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ASPECTS OF TREATMENT*

A comparison of skin grafting and healing by granulation, following axillary excision for hidradenitis suppurativa

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Summary

The treatment of established hidradenitis suppurativa demands complete excision of the apocrine glands in the affected area. Ten patients undergoing bilateral excision of the axillary skin, had one axilla grafted and the other allowed to heal by granulation utilising Silastic foam dressing, in order to compare the two methods. Split skin grafting resulted in more rapid healing of the excised area than healing by secondary intention. However, Silastic foam dressing resulted in certain healing with a good cosmetic result and avoided the need for immobilisation and a painful donor site. Most patients in this series preferred Silastic foam dressing to skin grafting.

Introduction

Hidradenitis suppurativa is a chronic suppurative, cicatrising disease of the skin and subcutaneous tissue. It commences after puberty, most commonly in the second or third decades of life. The condition occurs in both sexes, but most series show a female predominance. It is generally considered to be a disorder of the apocrine sweat glands and can arise wherever these glands are situated.

The primary event in hidradenitis is keratinous plugging of the apocrine duct leading to duct dilatation and sweat retention. Bacterial superinfection, then occurs, stimulating an inflammatory response, which eventually extends throughout the dermis (*1*). Gram positive cocci, in particular staphylococcus aureus, have long been considered to be the main secondary invaders in hidradenitis. However, there have been reports of infection with bacteroides in axillary hidradenitis (*2*) and perineal hidradenitis (*3*).

The medical treatment of chronic hidradenitis is ineffective, and ablation of the condition demands complete excision of the apocrine gland containing skin in the diseased area. This results in large cutaneous defects. Various methods have been used to obtain healing of the defects without wound contracture. Primary skin closure has been described (*4, 5*), as has split skin grafting, (*6, 7*). Satisfactory results have also been obtained using axillary flaps (*8*), while O'Brien, Wysocki, and Anastasi (*9*) used an anteriorly based Limberg flap in the female and a posteriorly based flap in the male. In our own experience, the use of primary closure or local rotation flaps has resulted in an unacceptable incidence of recurrence on long term follow up. This is presumably because they have been associated with insufficiently wide excisions. It is interesting that most authors recommending such approaches have not reported their long term results.

We here report a prospective study comparing healing by open granulation using Silastic foam dressing (Dow Corning) with split skin grafting, following bilateral radical axillary excision for hidradenitis.

Patients, methods and results

Ten patients, and therefore 20 axillae were studied. Prior to surgery, each axilla was assigned alternately for successive patients to grafting or Silastic foam dressing. Thus each patient received a graft to one axilla and Silastic dressing to the other, and acted as their own control. Following complete excision of the axillary apocrine glands, as demonstrated by the iodine/starch/oxytocin method (*10*); proflavine and paraffin packs were applied to both axillae, and a split skin graft obtained. At 48 hours, the packs were removed, Silastic dressing applied to one axilla and the graft to the other. Free movement of the Silastic dressed arm was allowed, and the grafted arm was immobilised in an aeroplane splint for four to five days. The skin grafts were managed as for delayed open grafting (*11*). The Silastic dressings were removed twice daily and cleansed in aqueous hibitane (*12*). Attention was paid to the prevention of wound bridging and the formation of excessive or unhealthy granulation tissue. After discharge from hospital, the patients were seen weekly, when the extent of healing, measurements of the range of arm movements, arm swelling and patient preferences were recorded. All patients have been followed up for a minimum of two years without recurrence of hidradenitis or significant arm swelling.

The mean maximum diameters of the excised axillary skin when measured at 90° to each other were similar for both groups; 11 by 8 cm for skin grafted axillae, and 10 by 8 cm for axillae receiving Silastic dressing.

The Editor would welcome any comments on this paper by readers

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The median time to complete healing was seven weeks (mean, 9; range 5–24) for all the grafted axillae and twelve weeks (mean, 14; range 5–36) for all the Silastic dressed axillae. For the purpose of this study, a successful graft was defined as a greater than 50% take of the applied skin. Six of the ten patients had a successful take (mean take 75%) using this definition, with a median and mean healing time of six weeks. Silastic dressings were applied to these axillae, while the areas of graft loss epithelialised. The four failed grafts (mean take 30%) completed healing by secondary intention, utilising Silastic dressing in three and Melolin dressing in one, with a median healing time of eleven weeks, (mean 13 weeks).

Seven of the ten axillae receiving Silastic dressing had uneventful healing (median and mean healing times 8 and 9 respectively). Of the remaining three, one found the dressing uncomfortable (this patient also had the skin graft failure which was dressed with Melolin), and Melolin dressings were applied. Granulation tissue formation in the other two was poor and epithelialisation slow. Median and mean times to healing in this group were 24 and 27 weeks respectively.

Seven of the ten patients, when asked to compare their grafted axilla with the opposite Silastic dressed axilla, expressed a preference for the Silastic dressing. The reasons given included its comfort, ease of use, limb freedom and lack of painful donor site. Two preferred the more rapid healing they obtained with grafting, and one patient disliked both methods intensely.

Discussion

Hidradenitis suppurativa is a debilitating condition of such chronicity, that patients are willing to accept a treatment as unpleasant as bilateral excision of axillary skin. We have abandoned immediate repair by either primary closure or rotation flap because of the high incidence of recurrent disease, our own experience being confirmed by the referral of recurrent cases after such procedures performed elsewhere.

Because of the high recurrence rate, we studied patients by the atropine/oxytocin/iodine method and found that excisions of the order of 11 by 8 cm are required to eradicate the main concentration of apocrine glands. This measurement in the contracted excised specimen represents a much larger skin defect, which cannot be repaired primarily. The alternative approaches of skin grafting and healing by granulation remain.

Immediate grafting is unsuitable because of the vascularity and heavy bacterial contamination of the axillary subcutaneous fat. Hence, delayed open grafting is necessary, but even so 100% take of the graft cannot be expected. Partial take shortens the healing time; in this series reducing the median healing time by five weeks. This has to be set against the period of arm immobilisation and the discomfort of the donor site. Bilateral simultaneous grafting is unacceptable to most patients, because of the immobilisation involved. Failed grafts will heal satisfactorily by granulation, and here Silastic foam provides the most comfortable and satisfactory dressing.

Healing by granulation is equally applicable to single or bilateral excisions and results in a longer but more comfortable period of convalescence. Use of the Silastic dressing allows the patient to manage the wound herself and continue her normal occupation for most of the healing periods. The ultimate cosmetic result is also better than with grafting. The drawback of the technique in this series was the prolonged period to healing in two patients. Recent work in this department suggests that these cases of unduly prolonged healing are associated with persistent bacterial colonisation and that antimicrobial therapy may accelerate healing.

It is clear that both methods are associated with advantages and drawbacks and particular circumstances may indicate one or other technique, especially in unilateral cases. However, a clear majority of patients prefer healing by open granulation, both on the grounds of relative comfort during healing and the ultimate result. As a result of patients preferences, our standard approach is now to allow both axillae to heal by open granulation.

References

1 Shelley WB, Cahn MM. The Pathogenesis of Hidradenitis Suppurativa in Man. Arch Dermatol 1955;72:562–5.

2 Leach RD, Eykyn Susannah J, Phillips I, Corrin B, Taylor Eliz A. Anaerobic Axillary Abscess. Br Med J 1979;2(6181):5–7.

3 Brenner D E, Lookingbill DP. Anaerobic Micro-organisms in Chronic Suppurative Hidradenitis. Lancet 1980;25;2(8200): 921–922.

4 Tasche C, Angelats J, Jayaram B. Surgical Treatment of Hidradenitis Suppurativa of the Axilla. Plast Reconstr Surg 1975;55(5):559–62.

5 Bell BA, Ellis H. Hidradenitis Suppurativa. J R Soc Med 1978; 71:511–15.

6 Knaysi GA, Cosman B, Crikelair GF. Hidradenitis Suppurativa. JAMA 1968;203(1):73–6.

7 Anderson DK, Perry AW. Axillary Hidradenitis. Arch Surg 1975;110(1):69–72.

8 Harrison SH. Axillary Hidradenitis. Br J Plast Surg 1964;17:95–8.

9 O'Brien J, Wysocki J, Anastasi G. Limberg Flap Coverage for Axillary Defects resulting from Excision of Hidradenitis Suppurativa. Plast Reconstr Surg 1976;58(3):354–58.

10 Morgan WP, Hughes LE. The Distribution, Size and Density of the Apocrine Glands in Hidradenitis Suppurativa. Br J Surg 1979;66:853–56.

11 Rees BI, Hughes LE. Delayed Exposed Skin Grafting in Surgery for Breast Cancer and Melanoma. Clin Oncol 1975;1:131–9.

12 Wood RAB, Williams RHP, Hughes LE. Foam Elastomer Dressing in the Management of Open Granulating Wounds: experience with 250 patients. Br J Surg 1977;64:554–57.