

# Axillary Reconstruction for Hidradenitis Suppurativa with an Inner-Arm Transposition Flap

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## ABSTRACT

Hidradenitis suppurativa is a chronic and disfiguring skin disease characterized by multiple abscesses and sinuses. It can affect any area with apocrine sweat glands and has the potential to involve multiple sites concurrently. Commonly affected sites include the axilla, groin, perineum, and perianal areas. In this report, we describe an innovative technique for reconstructing axilla HS using an inner-arm transposition flap.

**Keywords:** Hidradenitis suppurativa, Apocrine glands, Sinuses, Transposition flap

## INTRODUCTION

Hidradenitis suppurativa is a skin disease that most commonly affects areas of the body bearing apocrine sweat glands or sebaceous glands, such as the axillae, breasts, inner thighs, groin, and buttocks. It is a chronic inflammatory disease characterized by abscesses and sinus formation [1]. It is frequently misdiagnosed as “boils”. This results in delayed diagnosis, fragmented care, and progression to a chronic, disabling condition with abscess formation that has a profoundly negative impact on the quality of life. Simple boils have a pointed appearance with shiny or purulent overlying skin. The lesions in hidradenitis appear more rounded and extend into the deeper layers of the dermis [2]. Hidradenitis suppurativa (from the Greek hidros, sweat, and Aden, glands) is also known as Verneuil’s disease or acne inversa [3].

The cause is unknown but may involve a defect of terminal follicular epithelium [4]. It has traditionally been attributed to the occlusion of the apocrine duct by a keratinous plug [3]. Contributing factors include friction from axillary adipose tissue, sweat, heat, stress, tight clothing, and hormonal and genetic components [3]. Hidradenitis suppurativa usually occurs after puberty and before age 40, hence the theory that there is a hormonal component to the pathogenesis. Furthermore, flare-ups have been associated with shorter menstrual cycles and longer duration of menstrual flow [3]. There is a genetic component, as a study of 110 patients reported 38% of the patients with a family history of this disease. This is thought to reflect a familial form with autosomal dominant inheritance [3]. Cigarette smoking is a recognized risk factor for both the development of hidradenitis suppurativa and

the progression to a severe disease [2]. Obesity is also a risk factor; the majority of patients are overweight, and both the body-mass index and tobacco smoking have been directly correlated with the severity of this condition [5,6].

## CASE STUDY

25-year old female presented with multiple axillary swellings bilaterally. The swellings had been on and off for a period of 7 years. There was no family history of any such presentation. She had similar discharging swellings in the groin and perianal region. Physical examination showed multiple axillary swellings with several sinuses discharging pus (Figures 1a and 1b). The purulent discharge grew *Staphylococcus aureus* sensitive to ciprofloxacin. The urea, electrolytes, and creatinine were normal. Total leucocyte count was  $14.3 \times 10^9/L$  with differentials of neutrophils 58%, lymphocytes 34%, monocytes 6% and eosinophils 2%. There was a left shift in the neutrophils. Platelets were adequate and the red blood cells showed stomatocytes+, anisocytosis+, and target cells+. HbsAg was reactive while Anti HCV and HIV screening were non-reactive. Incisional biopsies were taken from the masses and the histologic finding was stratified squamous epithelium overlying a loose, oedematous stroma within which were seen sinus tracts surrounded by areas of fibrin-suppurative inflammation. There was no evidence of malignancy. The patient had oral ciprofloxacin 500 mg twice daily for five days according to the sensitivity report and was subsequently managed with oral clindamycin 300 mg twice daily for 2 weeks prior to surgery. With this regimen, she showed good response. Inner-arm transposition flap surgical method.

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**Figure 1A:** Preoperative lesions on the right side and flap markers.

The procedure was carried out under general anaesthesia with the patient positioned supine and the arm abducted at 90 degrees. The first phase involves wide local excision (WLE) of areas with active disease including the affected underlying soft tissue. The extent of the WLE was determined clinically and entailed 2cm of healthy skin peripheral to the affected areas to ensure adequate excision. The flap required to fill this defect was then marked on the inner arm of the hand. The incision lines were then infiltrated with a combination of a dilute vasoconstrictor and local anaesthetic in the form of 0.5% Xylocaine with Adrenaline. After excision of the axillary disease (the dissection extends deep to all hard nodules/sinuses into the normal soft axillary subcutaneous fatty tissue), haemostasis was achieved. The flap was raised in the subfascial plane from distal to proximal. Though this dissection appears easy care has to be taken to ensure that the brachial neurovascular structures are not damaged. The flap had to be sufficiently mobilized to transpose into the defect.

## DISCUSSION

The pathophysiology of hidradenitis suppurativa is said to involve the obstruction of the apocrine glands, resulting in glandular dilatation, bacterial infection with abscess formation and consequent rupture, tissue injury, fistula formation, fibrosis, and retractable scars [7]. Over the years conservative as well as surgical treatments have been proffered as management options. However, conservative treatment in cases of relapse has proven to be mostly ineffective, increasing relapse rates. Similarly, frequent local drainage can generate unaesthetic and cicatricial retraction with movement limitations [8]. These have also often resulted in recurrence of the condition. Very often hidradenitis suppurativa has been misdiagnosed as boils leading to poor management with resultant recurrence cicatrization contractures as well as patient dissatisfaction and frustration.

## CONCLUSION

The main goal in the treatment of Verneuil's disease is complete resolution without local relapse. To ensure the achievement of this aim, the most important factor to be considered is the extensive resection of the lesion with the excision of the entire area of follicular proliferation; this is because insufficient debridement is the principal cause of high relapse rates [8].

The defect left after excision of axillary HS could be closed primarily or left to heal secondarily. However secondary healing is less desirable as it may cause contractures and subsequent limitation

in the arm's range of movement leading to stiffening of the shoulders [9]. Commonly cited primary closure methods for axillary HS include the use of direct closure, split thickness skin graft (STSG), fasciocutaneous flap, musculocutaneous flap, parascapular flap, thoracodorsal artery perforator flap (TDAP) and posterior-arm flap [10-14]. A further innovative method for reconstruction has been introduced over the last few years with the addition of the inner-arm flap [15].

The inner-arm flap is a transposition flap which functions as a solution for HS. Its design serves to remove additional tissue from the inner arm that gives the 'Brachioplasty like' improvement to the contour of the arm.

Alharbi et al and Ching et al. recorded their experiences with the inner-arm transposition flap and have documented complication rates of 25% and 20% respectively [15,16]. Complications recorded included delayed healing, widening of scars, and dog ears.

These complications notwithstanding, the inner arm transposition flap comes with the added benefit of effective concealment of all scars under the arms with minimal donor and recipient site scarring in combination with the additional benefit of tightening of the arm tissue in the form of a 'Brachioplasty-like effect'.

The inner-arm transposition flap has been shown to offer good and reliable cover to the axillary defect. Interestingly it is argued to be suitable for most axillary HS cases, regardless of arm circumference [16]. It is a relatively easy and simple method that produces additional benefits.

## PATIENT CONSENT

The patient provided written consent for the use of her image.

## CONFLICTS OF INTEREST

None to be declared

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