



Rectus abdominis flaps for the treatment of severe hidradenitis suppurativa requiring abdominoperineal resection, a case series

Zachri N. Ovadja^{1,2} · Annekatrien L. van der Kar^{1,2} · Marieke G. A. de Roo¹ · Pieter J. Tanis³ · Oren Lapid¹ 

Received: 30 July 2018 / Accepted: 27 November 2018 / Published online: 15 December 2018
© The Author(s) 2018

Abstract

Background The management of severe hidradenitis suppurativa with destruction of the perianal region can be challenging; local tissue may not be available for closure.

Methods Patients were managed by proctectomy and reconstruction with musculocutaneous flaps based on the rectus abdominis muscle (RAM).

Results Three patients were managed using this approach achieving closure without recurrence.

Conclusion RAM-based flaps provide a good reconstructive option in the management of patients with severe therapy-refractory hidradenitis suppurativa in the gluteal region, combined with severe perianal destruction.

Level of Evidence: Level V, therapeutic study.

Keywords Hidradenitis suppurativa · Inflammatory bowel diseases · Laparoscopy · Myocutaneous flap · Negative-pressure wound therapy

Introduction

Hidradenitis suppurativa (HS) (acne inversa) is a chronic skin disorder developing in areas rich in apocrine glands. It is characterized by a progression from non-inflamed nodules to painful, inflamed lesions that rup-

ture with the release of pus, progressing to sinus tract formation and scarring [1].

The etiology of HS is idiopathic and probably multifactorial [2, 3]. Smoking and obesity are two well-established risk factors, and a positive correlation for disease severity was found for smokers versus non-smokers [4]. A positive family history is reported by 35–40% of HS patients [5]. The incidence of HS is increased in patients with inflammatory bowel disease (IBD). There are clinical, histological, and epidemiological similarities between both diseases [6–8]. In severe cases of HS, treatment with tumor necrosis factor (TNF) alpha inhibitors has shown promising results. However, in severe cases with therapy-refractory HS, there is a need for radical surgery and sometimes more complex reconstruction due to the large defects that are created. Wound closure after proctectomy is also a challenge, and in cases of larger excision, there is often a need for flap reconstruction [9–11]. The aim of this study was to report the management of three patients with severe therapy-refractory HS

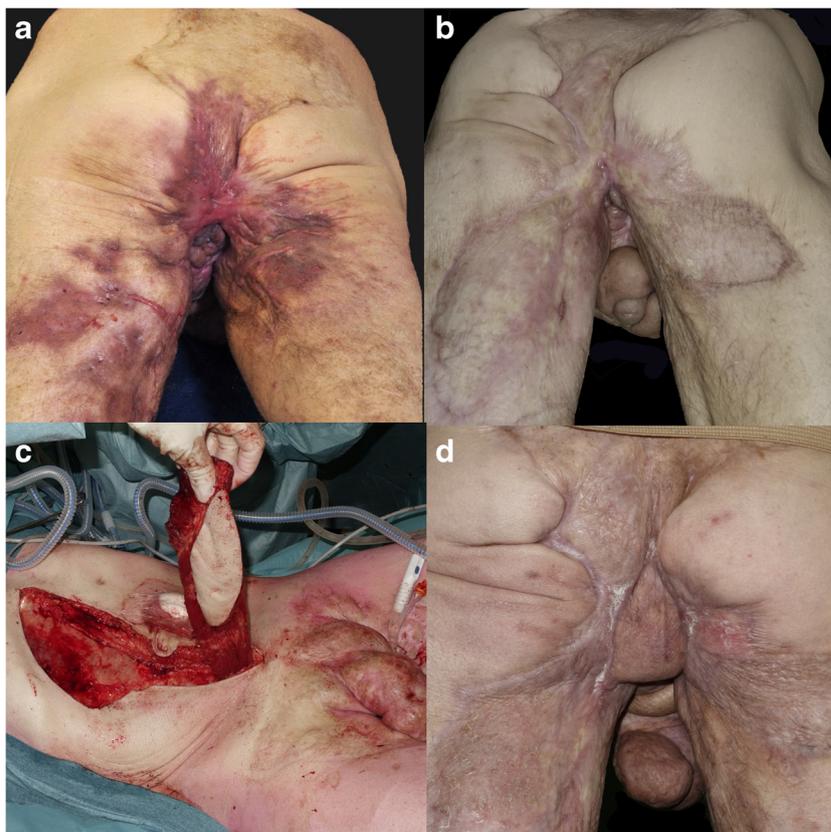
✉ Oren Lapid
o.lapid@amc.uva.nl

¹ Department of Plastic, Reconstructive and Hand Surgery, Amsterdam University Medical Centers, University of Amsterdam, Meibergdreef 9, 1105 AZ Amsterdam, The Netherlands

² Department of Plastic, Reconstructive and Hand Surgery, OLVG, Oosterpark 9, 1091 AC Amsterdam, The Netherlands

³ Department of Surgery, Amsterdam University Medical Centers, University of Amsterdam, Meibergdreef 9, 1105 AZ Amsterdam, The Netherlands

Fig. 1 Patient 1: **a** Initial presentation. **b** Following excision and STSG before proctectomy. **c** VRAM flap elevated. **d** At follow-up



in the inguinal and perianal region in whom a combined staged surgical approach of a wide excision, proctectomy, and reconstruction with a rectus abdominis musculocutaneous (RAM) flap was used.

Material and methods

We reviewed the charts of three patients with therapy-resistant perineal HS and rectal inflammation that underwent reconstruction following wide excision of the HS and a proctectomy. Wide surgical excision was performed in combination by a plastic surgeon and a general surgeon. Perineal tissue was excised up to healthy tissue, and a proctectomy was performed. RAM flaps with a skin island were harvested and tunneled transabdominally to the perineal defect; the flaps were inset with depithelization of their buried part. Surgical specimens were submitted for histopathologic examination.

The follow-up period was defined as the period between the intervention and last outpatient visit. We report three cases that required this surgical approach.

Results

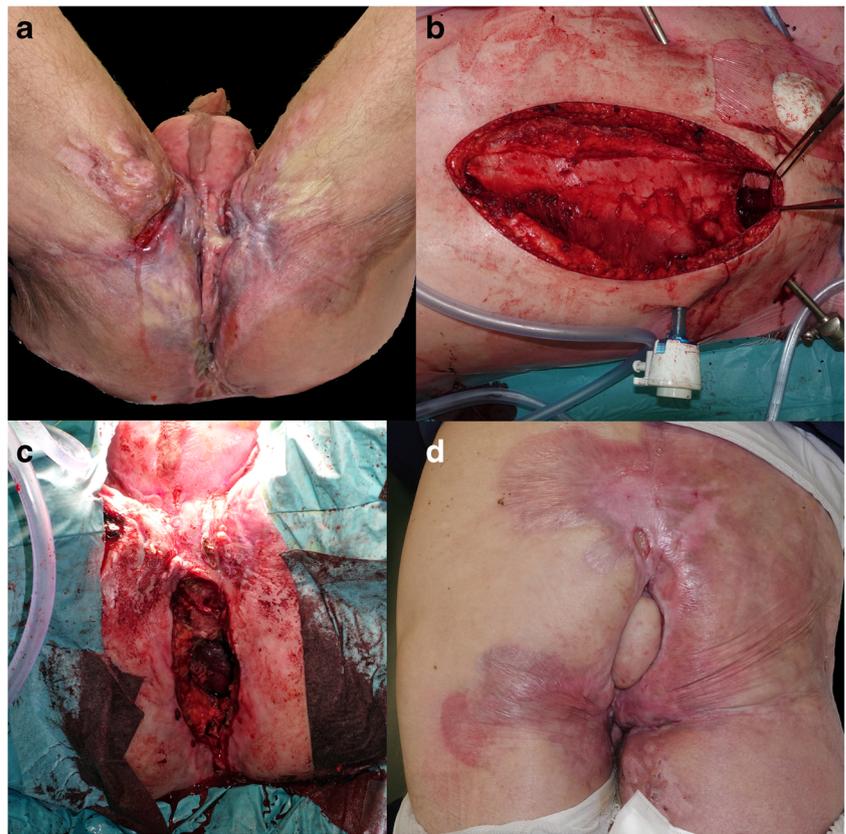
We report three cases that required this surgical approach.

Case 1: VRAM

A 60-year-old man presented with HS of his perineum, groins, and upper legs. He had suffered from therapy-refractory HS and IBD for 20 years despite several surgical procedures and anti-TNF alpha treatment. The patient had already undergone wide skin excisions at the back, buttocks, scrotum, penis shaft, groins, and upper right leg with direct closure with split-thickness skin grafts (STSG). At age 53, a diverting descending colostomy was performed because of extensive perianal fistulas.

At presentation, he was cachectic and septic with extensive productive sinus tracks in his perineal and peri anal area, groins, and upper legs, with purulent anal discharge. Due to scarring, the patient was not able to abduct his legs. He had a sinus tract originating from the inflamed rectum to his left hip, and on imaging, he was found to have osteomyelitis in his left femur (Fig. 1a). Due to the severity of his disease, he had a difficulty in

Fig. 2 Patient 2: **a** Situation before proctectomy. **b** Abdominal wall following flap harvest (note the limited opening in the fascia). **c** Perineal wound. **d** At follow-up



ambulating, with an inability to work and a lack of social interaction. He had extensive tooth decay due to extensive use of antibiotics.

Following stabilization of his nutrition, a wide excision of HS in the buttock region and his upper legs was performed and closure was achieved with negative pressure wound therapy (NPWT), followed by STSG (Fig. 1b). Once the surrounding area had healed, an abdominoperineal resection (APR) was performed, together with a wide excision of the inflamed perianal area. Closure was performed with a transpelvic vertical RAM (VRAM) flap because of the poor quality of the surrounding tissue, the inability to close the rectal surgical defect, and the limited leg abduction (Fig. 1c). The osteomyelitis of the left hip was managed by excision of the medial part of the fistula complex, and a gentamicin bead chain was left in situ which was gradually pulled out in the following weeks. The postoperative course was uneventful. Pathological findings suggested low-grade chronic infection of the rectum, but without the ability to differentiate between Crohn's disease and ulcerative colitis; the case was classified as indeterminate proctitis.

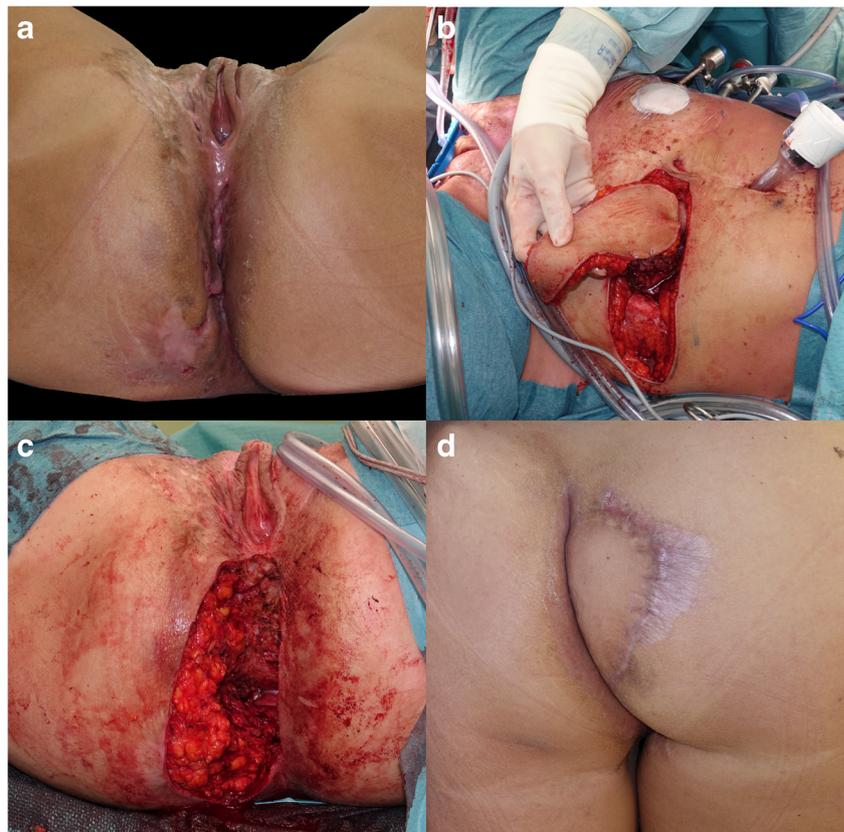
At 18 months' follow-up, the general condition of the patient had improved, the HS in the operated region was under control, and the patient was able to abduct his legs 60° and could ambulate freely (Fig. 1d).

Case 2: laparoscopic harvested VRAM

A 41-year-old male presented with severe HS in his axillary, inguinal, perianal, and gluteal regions. He had suffered from therapy-refractory HS for 27 years despite multiple surgical procedures. His past history included scleroderma and substance abuse. He had developed antibodies to infliximab.

At presentation, he was malnourished with extensive sinus tracts and abscesses in his buttocks and perineal region. Exploration was performed for perianal abscess, revealing extension of the abscess as a horseshoe-shaped epithelized sinus, 10 cm deep, in the perirectal space. A second-look procedure followed, with debridement of the coccyx due to osteomyelitis. The patient received an end colostomy in order to manage the wounds and because the anal sphincter and rectum were no longer deemed to be functional. Once there was no

Fig. 3 Patient 3: **a** Preoperative situation. **b** ORAM flap elevation. **c** Perineal and gluteal defect. **d** At follow-up



soiling of the perineal area, skin closure was performed using STSG.

Eighteen months after surgery, the patient underwent an APR due to persisting pus production from the perianal sinuses (Fig. 2a). The pelvic and perineal defect was closed by a laparoscopically harvested VRAM flap (Fig. 2b, c). A partial wound dehiscence due to the low quality of the surrounding tissue was treated using NPWT.

Pathological findings demonstrated chronic infection of the resected tissue, including the rectum, without signs of IBD.

At 12 months' follow-up, the patient no longer had active HS in his perineal and groin regions and his general condition had improved significantly (Fig. 2d).

Case 3: laparoscopic harvested ORAM

A 51-year-old woman presented with HS in the perineal, inguinal, and gluteal regions. She had suffered from Crohn's disease for 25 years and from HS for 20 years despite several surgical procedures and anti-TNF alpha

treatment. The patient had received an APR at 27 years of age because of extensive perianal Crohn's disease.

At presentation, she had extensive sinus tracts and abscesses in her buttocks and perineal region and pus production from a remaining sinus after proctectomy (Fig. 3a). The lesions involved were excised, together with the remaining part of the mesorectum. The large pelvic and perineal defect was closed with a laparoscopically harvested oblique RAM flap (Fig. 3b, c, d).

Pathological findings suggested chronic infection of the resected tissue with IBD activity. At 15 months postoperatively, the oblique RAM (ORAM) flap had healed without local HS recurrence (Fig. 3d). The patient still has active lesions in her groin region.

Discussion

HS can present itself in different ways. At the lower end of the spectrum (Hurley 1), cases can be treated by using medication or managed by simple surgical procedures such as incision and drainage or derofing of the lesions [12]. As the disease severity progresses

(Hurley 2–3), there is a need for more complex medical treatment such as using biologicals as well as more radical surgery and reconstruction [11, 12]. HS is associated with IBD [6–8]. Cases in which there is HS with a rectal involvement represent both a medical and a surgical challenge, as we were faced with in our patients. Managing only the cutaneous manifestations of HS in such patients might not be sufficient, due to the concomitant involvement of the rectum.

Following most APRs, primary closure of the perineal wound is sufficient. However, in case of wider resections with a need for volume replacement or in cases where there is loss of skin or severely scarred skin in the surrounding area, flap reconstruction is required [13]. It is preferable to use local flaps if possible such as a V-Y advancement flaps, the gracilis musculocutaneous flap, or the superior gluteal artery perforator flap (SGAP) [13, 14]. Distant flaps, based on the rectus abdominis muscle, such as the RAM flaps are also commonly used and may be harvested in combination with an abdominal procedure.

Due to the severely affected surrounding tissue in our patients, reconstruction of the APR wounds by primary closure or the use of local flaps like the SGAP were considered less appropriate; RAM flaps also have the advantage of providing a good bulk and can reach higher in the pelvis.

In two cases, the RAM-based flap was harvested in a laparoscopically assisted procedure; the advantage of this approach is that the abdominal wall distal to the umbilicus is preserved; this enables the abdominal wall fascia to be closed with a short horizontal suture line with an overlap of the facial layers; this may contribute to a faster postoperative recovery and less complications although this cannot be concluded from our data [15]. The laparoscopically assisted harvest may be technically challenging but affords good view of the pedicle and can be used as part of the endoscopic approach to colorectal surgery. Not using a flap to reconstruct the perineal area following the proctectomy would have led to chronic drainage in the perineal region with a high risk of bowel prolapse and ensuing intra-abdominal complications.

In the first two cases, a staged approach was chosen because insertion of the flap in an area with active HS was not desired. For this reason, regional excision followed by STSG was performed, before we proceeded with radical excision closure using flaps. As a consequence, the total course of treatment was more time consuming, on the other hand, staging the operations can reduce the potential complications associated with longer and larger procedures.

In conclusion, management of patients with severe therapy-refractory HS in the gluteal region, combined with IBD and severe perianal destruction, requires a multidisciplinary approach for adequate wide perianal excision with proctectomy and reconstruction. RAM-based flaps provide a good reconstructive option in such cases.

Funding information None

Compliance with ethical standards

Conflict of interest Zachri N. Ovadja, Annekatrien L. van der Kar, Marieke G. A. de Roo, Pieter J. Tanis, and Oren Lapid declare that they have no conflict of interest.

Ethical approval Ethical approval was not required by institution IRB.

Informed consent Informed consent was obtained; patients are not identifiable.

Open Access This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

References

1. Jemec GB (2003) Hidradenitis suppurativa. *J Cutan Med Surg* 7(1): 47–56
2. Ralf Paus L, Kurzen H, Kurokawa I, Jemec GBE, Emtestam L, Sellheyer K et al (2008) What causes hidradenitis suppurativa? *Clin Exp Dermatol* 17(5):455–472
3. Kohorst JJ, Kimball AB, Davis MD (2015) Systemic associations of hidradenitis suppurativa. *J Am Acad Dermatol* 73(5 Suppl 1): S27–S35
4. Sartorius K, Emtestam L, Jemec GB, Lapins J (2009) Objective scoring of hidradenitis suppurativa reflecting the role of tobacco smoking and obesity. *Br J Dermatol* 161(4):831–839
5. Schrader AM, Deckers IE, van der Zee HH, Boer J, Prens EP (2014) Hidradenitis suppurativa: a retrospective study of 846 Dutch patients to identify factors associated with disease severity. *J Am Acad Dermatol* 71(3):460–467
6. van der Zee HH, van der Woude CJ, Florencia EF, Prens EP (2010) Hidradenitis suppurativa and inflammatory bowel disease: are they associated? Results of a pilot study. *Br J Dermatol* 162(1):195–197
7. Janse IC, Koldijk MJ, Spekhorst LM, Vila AV, Weersma RK, Dijkstra G, Horváth B (2016) Identification of clinical and genetic parameters associated with hidradenitis suppurativa in inflammatory bowel disease. *Inflamm Bowel Dis* 22(1):106–113
8. van der Zee HH, de Winter K, van der Woude CJ, Prens EP (2014) The prevalence of hidradenitis suppurativa in 1093 patients with inflammatory bowel disease. *Br J Dermatol* 171(3):673–675

9. Haslund P, Lee RA, Jemec GB (2009) Treatment of hidradenitis suppurativa with tumour necrosis factor-alpha inhibitors. *Acta Derm Venereol* 89(6):595–600
10. Blok JL, van Hattem S, Jonkman MF, Horvath B (2013) Systemic therapy with immunosuppressive agents and retinoids in hidradenitis suppurativa: a systematic review. *Br J Dermatol* 168(2):243–252
11. Leslie KS, Tripathi SV, Nguyen TV, Pauli M, Rosenblum MD (2014) An open-label study of anakinra for the treatment of moderate to severe hidradenitis suppurativa. *J Am Acad Dermatol* 70(2):243–251
12. Saunter DM, Jemec GB (2017) Hidradenitis suppurativa: advances in diagnosis and treatment. *JAMA* 318(20):2019–2032
13. Devulapalli C, Jia Wei AT, DiBiagio JR (2016) Primary versus flap closure of perineal defects following oncologic resection: a systematic review and meta-analysis. *Plast Reconstr Surg* 137(5):1602–1613
14. Nisar PJ, Scott HJ (2009) Myocutaneous flap reconstruction of the pelvis after abdominoperineal excision. *Color Dis* 11(8):806–816
15. Agochukwu N, Bonaroti A, Beck S et al (2017) Laparoscopic harvest of the rectus abdominis for perineal reconstruction. *Plast Reconstr Surg Glob Open* 5:1581