Hidradenitis suppurativa (HS) was first described in 1839 by Velpeau, when he reported on a patient with chronic inflammation involving the axilla, breast and peri-anal areas. Aristide Verneuil, however, was the first to suggest that this disease originated in sweat glands, and for many years HS was known as Verneuil's disease.

In the chronic form, HS is characterised by induration, deep sinus tract formation and recurrent abscess formation. In established HS, surgery is the best method of treatment. However, a number of different modalities of surgical treatment have been advocated, with variable results. In fact, two recent reviews do not give directions as to a preferable form of surgical treatment and few studies have compared different forms of treatment.

This study reports on the experience in the surgical management of 94 axillae. The study compares three different methods of surgical excision and evaluates the different methods of wound closure.

Methods

A retrospective analysis was performed on all patients who presented for surgical treatment of chronic axillary hidradenitis. The study was undertaken in two centres: Groote Schuur Hospital, Cape Town and Mount Vernon Hospital, Middlesex.

Forty patients (64 axillae) were treated at Groote Schuur Hospital over a 14-year period (1982–1995). Nineteen patients (30 axillae) were treated at Mount Vernon Hospital (1992–1998). Particularly, we surveyed the outcome regarding extent of excision and method of closure. Surgery was performed on inpatients under general anaesthesia.

Acute infections are treated by incision and drainage and definitive treatment was delayed until a quiescent state is reached. Patients at Groote Schuur Hospital require at least three incisions and drainage in a 1-year period to qualify for definitive surgery. At Mount Vernon Hospital patients are treated surgically if two axillary abscesses occur in a 6-month period.

There was no policy regarding prophylactic antibiotics. No antibiotics are given at the time of excision at Mount Vernon Hospital. Antibiotics are occasionally given at Groote Schuur Hospital at the start of excision.

The patients were divided into groups according to type of excision, and type of closure. The three types of excision performed were:

1. Limited local excision. Only the obviously diseased tissue is excised. Usually this is within the area of the hair bearing skin.
2. Hair bearing skin excision – the area of axillary tissue containing terminal hair is excised. The excision was down to axillary fascia.
3. Wide local excision – all axillary hair bearing tissue and an additional 2 cm margin of surrounding skin was removed. The excision was also down to axillary fascia.

The three types of closure were arbitrarily divided into: (i) primary closure; (ii) immediate split thickness skin graft; and (iii) flap coverage.

Results

There were 42 females and 17 males with an average age of 32 years (range 16–65 years). Mean duration of disease prior to operation was 3.5 years (range 0.6–10 years).
Thirty-five patients had bilateral disease making the number of axillae operated on 94 (Table 1).

**Method of excision**

Twenty-six axillae had limited local excision. Recurrent disease occurred in seven patients. Thirty-nine axillae were treated by excision of all hair bearing skin of which three patients developed recurrent disease. There was a significant reduction in recurrent disease when excision of all the hair bearing skin was performed ($P = 0.04$, Fischer’s exact test). Twenty-nine axillae had wide local excision. No patient developed recurrent disease. There was no significant difference in disease recurrence between excision of all the hair bearing skin and wide local excision ($P = 0.18$, Fischer’s exact test).

**Method of closure**

Fifteen of the 26 axillae undergoing a limited excision could be closed primarily, as could 20 of the 39 axillae that had all hair bearing skin excised (Table 1). Of the wounds closed primarily (35), there were complications in 7 (these were minor wound breakdowns that healed with conservative care). All these complications occurred in patients that had had excision of all the hair bearing tissue. It was not possible to close any of the wide local excisions primarily.

There were 16 axillae closed with split thickness skin graft (Table 1). Complications included incomplete graft take in 6 (1 requiring regrafting), and 5 axillary wound contractures. Three patients needed subsequent axillary contracture release. This was performed a year after the grafts were applied.

Forty-three axillae were closed using a flap, 22 of which were performed in patients who had undergone wide local excision, 16 of the 39 axillae that had excision of all the hair bearing skin also had flap coverage, as did 5 axillae where limited local excision was performed (Table 1).

The choice of flap coverage included 28 cutaneous (Limberg design) random flaps, 8 fasciocutaneous transposition flaps (Limberg design) and 7 parascapular fasciocutaneous flaps (axial pattern based on the descending scapular artery). The flap was lost in two patients (both cutaneous). One patient developed an axillary contracture secondary to the flap loss, which subsequently required surgical release. The other patient had a split skin graft used after 60% of the flap underwent necrosis. Two patients complained of unsatisfactory scars (one needing revision), and minor wound breakdown occurred in nine patients that healed with conservative care (regular dressings).

The cosmetic result after local cutaneous and fasciocutaneous flaps was usually satisfactory. The lack of hair bearing skin did not trouble the patients, who were glad to be rid of the disease. One patient required revision of a stretched scar.

The cosmetic result after a parascapular flap was less satisfactory. The flap tended to be bulky and the scar on the back (closure of the secondary defect after flap transposition) was usually stretched and hypopigmented. A female patient requested scar revision of the donor site scar.

The follow-up ranged from 4 to 122 months (mean 16 months).

**Discussion**

HS appears to be a poral occlusive disease of the apocrine glands with the added element of bacterial infection. $^{3,13}$ Bacteria gain access to the apocrine system of the follicle, and then multiply in the nutrient milieu of the apocrine sweat. Superadded bacterial infection leads to local extension of the disease and tissue destruction. The results of this process are chronic sepsis with fibrosis, sinus tract formation and scarring of the overlying skin. $^3$ Understanding the pathology of the disease is essential in the formulation of a rational approach to treatment.

The aim of any surgical treatment is to excise all diseased tissue. Inadequate excision of diseased tissue will result in recurrent disease. The extent of the disease is not apparent from the cutaneous manifestations of the disease because of the subcutaneous fibrosis and sinus tract formation. Where limited excision was performed, it resulted in recurrent disease in a quarter of the axillae (7 of 26 axillae). A number of studies have shown that inadequate excision is the major cause of recurrence.$^{4,11,14}$

Excision of all the hair bearing skin is a more extensive resection. Most of the apocrine glands are excised with this type of procedure. In this study, this method of excision was associated with a low incidence of recurrent disease (3 of 39 axillae) and was more effective in reducing the incidence of recurrent disease than limited excision ($P = 0.04$, Fischer’s exact test). This type of excision may be adequate for many patients.

A study that investigated the distribution of the apocrine glands of the axillae has shown that these glands are not only confined to the hair bearing skin but extend for a further 2 cm. $^{15}$ In an attempt to reduce the incidence of recurrent disease further, wide local excision (2 cm beyond the hair bearing skin) was performed. This was suggested to be the best form of treatment in an initial study of nine patients$^{11}$ and in this series where this was effected, there was no disease recurrence. However, this method of treatment did not reach statistical significance when compared to excision of all the hair bearing skin ($P = 0.18$, Fischer’s exact test).
Another factor probably contributing to the failure to excise adequately all the diseased tissue is the problem of achieving wound closure. Clearly, primary closure can only be achieved when a limited excision is performed, which usually negates the aim of surgical treatment. A simple method of achieving wound closure is to use a split skin graft, but graft take was poor in this series, necessitating repeated dressing. Split skin grafts are cosmetically disfiguring, and axillary joint contractures are not uncommon. Three of the 16 patients in this series treated by split skin grafts developed axillary contractures requiring surgical release.

Another method of achieving skin cover is by flap reconstruction. Reliable flaps are available for axillary reconstruction and usually lead to better cosmetic results than other forms of treatment. There is no need for repeated dressings, strict patient compliance or splintage as with other methods. Flaps were employed in almost half of the cases in this series. Significant flap loss occurred in only two patients, resulting in contraction formation in one requiring surgical release. The other flap-related complications were relatively minor and resolved with conservative treatment performed on an outpatient basis. These complications were aggravated by the fact that flaps were transposed into an ‘infected bed’. However, the flaps allowed for adequate excision of diseased tissue with its attendant benefits on the incidence of recurrent disease.

The choice of flap can be tailored to the defect. The size of the hair bearing skin varies in different people. Where the resulting defect is small, a simple cutaneous or fasciocutaneous flap can be transposed into the defect. Fasciocutaneous flaps have a more robust blood supply and were associated with fewer complications than simple cutaneous flaps in this study. When the defect is particularly large, a pedicled parascapular flap was used. This was only required in 15% of cases. This is more cosmetically disfiguring and the scars on the back were often stretched and hypopigmented.

The ideal treatment of HS should provide a high likelihood of cure with a low recurrence rate. Excision of all the hair bearing skin was associated with a low recurrence rate and was more effective at reducing the incidence of recurrent disease than limited local excision. Once adequate excision has been effected, flap coverage is usually needed to achieve wound closure. Simple fasciocutaneous flaps are used for smaller defects while large defects required a pedicled parascapular flap. Complications which occurred after flap coverage were usually minor and responded to conservative measures. This study suggests that adequate excision and flap coverage is the method of choice for the treatment of chronic axillary hidradenitis suppurativa. It was associated with the lowest recurrence rate and least morbidity.

References


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