

Ultrasound for a better surgical approach in hidradenitis suppurativa

Ultrassom para uma melhor abordagem cirúrgica na hidradenite supurativa

DOI: <http://www.dx.doi.org/10.5935/scd1984-8773.2025170433>

ABSTRACT

Hidradenitis suppurativa (HS) is a chronic inflammatory disease affecting intertriginous areas of the body, characterized by painful nodules, abscesses, sinusoidal tracts, and fistulas. Surgery is crucial for treatment, being potentially curative and achieving high satisfaction levels. Pre-surgical evaluations are often limited by the difficulty of detecting fistulous tracts and deep nodules. Ultrasound has emerged as a staging, follow-up, treatment response evaluation, and preoperative management method for HS. It enables accurate localization of subclinical lesions and optimizes surgical results. This report presents two representative cases of pre-surgical ultrasound evaluation in HS.

Keywords: Hidradenitis Suppurativa; Ultrasonography, Doppler; Outpatient Surgical Procedures

RESUMO

A hidradenite supurativa (HS) é uma doença inflamatória crônica que afeta áreas intertriginosas, caracterizada por nódulos dolorosos, abscessos, trajetos sinuosos e fístulas. A cirurgia é fundamental no tratamento, sendo potencialmente curativa e alcançando alta satisfação. Porém, avaliações pré-cirúrgicas enfrentam limitações para identificar trajetos fistulosos e nódulos profundos. O ultrassom surgiu como ferramenta para estadiamento, monitoramento, avaliação de resposta ao tratamento e planejamento pré-operatório, permitindo localizar lesões subclínicas e otimizar resultados cirúrgicos. Este estudo apresenta dois casos ilustrativos que demonstram a utilidade da ultrassonografia na avaliação pré-cirúrgica em pacientes com HS.

Palavras-chave: Hidradenite Suppurativa; Ultrassonografia Doppler; Procedimentos Cirúrgicos Ambulatoriais

Case report

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Funding: None

Conflict of interest: None

Submitted on: 12/28/2024

Final decision: 01/30/2025

How to cite this article:

Bulla-Alcala F, González C, Cataño S, Ochoa-Bermudez JF. Ultrasound for a better surgical approach in hidradenitis suppurativa. Surg Cosmet Dermatol. 2025;17:e20250433.



INTRODUCTION

Hidradenitis suppurativa (HS) is a chronic inflammatory disease characterized by painful nodules, abscesses, sinusoidal tracts, and fistulas, primarily affecting intertriginous regions such as the axillae and groin.^{1,2} Treatment is comprehensive, encompassing antibiotics, retinoids, biological therapies, and surgical interventions.³ Surgery remains crucial, as it is the only potentially curative option, achieving high satisfaction levels regardless of disease severity.⁴

Several classifications are used to assess HS severity. The most widely recognized is the Hurley system, which stages the disease into three levels.² However, traditional classifications have limitations, including inaccurate assessment of inflammation.^{5,6} To address these, new scales have been developed. The Modified Hurley scale evaluates body surface area involvement, inflammation, and migratory lesions,⁷ while the IHS4 (International Hidradenitis Suppurativa Severity Score System) dynamically assesses nodules, abscesses, and fistulous tracts over time.^{5,6}

Physical examination of HS patients has limitations, as fistulous tracts and deep nodules are often undetectable by palpation alone.⁷ This limitation may lead to inadequate medical and surgical treatment.⁷⁻¹¹ Imaging addresses these challenges by clarifying lesion morphology and severity, tracking disease progression, and assisting in pre-surgical mapping.¹² Imaging modalities include ultrasound and MRI.¹³⁻¹⁵ High-resolution ultrasound with Doppler analysis is particularly effective, providing safe, accurate detection of subclinical lesions and active inflammation. It is now considered the standard of care for diagnosis, staging, and preoperative localization of target lesions in HS.^{7,16-23}

METHOD

We present two cases of patients treated at a Dermatologic Surgery Center in Bogotá, Colombia. Both patients, diagnosed with HS and referred for surgical intervention, underwent high-frequency ultrasound for lesion localization and marking. Informed consent was obtained.

CLINICAL CASES

Case 1

A 25-year-old woman with severe HS (Hurley stage III; IHS4: 19 points) was treated with combined medical management (oral antibiotics) and surgery. Preoperative ultrasound identified isolated dermal edema, follicular dilation, cystic nodules, and fistulas in the bilateral inguinal regions. A complex type II fistula extended from the distal right inguinal region to the proximal thigh, while a type III fistula was observed in the left inguinal region. Ultrasound-guided marking of target lesions facilitated surgical resection (Figure 1). Six months postoperatively, the patient showed adequate healing without recurrence.

Case 2

A 58-year-old woman with HS in the inguinal, intergluteal, and gluteal regions had a history of biological treatment and multiple surgical resections. Preoperative ultrasound identified a type III fistula with significant fibrosis in the proximal right buttock and a type II fistula with mild fibrosis and edema in the infragluteal fold. The marking of lesions ensured precise surgical resection (Figure 2). Postoperative outcomes were successful, with no complications or recurrence at one-year follow-up.

RESULTS

Satisfactory postoperative outcomes were achieved in both patients, showing the efficacy of ultrasound-guided surgical resection in improving surgical precision and reducing recurrence.

DISCUSSION

Pre-surgical planning based solely on clinical parameters often underestimates the extent and severity of HS lesions.²² Visual examination and palpation fail to identify deep or subclinical lesions, resulting in incomplete surgical margins and increased risk of recurrence.^{7,23} Imaging, particularly ultrasound, addresses these limitations by providing detailed information about lesion boundaries, subclinical activity, and severity.^{7,18} High-resolution ultrasound with Doppler analysis is especially useful for staging disease, monitoring treatment response, and guiding preoperative planning.^{7,18,24-26}

The modified Sonographic Scoring of Hidradenitis Suppurativa (mSOS-HS) is a validated tool for staging HS based on ultrasound findings²⁷:

Stage I includes one fluid collection and changes in the dermis, such as pseudocysts or follicular dilations.

Stage II involves two to four fluid collections or a fistulous tract with dermal changes affecting up to two body segments.

Stage IIIA includes five or more fluid collections or multiple fistulous tracts, while Stage IIIB involves extensive, bilateral, or interconnected fistulas.

Ultrasound also categorizes fistulas based on fibrosis and edema into three types²⁵:

1. Type I: Minimal fibrosis and low edema.
2. Type II: Moderate fibrosis and low edema.
3. Type III: Severe fibrosis and significant edema.

Detecting fibrosis is particularly important, as fibrotic lesions are less likely to respond to medical therapy.^{25,28} These cases often require combined medical and surgical management.¹⁸ By delineating subclinical lesions and determining fistula depth, ultrasound significantly improves surgical precision.^{7,17,18,24-27}

Certain patient factors increase the likelihood of inadequate surgical margins, including obesity, male gender,

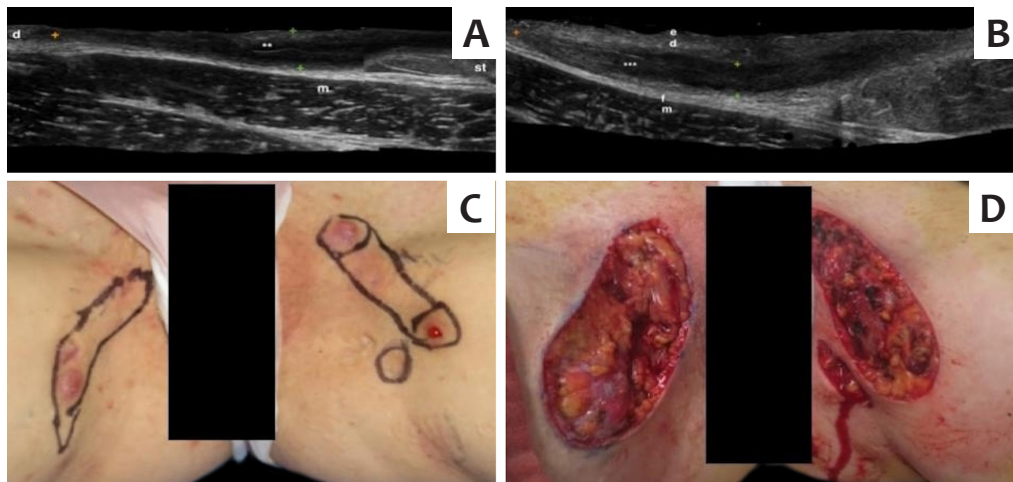


FIGURE 1: **A** - High-resolution ultrasound with 18-24 MHz linear golf club transducer of the inner third of the right thigh showing a tubular, elongated structure with well-defined borders corresponding to a Type II fistula with fibrosis in the wall. Asterisks (**) indicate a retained monofilament hair tract in the fistula. Green calipers (+) delineate the fistula thickness, which extends to the muscle fascia (m), and orange calipers indicate the fistula length. **B** - High-resolution ultrasound with 18-24 MHz linear golf club transducer of the inner third of the left thigh showing a tubular, elongated structure with well-defined borders corresponding to a Type III fistula with fibrosis in the wall and edema in the periphery. Asterisks (**) indicate a retained monofilament hair tract in the fistula. Green calipers (+) delineate the fistula thickness, which extends to the fascia (f) of the muscle (m), and orange calipers indicate the fistula length. **C** - Fistula and nodule marking. **D** - Surgical resection guided by prior ultrasound marking.

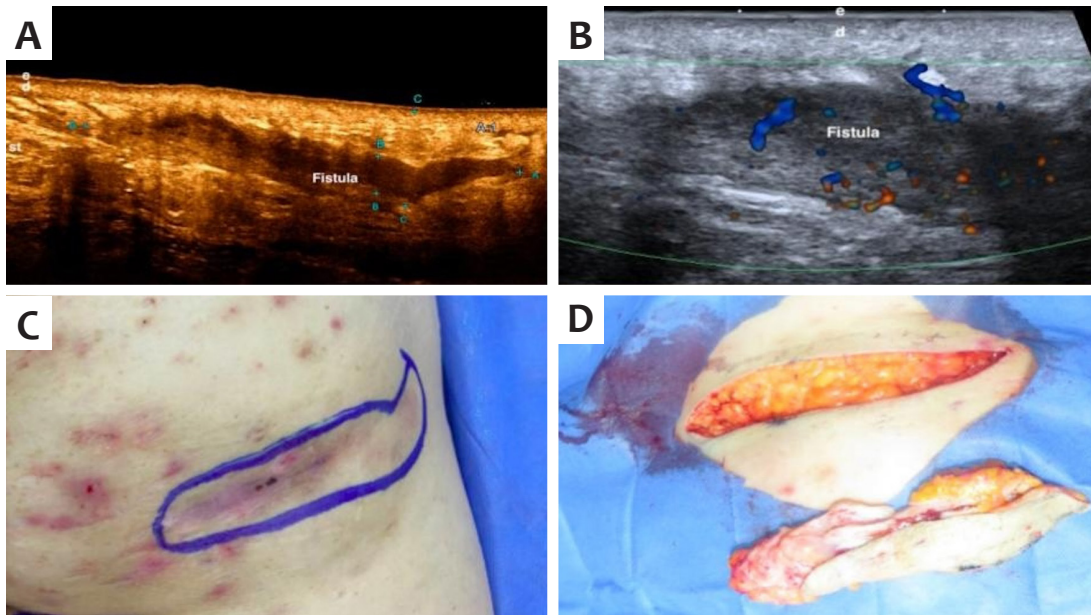


FIGURE 2: **A** - High-resolution ultrasound with an 18-24 MHz linear golf club transducer of the external aspect of the left buttock showing a tubular, elongated structure with well-defined borders corresponding to a Type III fistula with fibrosis in the wall and edema in the periphery, located in the deep dermis-hypodermis. Calipers B + delineate the fistula thickness, and Calipers A + indicate its actual length. Calipers C + measure the depth of the fistula from the epidermis (e) to the deepest plane of the subcutaneous tissue. Dermis (d). **B** - Magnified Color Doppler image of part of the fistula described in A showing an important vascularized component within the fistula, consistent with an active inflammatory process of the disease. **C** - Ultrasound-marked lesions in the right gluteal region. **D** - Surgical resection guided by prior ultrasound marking.

Hurley stage II disease, and elevated IHS4 scores.²³ These patients benefit most from preoperative ultrasound examination, as it improves lesion localization, reduces recurrence rates, and optimizes surgical outcomes.^{7,18,24–26} Studies have shown that ultrasound-guided surgical procedures improve margin delineation and decrease recurrence within 24 weeks postoperatively.²³

In the cases presented, wide local resections guided by ultrasound ensured complete lesion removal and successful postoperative healing. Ultrasound provided detailed preoperative insights, detecting subclinical lesions and guiding precise resection, ultimately minimizing recurrence and enhancing outcomes.

CONCLUSION

HS is a chronic disease with significant demands on the treating physician due to its complex management. Surgery is critical, being the only potentially curative intervention. High-frequency ultrasound plays an invaluable role in preoperative planning, enabling the detection of subclinical lesions, precise lesion mapping, and improved surgical outcomes. Incorporating ultrasound into the standard management of HS enhances treatment efficacy, reduces recurrence, and ensures better patient care. ●

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