

MODified DERoofing With Scar Excision (MODES Procedure) for the Surgical Treatment of Hidradenitis Suppurativa

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Although recent developments have advanced the medical management of hidradenitis suppurativa (HS), none are capable of eliminating scarring or epithelial linings present in chronic sinuses.^{1,2} Surgical management of HS consists of a few procedure types: incision and drainage, deroofing, wide local excisions (WLE), skin-tissue-saving excision with electrosurgical peeling (STEEP), and staged excision.³ Table 1 highlights similarities and differences between these procedures. WLE continues to be the most performed procedure for HS, with the lowest reported need for further surgical intervention (13% to 27%). However, the healing time (up to 14 weeks without primary closure) and associated morbidities are the highest among HS procedures.^{1,4} Traditional deroofing is often performed in the outpatient setting and has a more rapid healing time but a higher recurrence rate (17% to 27%).^{1,5} At our HS specialty referral clinic, we perform a unique outpatient surgery using sinus tracts to guide excision of HS tissue in Hurley stage I-III disease, to which we refer as the MODES (Modified Deroofing with Scar Excision) procedure. Our technique involves an initial deroofing procedure, followed by exploration, subsequent marsupialization, and excision of involved scar tissue.

Following visual identification of sinus tracts and confirmation with palpation, the area is marked with a surgical pen and prepped with chlorhexidine (Figure 1a). Local anesthesia is achieved and confirmed with lidocaine 1% with epinephrine. A sterile probe is inserted into the sinus tract openings, and a #10 surgical blade is used to create an incision over the roof of the tunnel. Exploration with the sterile probe is performed to identify communicating tunnels, which are also deroofed. The base of any secondary sinus tracts is managed with curettage and electrocautery, which is aimed at destroying overlying biofilm. The base of some tunnels may be left intact if healthy tissue is present. Fibrotic scar tissue adjacent and at the base of the sinus tract is excised by

scalpel via perpendicular and oblique sections. The wound bed is manually debrided with dry sterile gauze, followed by electrocautery of the area for hemostasis and to disrupt remaining biofilm (Figure 1b). The wound is left to heal by secondary intent. The surgical bed is liberally dressed with petroleum jelly ointment and covered with nonadherent gauze, sterile absorbent gauze, and Hypafix surgical tape. The patient is instructed on post-operative wound care: initial bandage is left over the wound for 48 hours, followed by bandage removal, wound cleansing (antibacterial wash), and daily application of Vaseline, Aquaphor, or petroleum jelly (enough to fill the entire wound) for 4-8 weeks along with nonadherent gauze and paper tape.

The MODES procedure has been performed in a large number of patients at our HS referral center since 2017. The success of the procedure is likely due to removal of fibrous tissue, which may serve as the source of recurrences due to hidden, discontinuous epithelialized tracts, within and adjacent to wound beds of traditional deroofing sites. Dahmen et al⁵ also reported success with a similar procedure as the one we described above, which they simply refer to as modified deroofing. We have found this terminology to be confusing to both patients and providers. Thus, we propose a unique nomenclature for the MODES procedure to differentiate it from traditional deroofing, allowing for wider utilization and

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Table 1. Comparison of HS Surgical Treatments.

Procedure	Description	Recurrence rate	Complications	Healing time	Setting	Comments
Deroofing	Opening of exterior skin-bridge of fistula tracts without removal of surrounding tissue	27%	*Post-op bleeding (1%) *Hypergranulation *Infection	2 weeks (may be longer)	Outpatient with local anesthesia	*Hurley stage I/II
Wide local excision	Removal of affected tissue with standard margins (1, 3 cm)	13 to 27%	*Chronic or excessive pain (32.7%) *Infections (10.9%) *Contractures (7%) *Post-op bleeding (7%) *Wound dehiscence (3.5%)	Up to 14 weeks	Hospital with general anesthesia	*Hurley stage II/III *May require prolonged hospital stay and additional procedures such as skin grafting
STEEP	Sinus tract and scar removal with tangential electro-surgical transections	29%	*Hypergranulation (62.4%) *Post-op bleeding (1.9%) *Infections (1.9%) *Contractures (0.6%)	Not reported	Hospital with general anesthesia	*Hurley stage II/III
MODES/ Modified deroofing	Sinus tract and scar removal using scalpel via perpendicular and oblique sections	18% (as low as 6% for axillary procedures)	*Post-op bleeding	5.2 weeks	Outpatient with local anesthesia	*Hurley stage I/II/III *Does not require electro-surgical device *Less technical challenge than STEEP

Abbreviations: MODES, Modified deroofing with scar excision; STEEP, Skin-tissue-saving excision with electro-surgical peeling.



Figure 1. Clinical course of a 35-year-old female who underwent the MODES procedure to her right axilla. The patient had long-standing Hurley stage II HS of bilateral axillae, despite medical treatment. (a) Preprocedural chronic skin changes with sinus tracts. (b) Immediately post-procedure illustrating the extent of the excision. (c) Wound bed 1 week post-operatively. (d) Surgical site 2 months after the procedure.

better management of patient expectations pre- and post-operatively. The MODES procedure may be combined with medical management and provides an additional surgical option for general dermatologists to consider for HS patients in their daily practice.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr Paek has been an investigator for Avillion, AbbVie, BMS, Novartis, has participated in advisory boards for BMS, AbbVie, Janssen, Novartis, and Sanofi Genzyme, and is a speaker for AbbVie and Janssen. All other authors have no conflicts of interest to declare.

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