Plainsboro, New Jersey, USA). Integra is a bilaminate artificial dermis composed of shark chondroitin 6-sulfate and bovine collagen. Integra is applied to the wound bed following appropriate debridement and establishment of a healthy, well-vascularized wound base. After its application, vascularization occurs in approximately 2–3 weeks, creating a neodermis that can be skin grafted. Although Integra use is an established reconstructive modality,[1] we found only a single report of its use with scrotal loss.[2] There is an additional case report describing Integra use for penile coverage.[3] There are no reports, to our knowledge, describing Integra use for scrotal reconstruction following Fournier’s gangrene.

Case Report

A 43-year-old man arrived in the emergency room with progressive erythema of the right thigh, right flank, and scrotum for 1 day after lifting weights and using the stationary bike at the gym. He reported no prior infections, illnesses, hospitalizations, or previous surgeries and was a non-smoker. He was admitted and received broad spectrum intravenous antibiotics and underwent wide excisional debridement of multiple areas of necrotizing fasciitis including the right thigh, right leg, right flank, right groin, and genitalia, including the entire anterior scrotum. The severe infection of the scrotum resulted in complete loss of all of the underlying fascia and left the patient with exposed testes [Figure 1]. Wound cultures and blood cultures were positive for Group A Streptococcus infection. Treatment

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Website: www.onlinejets.org
DOI: 10.4103/JETS.JETS_62_17

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How to cite this article: Dent BL, Dinesh A, Khan K, Engdahl R. Scrotal Reconstruction with Integra Following Necrotizing Fasciitis. J Emerg Trauma Shock 2018;11:57-9.

Received: 13.06.17. Accepted: 07.09.17.
included intravenous antibiotics and fluid resuscitation, local wound care, serial operative debridements, and subsequent vacuum-assisted closure (VAC) therapy (KCI, Acelity, San Antonio, Texas). Fourteen days later, split-thickness skin grafts were used for coverage of the lower extremity, flank, groin, and penile wounds and Integra was used to cover the anterior scrotum and exposed testes [Figure 2]. A VAC dressing was placed over the skin grafts and scrotal Integra. Antibiotics were maintained until complete wound coverage was achieved. A VAC dressing change was performed at 1 week. Two weeks following Integra placement, the patient was taken back to the operating room and the silicone sheet was removed from the Integra. The Integra appeared fully incorporated by the patient’s tissue, and healthy granulation was present at the wound base [Figure 3]. A split-thickness skin graft and overlying VAC dressing were then applied. The skin graft healed well with complete and stable wound coverage [Figures 4 and 5].

**DISCUSSION**

Scrotal loss from Fournier’s gangrene is a devastating injury that can have limited local reconstructive options due to the presence of infection or inflammation in the surrounding soft tissue. There is no consensus on the treatment of exposed structures in these situations. Traditional techniques, including invagination of the testes in thigh soft tissue and local flaps, may not be available in these settings. Moreover, such techniques may result in distortion or injury to the already traumatized deeper scrotal structures. Furthermore, when possible, reconstructive options should strive to closely match loss with like tissue. In this case, scrotal reconstruction with Integra provided stable testicular and wound coverage with closely matched skin and minimal donor-site morbidity. While this experience is anecdotal and limited to a single case, it is certainly encouraging. Further study and a larger sample size will be necessary to better understand the advantages and disadvantages of scrotal reconstruction with Integra. For now, Integra should be considered in the armamentarium of scrotal reconstructive techniques for Fournier’s gangrene patients.
CONCLUSION

Scrotal reconstruction with Integra provided stable testicular and wound coverage with closely matched skin and minimal donor-site morbidity in this 43-year-old male with Fournier’s gangrene. While further study and a larger sample size will be necessary to better understand the advantages and disadvantages of Integra use in scrotal reconstruction, our success in this case coupled with the general versatility of Integra in soft tissue reconstruction suggests that Integra may become a valuable tool in the reconstruction of Fournier’s gangrene patients.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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