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Use of multiple fasciocutaneous flaps for the management of extensive hidradenitis suppurativa

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SUMMARY

Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease with a relapsing nature that has a significant impact on the patient's quality of life. The clinical presentation of the disease includes deep dermal abscesses and sinus tracts. Long-term affliction of the disease may lead to contractures, scars and fibrosis. Management is still challenging and varies from medical to surgical options. We report the following case of a man in his 30s who presented with severe HS in the axillae, groins, perineum and lower sacral region. The patient has been treated by excision of the whole lesions followed by using multiple fasciocutaneous flaps as a reconstructive method.

BACKGROUND

Hidradenitis suppurativa (HS) is a chronic, inflammatory skin disease that markedly impacts the patient's quality of life. Lesions usually appear after puberty and arise as painful, deep-seated abscesses with sinus tracts in sites where apocrine glands are found, primarily in the intertriginous areas.^{1,2}

Lesions most commonly arise in the anogenital, axillary, inframammary and inguinal regions. Seldom, these lesions occur in sites where apocrine glands are either absent or scanty.^{2,3}

Unusual areas where the disease was reported as atypical are the abdomen, amputation stump, caesarian scar, chest, dorsal foot, eyelids, knees, retroauricular region and scalp.^{2,3}

The aetiology of HS is produced by a variety of elements with genetic predisposition and environmental factors which include smoking, obesity and hormonal factors, as well as microbiological factors. All of these factors contribute to the onset and course of the disease.^{2,4} The range of clinical presentation includes severe pain, itching, malodorous discharge, deep dermal abscesses and sinus tracts with long-term inflammation that may end with fibrosis, contractures and scars. All of these may lead to psychological consequences that markedly impact the patient's quality of life and occupation.^{2,4} A meta-analysis revealed that there are 118 760 093 HS cases reported in the literature.⁵ According to a study conducted in Riyadh, Saudi Arabia, the prevalence of HS was estimated to be 1.29%, and the most common accompanying disease was found to be diabetes mellitus type 2, followed by lipid disorders and acne.⁶ The treatment of HS is conducted on a long-term basis and is often challenging. It usually includes a combination of anti-inflammatory and surgical interventions. Biological

agents such as adalimumab, infliximab, etanercept, anakinra and bermekimab have been used for the treatment of HS; however, despite the high level of evidence for their use, they still struggle to control the disease adequately.^{2,4} Laser therapy is an effective and safe therapy for HS, leading to improved quality of life. It has been applied in some cases with the aim of modifying disease activity because the destruction of the pilosebaceous apparatus may prevent the spread of the disease.^{7,8} Surgical intervention is the treatment of choice for recalcitrant lesions. Those lesions necessitate a wide, local excision with a consequent need for reconstruction with skin grafts or rotation and advancement flaps.⁹⁻¹¹ The Hurley clinical staging system is a widely used grading system to characterise the extent of disease in patients with HS; it classifies the patients into three disease severity groups:

- ▶ abscess formation (single or multiple), no sinus tracts or cicatrization/scarring
- ▶ recurrent abscesses with sinus tracts and scarring, single or multiple separated lesions
- ▶ diffuse or almost diffuse involvement or multiple interconnected sinus tracts and abscesses across the entire area

Lifestyle modification (eg, smoking cessation and antiseptic wash) should be applied to all stages; topical antibiotics (eg, clindamycin), intralesional steroids, zinc gluconate, systemic antibiotics (eg, doxycycline) and local procedures for abscesses and sinus tracts (eg, drainage of fluctuating abscess, deroofting of the sinus tracts and laser treatment) can be applied to Hurley stages I and II. Hurley stage III treated with systemic antibiotics (eg, clindamycin), biological agents and a radical wide excision with a reconstructive method for closure (eg, skin grafts or flaps) can be applied.^{7,9}

CASE PRESENTATION

This study presents the case of a man in his 30s who was referred to our centre from a local hospital due to severe pain, bleeding and an inability to abduct his right shoulder for 1 month. Patient history included a diagnosis of HS in the left axilla, both groin sites, perineum and sacral area for 2 years with no other medical comorbidities; the patient was a heavy smoker with no family history of HS. The patient received a trial of antibiotic treatment and adalimumab for 9 months; however, he did not respond to the medical treatment. Multiple abscesses from both axillae were drained in the local hospital with insignificant improvement.



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Figure 1 Right axilla before radical surgeries showing inflammation, multiple abscesses and sinus.

On examination, the patient was found to be febrile (his temperature reached 38.2°C). In the right axilla, there were large abscesses and sinus tracts involving the whole area with bleeding. In the left axilla, there were multiple tracts and small abscesses. Additionally, nodules and sinus tracts were found in the groin area, perineum and lower sacral area. Investigations showed leucocytosis and anaemia of chronic disease. The patient was admitted and surgical intervention was planned subsequently. Our patient was classified as having HS Hurley stage III which required surgical management after failure of multiple modalities of medical treatment.



Figure 2 Right axilla after radical surgeries, showing lateral thoracic and posterior arm flap after complete healing.



Video 1 This video demonstrates the active function of both shoulder joints after reconstruction with multiple fasciocutaneous flaps.

TREATMENT

The lesions on the right axilla were extensive and severe; therefore, multiple operations were performed to obtain an adequate resection. The first operation involved debridement of the right axilla; the wound was covered using povidone-iodine 10%, dressing daily for 5 days (figure 1).

After clearance of the infection, the patient underwent the second operation, that is, lateral thoracic flap because the defect was large enough to be closed by other locoregional flaps. After 6 weeks, recurrence occurred at the suture line, following which the patient underwent another debridement and the resultant defect was closed by posterior arm flap. Unfortunately, 6 weeks later, there was a residual disease; an excision was conducted and closed primarily (figure 2, video 1).

After 6 weeks, the second stage of the operation was commenced for the left axilla; radical debridement and medial arm flap were done (figures 3 and 4).



Figure 3 Left axilla before excision of the lesion showing the active disease.

Subsequently, the third stage of the operation was performed with respect to the groin and perianal regions (the disease was extensive and involved multiple regions) (figures 5–7).

Therefore, the patient required multiple operations, the first being excision, the resultant defect was reconstructed with a posterior thigh flap. The second operation was the excision of the residual lesions in the perianal area and the groin; a scrotal flap was used for coverage. Some small satellite lesions were also excised and closed primarily (figure 8).



Figure 4 Left axilla after radical surgeries (note the healed flap).



Figure 5 Left groin before radical surgeries showing the active disease.

The fourth stage of the operation was performed for the lower sacral region; excision and advancement of v-y flap were performed (figures 9 and 10).



Figure 6 Right groin showing the active disease.



Figure 7 Perineum before radical surgeries, showing multiple abscesses, nodules and sinus tracts.

A histopathological investigation was conducted for all excised samples, proving the diagnosis of HS.

The patient underwent a smooth postoperative course following all surgical procedures, where he stayed for 5 days and received a postoperative course of antibiotics and analgesia, and dry dressings were performed.

OUTCOME AND FOLLOW-UP

The patient is currently being followed up, the last operation was 9 months ago, and it was for the lower sacral area; no residual lesions have been found yet. Furthermore, the patient's condition has improved. He can now raise his arms above his head, and he can move well. Moreover, he is quite satisfied with the outcome of multiple surgeries.

DISCUSSION

The chronic and relapsing nature of HS leads to physical and psychological impairment. Additionally, surgical management is still quite challenging for the plastic surgeon. Unfortunately, the patient in this case study failed to respond to medical treatment and suffered from severe and extensive lesions at multiple body sites.

Smoking is a well-established risk factor for HS that affects the outcome's severity and prognosis. Patients who continue to smoke demonstrate slower rates of achieving remission than those who stop smoking; therefore, smoking cessation is a crucial part of managing the disease. Our patient was a heavy smoker who failed to quit despite multiple smoking cessation attempts.^{12 13}



Figure 8 Perineum and groin sites after complete healing of the flaps.



Figure 9 Lower sacral area before excision, showing multiple abscesses and sinus tracts.

For the patient in this case study, surgical management was the only effective solution. Based on an analysis of 106 HS cases treated with a wide excision and reconstruction, the overall complication rate was 17.8%. Most of these were minor complications such as wound dehiscence, postoperative bleeding and haematoma.¹⁴ We also encountered some of these complications after a wide excision and reconstruction with flaps, specifically minor wound dehiscence and recurrence of some lesions on the flap, particularly on the right axilla, due to the fact that the inflammation was severe from the beginning. Thus, adequate resection was difficult in this area; however, these complications were managed successfully.

Wide excision and reconstruction using skin flaps and grafts led to a lower recurrence rate based on 107 cases of HS that underwent wide excision and reconstruction, which were analysed by a retrospective study. The highest recurrence rate occurred after wide excision with primary closure. In contrast, the lowest recurrence rate was among patients who underwent reconstruction with a fasciocutaneous flap despite having the most advanced disease severity and more comorbidities. The recurrence rate was found to be related to the severity of the disease and not to the surgical method of reconstruction.^{15 16}

Furthermore, in our case, a decision to use locoregional fasciocutaneous flaps for reconstruction was made. These flaps are readily available with fewer donor sites, easily mobilised, and



Figure 10 Lower sacral area after excision and flap reconstruction.

most of them preserve the main arterial axis. Unlike muscle flaps, the functional sequelae of the donor site are minimal.¹⁷

Additionally, split-thickness grafts have been associated with a lower recurrence rate because they do not contain cutaneous appendages, which are involved in the aetiology of the disease¹⁸; however, in this case study, a skin graft was not considered a closure method because flaps are more reliable in mobility areas, like the axilla and groin. Moreover, skin grafts require a prolonged period of immobilisation postoperatively, which may result in contractures and decreased range of motion.^{19 20}

To the best of our knowledge, the reported cases of surgical management of HS nationally and internationally involve the utilisation of no more than two flaps in one patient.^{11 21} We reported the first case with HS, where six flaps were used on the same patient. Moreover, none of the reported cases with extensive lesions required multiple radical surgeries.^{22–24}

Learning points

- ▶ Hidradenitis suppurativa treatment is very challenging and requires long-term management.
- ▶ Surgical management in the form of excision of the involved skin is reserved for chronic cases riddled with severe disease where there has been minimal response to non-surgical management.
- ▶ Reconstruction after excision with local and regional fasciocutaneous flaps lead to superior outcomes in terms of function and patient satisfaction.
- ▶ Wide excision and reconstruction using fasciocutaneous flaps lead to a lower recurrence rate if all lesions are excised radically.
- ▶ Fasciocutaneous flaps are readily available with fewer donor site morbidity and easy mobilization.

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Contributors The following authors were responsible for drafting of the text, sourcing and editing of clinical images, investigation results, drawing original diagrams and algorithms, and critical revision for important intellectual content: RHA, EHHA, MsF, MB. The following authors gave final approval of the manuscript: RHA, MB.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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