

# Surgical Deroofing for Hidradenitis Suppurativa

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Hidradenitis suppurativa can present in varying degrees of severity; management often poses a challenge for primary care physicians and dermatologists. Deroofing is a surgical technique that has shown superiority over standard excision. We describe the deroofing procedure and review clinical data to provide instruction and support its use.

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## Practice Gap

Hidradenitis suppurativa (HS) is a chronic inflammatory skin condition characterized by inflammatory nodules, abscesses, sinus tracts, fistulae, and scarring, mainly in intertriginous areas. The extent of disease—classified using the Hurley staging system (stages I–III)—helps guide treatment, which includes medical management and surgical intervention in later stages.

First-line treatment of HS includes topical or systemic medications, or both. Surgical therapy typically is reserved for refractory HS in moderate to severe disease (Hurley stages II and III) and is combined with pharmacotherapy. Specifically, clinical management guidelines issued by an expert committee of the United States and Canadian Hidradenitis Suppurativa Foundations recommend excision or deroofing for recurrent nodules and tunnels.<sup>1</sup>

Surgical options for HS that are available to the outpatient dermatologist include incision and drainage, electrosurgery, CO<sub>2</sub> laser evaporation, excision, and deroofing (also known as unroofing).<sup>2</sup> Deroofing is a fairly novel therapy; many dermatologists are unfamiliar with the procedure. A PubMed search of articles indexed for MEDLINE related to HS prior to 2010 revealed only 1 article containing the word *deroofing* and only 4 articles containing *unroofing*.

The pathophysiology of HS has important implications for successful treatment. Inflammation of the

follicular pilosebaceous unit along with follicular occlusion create challenges with treatment.<sup>3</sup> It is postulated that a defect in the glassy membrane of the infra-infundibular wall predisposes the pilosebaceous follicle to lose its structural integrity as pressure builds from plugging of the duct,<sup>4</sup> which can result in the clinical hallmarks of HS including tunneling tracts, bridging nodules, abscesses, and fistulae that form with lateral expansion of the plugged follicle.

Leaking of the contents of these plugged follicles into surrounding tissue produces an inflammatory response in characteristic HS lesions. Because debris within the lesions moves laterally instead of being able to burst to the surface, the lesions have difficulty fully healing. Unroofing the lesions and removing built-up debris allows them to heal more expediently and quiets the underlying immune response by removing the stimulus.<sup>4</sup>

Herein, we describe the benefits, risks, and surgical process of deroofing for HS.

## Technique and Tools

Deroofing is performed under local anesthesia, stepwise as follows:

1. Identify sinus tracts and infiltrate the area with lidocaine (Figure, A).
2. Use a blunt probe to define the borders of the area to be unroofed and to evaluate for any communicating sinus tracts (Figure, B).
3. Remove the roof of underlying abscesses and tracts, using a probe as a guide (Figure, C).
4. Enter through the skin or sinus opening using electrocautery or with a scalpel or scissors; perform blunt dissection.
5. Reflect back the entirety of skin overlying the probed areas and remove the skin to expose the base of the lesion (Figure, D).

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6. Explore the exposed base and walls of the lesion with the probe again to assess for hidden tracts; take care not to create false tracts.

7. Debride the surgical wound using curettage or rough gauze grattage to remove remaining inflammatory debris or biofilm. To achieve hemostasis, apply aluminum chloride or ferric chloride. Coat the wound with petroleum jelly and gauze and allow it to heal by secondary intention.

8. Educate the patient on wound care—once-daily gentle cleansing with soap and water, followed by application of a moist dressing—which is similar to wound healing by secondary intention from other causes.<sup>2,4</sup>

### Practice Implications

A deroofing procedure has many benefits compared to other surgical modalities for the treatment of HS. Deroofing requires only a probe, curette, and electrocautery device, making the procedure more cost-effective than excision, which requires a full tray of equipment and sutures. Furthermore, margins do not need to be taken with deroofing, and no undermining or closure is needed, which saves time during the operation and minimizes the risk for complications, including dehiscence and formation of new sinus tracts.<sup>4</sup> No specialized equipment, such as a CO<sub>2</sub> laser, is required, which makes deroofing accessible to every clinical dermatologist in any demographic or geographic setting.

*Evidence of Benefit*—Saylor and colleagues<sup>5</sup> found that deroofing carries a 12.5% complication rate, which includes postoperative bleeding, hypergranulation tissue, and rarely wound infection. This rate is significantly lower

than the 26% complication rate associated with local excision, which includes wound dehiscence, infection, and contracture ( $P < .001$ ). Deroofing also was found to have an HS recurrence rate of 14.5%, which is significantly less than the 30% recurrence rate seen with local excision ( $P = .015$ ). Saylor et al<sup>5</sup> also concluded that incision and drainage was recommended only for immediate relief of HS because of its 100% recurrence rate.

van der Zee<sup>2</sup> reported on 88 lesions from 44 patients that were treated by surgical deroofing, resulting in an average defect of 3.0 cm in length and a mean healing time of 14 days. The typical outcome was cosmetically acceptable scarring; this finding was supported by a postoperative survey (>1 year), to which 37 of 44 patients responded and assigned an average satisfaction score of 8 (of a possible 10) and a recommendation rate of 90%.<sup>2</sup>

*Procedural Coding*—Specific Current Procedural Terminology codes (11450-11471) from the *International Classification of Diseases, Tenth Revision*, exist for HS deroofing procedures; the applicable code for a given case depends on the final length of the surgical defect. Documentation to support these codes is similar to the note for an excision procedure, taking care to include location, depth, and length of the excision; healing by secondary intention; and the diagnosis of HS.

### Final Thoughts

Deroofing is a surgical option that can be beneficial to patients with HS. It is a relatively simple procedure available to any dermatologist, regardless of setting. We encourage dermatologists to consider deroofing, even in

A, Axilla affected by hidradenitis suppurativa with an area of prior deroofing. New sinus tracts have formed peripherally and have been mapped out. The area has been infiltrated with lidocaine in preparation for deroofing. B, A blunt probe is used to define borders of the area to be unroofed by gently probing sinus tracts for communicating channels. An electrocautery device is used to cut and coagulate, using the probe as a guide. C, Gradually, areas are unroofed by cutting along the guiding probe, with caution to avoid creating iatrogenic sinus tracts. D, Skin overlying the probed area is reflected back and removed, exposing the base of the lesion. Grattage is used to gently debride the base. The electrocautery device can be used to stop any bleeding from unroofed areas.



patients with Hurley stage II lesions, because it can yield cosmetically acceptable and definitive results, given the variety of therapies available for HS. Deroofing also can be superior to standard excision, especially because of the potential complications with standard excision and quicker operative time with deroofing. As more providers become familiar with the deroofing procedure for HS, further studies can be undertaken to add to the paucity of data about deroofing and how it compares to other surgical treatments.

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