Surgical Treatment in Hidradenitis Suppurativa

Subjects: Dermatology

Contributor: Ratnakar Shukla, Mohamad Goldust, Priyanka Karagaiah, Anant Patil, Alex Ortega Loayza, Jacek Szepietowski, Stephan Grabbe

Hidradenitis suppurativa (HS) is a chronic, progressive inflammatory disorder of follicular occlusion with pubertal onset that presents as painful inflammatory nodules, sinus tracts, and tunnelling in apocrine-gland-rich areas, such as the axilla, groin, lower back, and buttocks. There are various options available for surgical intervention, with no optimal treatment, requiring an individualized approach for each patient. The choice of surgical treatment depends upon various factors, such as the chronicity and extent of disease, affected site, presence of long-standing lesions, and patient comorbidities. Surgical treatment in HS ranges from procedural treatments (e.g., laser) and minor surgery (e.g., incision and drainage and deroofing) to major surgery (e.g., wide local excision).

Keywords: hidradenitis suppurativa ; apocrine gland ; follicular occlusion

1. Incision and Drainage (I and D)

Incision and drainage can be used as a treatment modality in acute cases with tender fluctuant abscesses with pus accumulation. It offers the opportunity for rapid pain relief. However, this modality does not actively intervene in the diseased tissue; as such, the relief is temporary and is associated with a nearly 100% recurrence rate [1][2][3].

After wide circumferential local anesthesia, an incision is performed and digital pressure is applied to express the purulent contents. Saline washes can be administered to extrude the remaining contents. Packing is not required following the drainage of HS lesions, but it can be considered in cases when an infectious abscess is possible [4]. Currently, only a few case reports are available for incision and drainage procedures, and it lacks substantial evidence supporting its use in HS. As deroofing can be performed with the same equipment and requires approximately the same amount of time, experts recommend deroofing over incision and drainage.

2. Deroofing

Deroofing, first described by Mullins et al. in 1959, is a simple, conservative, low-cost surgery for Hurley stage II and III lesions [5]. The procedure involves stripping the “roof” from all the abscess or sinus tracts and exposing the floor of the lesions in the affected areas. A metal probe or scissors gently probe to identify all communicating tracts, which are then deroofed. The gelatinous proliferating sinus tissue is then removed using a curette, scalpel, or moistened gauze [4][6][7]. The preserved floor allows the epithelial cells from sweat glands and hair follicle remnants to quickly re-epithelialize the wound and heal by secondary intention [8][9].

Deroofing is a simple and minimally invasive procedure that can be achieved by multiple methods, specifically, blunt surgical scissors, carbon dioxide (CO_2) lasers, or electrosurgery probe. An open study by Vanderzee et al. treated 44 patients with a total of 88 lesions with a deroofing procedure followed by healing with secondary intention. Most deroofed lesions were located in the groin (47%) and axillae (44%). The mean healing time was 14 days in defects with a mean length of 3 cm. It was observed that 17% of the deroofed lesions recurred after a median of 4.6 months, while 83% of the lesions showed no recurrence after a median follow-up of 34 months. A total of 90% of the treated patients were willing to recommend the deroofing technique to others with HS [10].

Electrosurgery, with a mean healing time of around 16 days, also proved to be a good alternative for deroofing early HS lesions [11].

Deroofing presents many advantages: it can be performed under local anesthesia, offers low morbidity and cosmetically acceptable results, and prevents contractures [11]. Deroofing is the primary procedure for persistent nodules and sinus tracts in Hurley stage I or II. Complications associated with the procedure include post-surgical bleeding, infection, and scarring [12][13].

3. Excision

Excision is a more invasive approach that is aimed at removing the diseased tissue in its entirety. Depending on the level of invasiveness, excision can be limited, where each diseased area is excised separately, with a rim of normal tissue margin, or wide, where an area comprising all lesions is excised. In especially severe cases, radical excision of the entire area of a body region with disease activity may be indicated [14]. However, excision surgery is not uniformly defined in most studies, making the comparison of treatment outcomes challenging. Different studies may have described the same procedure under different names. This also leads to challenges in defining recurrence.

3.1. Limited/Localized Excision

This office-based procedure can be performed under local anethesia. In their retrospective study on 57 patients with an average of 92 operated lesions, Van Rappard et al. described local excision as the complete resection of the diseased tissue beyond the borders of activity, leaving behind clear margins. The selection criteria for local excision included (i) recurrent abscesses or fistulas in the same location; (ii) Hurley stage I and II lesions where excision could be performed easily, leaving behind healthy tissue around and below the lesion; and (iii) their lesions were smaller than palm size, in order to not exceed the maximum quantity of lidocaine that could be used per procedure. The defect was managed with a primary closure, and patients were followed up for an average of 27 months. In total, 63% of patients were treated successfully, without any recurrence, 83% were satisfied with the cosmetic outcomes, and 89% were willing to suggest it to other patients with HS [15].

3.2. Wide Excision

Wide excision should be offered in severe cases that are refractory to medical treatment when there is a risk of extensive fibrosis or architectural loss. Wide excision involves the surgical removal of lesions as well as the surrounding disease-free tissue, such as subcutaneous fat or a 1–2 cm lateral margin of intertriginous skin [1]. According to Park and Park's recommendation, all apocrine glands should be removed from all hair-bearing skin to the deep underlying fascia [16]. Wide surgical excisions were defined by Alharbi et al. as the removal of diseased tissue with a wide margin of 1 cm up to the subcutaneous tissue until reaching the fascia. While some studies have a clear definition for wide excision, many studies do not mention a definite criterion, which makes it difficult to compare various studies [17]. Sinus tract location, extent, and fluid collections can be demonstrated preoperatively by magnetic resonance imaging or ultrasound [18]. They can also be demonstrated intraoperatively by dye mapping techniques, such as methyl violet and iodine starch [19][20], so that the entire area of HS lesions can be identified and removed. This is of particular importance in intertriginous areas, as they require the complete removal of diseased tissue by wide excision for a successful outcome [20]. Lelonek, et al. have reported their observations in a case series of seven patients with genital elephantiasis due to HS. In these patients, wide excision of the affected genital parts followed by surgical reconstruction using combined surgical methods was performed. The procedure resulted in an improvement in the quality of life of the patients [21].

Cryotherapy can be used persurgically to assess the extent of the lesion with minimum discomfort and is simple to perform [22]. A CO_2 laser can be used for debulking, which further improves hemostasis and the visualization of the operative field [1].

3.3. Radical Excision

Yet again, there is no clear definition for radical excision. Some authors have termed it as the removal of the entire hair-bearing area in the affected area, with a clear margin of at least 1 cm [23]. Nesmith et al. have described radical excision as the removal of diseased tissue up to the deep fat and fascia and additionally removed superficial lymph nodes to eliminate microbacterial foci [24].

As per a meta-analysis, the estimated rate of HS recurrence is 22.0% following local excision and 27% following deroofing, compared to a recurrence of 13.0% following wide excision [25]. With the axilla being one of the most commonly affected sites, there is a risk of injury to the brachial plexus and the axillary artery and its branches in severe cases requiring a radical excision [1]. Special care must be taken in cases of inguinal and perianal HS, as there are chances to damage the anal sphincter and the vaginal wall. Hypergranulation is the most common complication in patients that are treated with wide excision and left to heal by secondary intention [1].

References

1. Janse, I.; Bieniek, A.; Horváth, B.; Matusiak, Ł. Surgical procedures in hidradenitis suppurativa. Dermatol. Clin. 2016, 34, 97–109.
2. Kohorst, J.J.; Baum, C.L.; Otley, C.C.; Roenigk, R.K.; Schenck, L.A.; Pemberton, J.H.; Dozois, E.J.; Tran, N.V.; Senchenkov, A.; Davis, M.D. Surgical management of hidradenitis suppurativa: Outcomes of 590 consecutive patients. Dermatol. Surg. 2016, 42, 1030–1040.
3. Ellis, L.Z. Hidradenitis suppurativa: Surgical and other management techniques. Dermatol. Surg. 2012, 38, 517–536.
4. William, D.F.; Hazen, P.G.; Boer, J. New and traditional surgical approaches to hidradenitis suppurativa. J. Am. Acad. Dermatol. 2015, 73, S62–S65.
5. Mullins, J.F.; Mccash, B. Treatment of chronic hidradenitis suppurativa: Surgical modification. Postgrad. Med. 1959, 26, 805–808.
6. Lin, C.-H.; Chang, K.-P.; Huang, S.-H. Deroofing: An effective method for treating chronic diffuse hidradenitis suppurativa. Dermatol. Surg. 2016, 42, 273–275.
7. Van Hattem, S.; Spoo, J.R.; Horváth, B.; Jonkman, M.F.; Leeman, F.W.J. Surgical treatment of sinuses by deroofing in hidradenitis suppurativa. Dermatol. Surg. 2012, 38, 494–497.
8. Brown, S.C.; Kazzazi, N.; Lord, P.H. Surgical treatment of perineal hidradenitis suppurativa with special reference to recognition of the perianal form. Br. J. Surg. 1986, 73, 978–980.
9. Culp, C.E. Chronic hidradenitis suppurativa of the anal canal. A surgical skin disease. Dis. Colon. Rectum. 1983, 26, 669–676.
10. Van der Zee, H.H.; Prens, E.P.; Boer, J. Deroofing: A tissue-saving surgical technique for the treatment of mild to moderate hidradenitis suppurativa lesions. J. Am. Acad. Dermatol. 2010, 63, 475–480.
11. Aksakal, A.B.; Adişen, E. Hidradenitis suppurativa: Importance of early treatment; efficient treatment with electrosurgery. Dermatol. Surg. 2008, 34, 228–231.
12. Blok, J.L.; Boersma, M.; Terra, J.B.; Spoo, J.R.; Leeman, F.W.J.; Van Den Heuvel, E.R.; Huizinga, J.; Jonkman, M.F.; Horváth, B. Surgery under general anaesthesia in severe hidradenitis suppurativa: A study of 363 primary operations in 113 patients. J. Eur. Acad. Dermatol. Venereol. 2015, 29, 1590–1597.
13. Greeley, P.W. Plastic surgical treatment of chronic suppurative hidradenitis. Plast. Reconstr. Surg. 1951, 7, 143–146.
14. Weyandt, G. Operative Therapie der Acne inversa. Der. Hautarzt. 2005, 56, 1033–1039.
15. Van Rappard, D.C.; Mooij, J.E.; Mekkes, J.R. Mild to moderate hidradenitis suppurativa treated with local excision and primary closure. J. Eur. Acad. Dermatol. Venereol. 2012, 26, 898–902.
16. Parks, R.W.; Parks, T.G. Pathogenesis, clinical features and management of hidradenitis suppurativa. Ann. R. Coll. Surg. Engl. 1997, 79, 83–89.
17. Alharbi, Z.; Kauczok, J.; Pallua, N. A review of wide surgical excision of hidradenitis suppurativa. BMC Dermatol. 2012, 12, 9.
18. Wortsman, X.; Moreno, C.; Soto, R.; Arellano, J.; Pezo, C.; Wortsman, J. Ultrasound in-depth characterization and staging of hidradenitis suppurativa. Dermatol. Surg. 2013, 39, 1835–1842.
19. Harrison, B.J.; Mudge, M.; Hughes, L.E. Recurrence after surgical treatment of hidradenitis suppurativa. Br. Med. J. Clin. Res. Ed. 1987, 294, 487–489.
20. Maghsoudi, H.; Almasi, H.; Miri, B.M.R. Men, main victims of hidradenitis suppurativa (A prospective cohort study). Int. J. Surg. 2018, 50, 6–10.
21. Lelonek, E.; Bieniek, A.; Matusiak, L.; Szepietowski, J.C. Improved psychosocial status after surgery for genital elephantiasis due to hidradenitis suppurativa: A prospective study of a case series. Acta Derm. Venereol. 2021, 101, adv00389.
22. Daveluy, S. Cryoinsufflation in the presurgical assessment of hidradenitis suppurativa. J. Am. Acad. Dermatol. 2020, 82, e127.
23. Ritz, J.P.; Runkel, N.; Haier, J.; Buhr, H.J. Extent of surgery and recurrence rate of hidradenitis suppurativa. Int. J. Colorectal. Dis. 1998, 13, 164–168.
24. Nesmith, R.B.; Merkel, K.L.; Mast, B.A. Radical surgical resection combined with lymphadenectomy-directed antimicrobial therapy yielding cure of severe axillary hidradenitis. Ann. Plast. Surg. 2013, 70, 538–541.

25. Mehdizadeh, A.; Hazen, P.G.; Bechara, F.G.; Zwingerman, N.; Moazenzadeh, M.; Bashash, M.; Sibbald, R.G.; Alavi, A. Recurrence of hidradenitis suppurativa after surgical management: A systematic review and meta-analysis. J. Am. Acad. Dermatol. 2015, 73, S70–S77.