

Perineal Hidradenitis Suppurativa: two Case Studies and a Review of the Literature

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Abstract

Severe Hidradenitis Suppurativa (HS), characterised by chronic abscess and sinus tract formation, causes significant reduction in patient physical and psychological quality of life. Completion of surgical excision and reconstruction is the only definitive treatment for HS refractory to medical management such as topical or oral antibiotics or disease-modifying biological agents. Staged skin grafting with BTM and vacuum assisted closure dressings is a novel technique that has shown efficacy in closing wounds left by extensive surgical excision of severe HS. We present two case studies demonstrating the effectiveness of this technique for management of groin and perineal HS while minimising wound contracture and preserving range of movement for improved quality of life.

Keywords: hidradenitis suppurativa; biodegradable temporising matrix; reconstructive surgical procedure

Introduction

Hidradenitis Suppurativa (HS) is a chronic skin condition characterised by formation of multiple abscesses and sinus tracts that can cause significant reduction in physical and psychosocial quality of life (QoL) [1, 2]. It is commonly found in apocrine gland bearing regions of skin such as the axilla, perineal/perianal and inguinal regions [2]. While the exact mechanism of disease is unclear, it is thought to involve autoimmune destruction of pilosebaceous units or hair follicles followed by secondary infection [1, 3]. Estimates of prevalence vary, with estimates of up to 4% globally [2, 3]. Medical treatment includes topical or oral antibiotics such as clindamycin and biological agents such as the TNF-alpha-inhibiting monoclonal antibody agents adalimumab and infliximab [4, 5]. Procedures such as incision and drainage or deroofing of lesions, while used in acute flares of symptom and infection management, will rarely provide resolution in more extensive disease and have a high risk of recurrence [3, 6]. Surgical excision and reconstruction of the site remains the only definitive treatment for severe and refractory HS to reduce or prevent further recurrence [6, 7].

Many techniques have been described for excision and reconstruction in severe HS, including excision with either skin grafting or flap based reconstruction, however there is no consensus on gold standard surgical

management [5, 6]. In larger and more complex areas such as the groin and perineum there is a risk of wound contracture and loss of range of movement (ROM) post procedure [6]. While split thickness skin grafts have a higher risk of contracture, locoregional advancement or free flap reconstruction, such as anterolateral thigh or gracilis flap, must be carefully considered based on the size and nature of the defect, risk of donor and recipient site morbidity, and patients factors including comorbidities, previous therapies and patient weight [8, 9]. Polynovo's NovoSorb Biodegradable Temporizing Matrix (BTM) consists of a bioabsorbable synthetic matrix which facilitates cellular migration, aiding in granulation of the wound [10]. This matrix is sealed using a membrane which is removed once granulation tissue has integrated into the matrix, leaving a vascularised wound bed suitable for grafting and result in a more robust and pliant skin reconstruction [10].

We present two cases of extensive groin and perineum HS excision and reconstruction using BTM and a staged split thickness skin grafting method.

Case 1

A 53-year-old male presented with Hurley stage III groin and axilla HS present for several decades. He was a non-smoker with dyslipidaemia and Type 2 Diabetes Mellitus (HbA1c 7.5%) managed with metformin and an SGLT2 inhibitor. Treatment with adalimumab had stabilised his disease for several years, prior to referral to the Plastic and Reconstructive Surgery unit. He was referred due to progression with increasing discharge and new tract development severely impacting daily activities. Prior to treating his groin, he had a successful excision and reconstruction of his axilla HS with BTM and STSG, leading to improved QoL and no recurrent disease at 1-year follow up, and was eager to continue his surgical treatment. Upon review, there was extensive perianal and perineal disease with multiple tract discharging pus. A colonoscopy found no obvious tracts in the anal canal and a diverting ileostomy was performed 3 months prior to HS excision.

Intra-operatively, sinus tracts were probed and injected with methylene blue dye to define the extent of the diseased area which was then debrided to healthy tissue [11]. There was significant extension posteriorly toward the cleft and fascia had to be stripped from adductors bilaterally (Figure 1.). The wound was washed with hydrogen peroxide and normal saline before a Vacuum-Assisted Closure (VAC) dressing was applied [12]. After 5 days of VAC dressing and prophylactic antibiotic therapy, BTM was applied to the clean wound and secured with a VAC dressing. After 4 weeks, the BTM was well integrated (Figure 2.) and in the second stage operation, the sealing membrane was stripped and a fenestrated STSG was applied. The site was dressed with a VAC dressing for a further 2 weeks, then topical kenacomb and simple dressings to completion. Three months post complete wound healing, the ileostomy was reversed. There has been no disease recurrence to date and, the patient is mobilising well (Figure 3.). Approximately 50% of the graft was hyperpigmented, however the patient did not report this to cause distress.



Figure 1: Case 1 post-operative debridement defect



Figure 2: Case 1 during BTM integration



Figure 3: Case 1 outcome of BTM and STSG at 7 months post-operatively

Case 2

A 62-year-old male presented with a 10-year history of worsening Hurley stage III perineal and groin HS. He had been managed with weekly adalimumab injections and required a loop colostomy 2 years prior to this surgery, and had previously undergone incision and drainage of acute HS flares. He was an ex-smoker, with Type 1 Diabetes Mellitus (HbA1c 8.4%), heart failure, ischaemic heart disease, hypertension, hypercholesterolaemia, pulmonary hypertension and obstructive sleep apnoea. Pre-operative multi-disciplinary discussion as well as allied health input was sought for optimisation of nutrition, anaesthetic risks and medical management prior to proceeding.

Excision of his perineal and groin HS was completed using the same operative procedure as above, and BTM with a VAC dressing was applied at day 3 post initial debridement [12](Figure 4.). After nearly 5 weeks, the BTM was integrated and delamination and STSG performed (Figure 5.). During this time, he was on IV Augmentin for pre-operative *Streptococcus anginosus* and mixed skin and enteric flora wound colonisation under the guidance of the Infectious Diseases team. At 3 months post operatively his wound was well healed and he had resumed all normal activities. There has been no disease recurrence to date and the wound is well healed (Figure 6.) and he is planned for future reversal of his loop colostomy.



Figure 4: Case 2 pre-operative disease (left) and post-operative debridement defect (right)



Figure 5: Case 2 BTM at time of application (left) and during BTM integration (right)



Figure 6: Case 2 outcome of BTM and STSG at 4 months post-operatively

Quality of Life Measurements

Both patients were asked to fill out the Dermatology Quality of Life Index (DLQI) before the operation and at 1- and 3-months post grafting and final removal of vacuum dressings. The DLQI is a validated tool for assessing QoL impact of dermatological conditions^[13]. Both patients reported significant improvements in quality of life at the 3-month mark. Patient 1 reported a reduction from 29/30 “Extremely large impact on life” to 16/30 “Large impact on life”, Patient 2 reported a reduction from 12/30 “Very large impact on life” to 7/30 “moderate impact on life”. Both patients reflected a reduction in QoL impact classification and given the early follow-up point, it is expected that further reduction in QoL impact will occur as the wound further matures.

Discussion

The closure of high surface area wounds post extensive HS disease excision is especially complex in areas of large contour with a high degree of movement such as the perineum and groin. Loss of elasticity due to scar tissue formation and wound contracture can be detrimental to movement, including a patient’s ability to ambulate independently [14]. To combat this, regional or free flap reconstruction can be used but is dependent on size, location and quality of suitable donor tissue and the complexity of the recipient site as well as patient factors such as comorbidities [15]. For these two patients with substantial defects, it was deemed there was not enough suitable tissue for an appropriate flap for the wound. As such BTM with split thickness skin grafting was used to address the issues of wound closure while minimising wound contracture.

The premise of this novel technique is to provide a scaffold via BTM for granulation to occur while using VAC dressings to draw cells and cellular products into the matrix [16]. BTM has been applied in multiple complex wound pathologies including burns, free flap donor sites and traumatic injuries [17, 18]. As it is entirely composed of a synthetic polyurethane polymer, there is a lower risk of infection than with other biologic agents such as glycosaminoglycan derivatives [18]. Integration normally takes 2 to 3 weeks, when vessel and collagen production have occurred throughout the matrix [10]. The creation of a robust granulating tissue bed forms a well vascularised foundation for STSG application, aiming to increase graft take and reduce contracture rates allowing for increased mobility of tissue including in areas of major movement [18, 19]. In the case of these patients, an extensive wound in a high mobility area has been reconstructed without contracture, restriction of movement, infection or recurrence.

In our experience of these patients with extensive, refractory disease, careful management with optimisation of the surgical site and staged surgery is vital. Optimisation of commonly associated risk factors such as obesity and smoking [2], as well as medical comorbidities impacting wound healing such as diabetes, is necessary. Psychosocial support with referral for support groups may also assist patients with navigating HS treatment [2, 3]. Multidisciplinary involvement, such as that in case 2, provides the opportunity for medical management to be optimised with Dermatology input, as well as perioperative planning with Infectious Disease teams for appropriate and guided treatment of colonised wounds, and allied health input such as dietitians and occupational therapist for optimal wound healing and post-operative care and positioning. The use of bowel diversion such as ileostomy or colostomy prior to debridement and reconstruction decreases the risk of wound contamination in perineal pathology and reduces the risk of complications perioperatively including infection and wound breakdown [20]. Once the area is well healed, reversal can be considered, allowing patients to return to their normal bowel habits.

It is important to consider that in addition to this preparation, the process of excision, BTM application, integration and eventual grafting requires multiple procedures and repeated dressings over several weeks. Therefore, careful counselling and patient selection must be undertaken to ensure the patient understands the operative and post-operative care requirements of this staged procedure. This was well tolerated by these two patients, as is particularly demonstrated by the first patient, who has chosen to undergo BTM and STSG reconstruction in multiple areas. These two patients have both demonstrated improved quality of life post-operatively using the DLQI, recommended in international guidelines as a suitable patient-reported outcome measure for assessment of HS [7]. These preliminary results demonstrate that this novel technique can assist in mitigating the physical and psychosocial burden associated with severe HS.

Conclusion

In summary, staged skin grafting with BTM and vacuum dressings is a novel technique that has shown efficacy in closing wounds left by extensive surgical excision of severe HS. It demonstrates the possibility of using skin grafting while avoiding wound contracture making it a feasible solution to wound closure in high movement areas of the body.

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