BRIEF COMMUNICATIONS

USE OF A VERSATILE TRANSPOSITIONAL FLAP IN THE SURGICAL TREATMENT OF AXILLARY HIDRADENITIS SUPPURATIVA

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Abstract: Axillary hidradenitis suppurativa is a chronic recurrent disorder characterized by abscessing inflammation, fistulating sinus tracts, and scarring. This is not only a medical disease, but also a complicated problem necessitating surgical intervention. While various management strategies have been reported, the results are frequently unsatisfactory. Primary closure of the defect after radical excision is often impossible and results in poor wound healing. Skin graft on the soft tissue defect often results in obvious scar contracture and limitation of movement. Local muscle flap can fill in the defect but the range of adduction of the arm will be limited by its muscle bulk. Free flap transfer is a choice of management but this technique calls for a trained team, laborious execution, expensive instruments and plenty of time. We describe the use of transpositional fasciocutaneous flap, which can provide a reliable flap of variable size of skin and soft tissue coverage with good elastic properties. The technique is easily adapted to the reconstruction of resultant defects. This technique was used to transfer 8 transpositional fasciocutaneous flaps in 7 patients for the closure of axillary defects resulting from radical excision of chronic hidradenitis suppurativa. No flap complication or disease recurrence was observed during 2 years of follow-up. The technique had satisfactory esthetic and functional results as well as low donor site morbidity.

Key words: Axilla; Hidradenitis suppurativa; Reconstructive surgical procedures; Surgical flaps

J Formos Med Assoc 2004; 103: 644-7

Hidradenitis suppurativa (HS), a chronic, suppurative and cicatrical disease of apocrine gland-bearing skin areas, was first described as a clinical entity in 1839 by Velpeau.1 The disease presents most frequently as a deep recurrent abscess in the axilla. Affected patients often progress to a chronic state with persistent pain, sinus tract or fistula formation, purulent discharge, dermal scarring or even sepsis. The clinical course shows a wide spectrum in these patients, and medical treatment is usually unsatisfactory. An effective, complex surgical intervention is thus required in patients with severe and recurrent disease.

The best management of the chronic phase of HS is primarily excision of the infected axillary skin. A number of different modalities have been advocated, with variable results.2-10 Although treatment of HS can provide a high likelihood of cure and a low recurrence rate, functional coverage of the axillary skin defect is still challenging due to postoperative scar contracture resulting from inadequate wound closure technique. In order to reconstruct the excisional axillary area and obtain a good range of shoulder movement, we have used transpositional fasciocutaneous flaps successfully.

Methods

From 2000 to 2002, 5 transpositional fasciocutaneous flaps were performed for axillary skin defect resulting from HS. Seven patients, 5 males and 2 females, were treated after radical excision of the affected skin and followed up retrospectively over a period of 2 years. The age of the patients ranged between 18 and 46 years, with an average of 25 years. Of these, 6 patients had a unilateral procedure, and 1 male patient had a
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bilateral procedure. In the series presented, prompt closure of the resulting wound with this flap was done for all cases. Patients with active infection were placed on appropriate antibiotic therapy prior to surgery.

Surgical technique
Surgery was performed on inpatients under general anesthesia. The patient is placed in the decubitus position with the arm abducted. A wide excision is carried down to the axillary fascia to remove all the involved hair-bearing skin and its subcutaneous tissue. A proper fasciocutaneous flap of corresponding size is designed with its base situated superiorly and then tailored to lie in the axillary defect. A flap base/length ratio of 1:2 to 1:3 can be easily and safely achieved because the vascular network at the level of the fascial plexus is rich. The length of the flap depends mainly on the requirement for extension to the anterior aspect of the axilla. The flap elevation is started distally in a deep fascia plane, and includes the underlying latissimus fascia (Fig. 1). Transposition by rotation from 90° to 120° along the flap longitudinal axis is inset into the axillary wound (Fig. 2). Care must be taken to avoid any tension on the flap. The donor site defect is closed primarily with local tissue undermining or tied-over suture technique. A compression dressing and an abduction splint is applied for 3 days to prevent hematoma.

Results
The dimensions of the flaps varied from 7.5 x 7.0 cm to 13 x 10.5 cm. All flaps healed uneventfully with no postoperative infection and wound dehiscences. Only 1 patient developed a complication, presenting with distal flap congestion. Small flap design with tension of the flap may account for this complication. The damage was rapidly reversible after debridement and skin graft management in 1 month. All patients had primary closure on their donor sites. The average postoperative hospital stay was 5 days.

The plaster was discarded on the fourth postoperative day to encourage the movement of the shoulder joint. Since the elastic, well-vascularized skin provided an excellent gliding function on the axillary region, all patients exhibited a full range of motion in the shoulder in the follow-up period, which ranged from 6 to 15 months. The esthetic outcome of the transplanted flap was good without hypertrophic scar contracture. No recurrence was observed during follow-up.

Discussion
HS is a chronic, recurrent suppurative inflammation of the apocrine sweat glands. The presumed etiology is a follicular occlusion disease caused by keratinous plugging with superimposed bacterial infection of the adjacent eccrine glands. The disease is 3 times more common in females and is generally found in adults between 20 to 40 years old. 

The medical treatment of HS is frequently unsatisfactory because this chronic infection usually continues for years with periodic exacerbation and remission. Although the early, acute lesion often responds to antibiotics, this treatment is unlikely to alter the clinical course of the disease. Incision and drainage with wet dressing only give temporary effects
and frequently lead to sepsis and recurrence. In chronic forms, radical excision yields the best results in terms of disease eradication.

The purpose of any surgical treatment in HS is to excise all diseased tissue. Recurrence results mainly from inadequate excision due to subcutaneous sinus tract formation or unusual distribution of apocrine glands. Any attempts to obtain primary skin cover may lead to inadvertent compromise of the excision margin. The method of hair-bearing skin excision under careful visualization of the apocrine glands can provide adequate results.

Once the defect is bacteriologically clean without apocrine gland containing tissue, various techniques may be used to facilitate the wound coverage. Primary wound closure is not recommended in such skin defects because of limitation in shoulder movement by resultant scar contracture. Free split skin grafts are cosmetically disfiguring, and resultant scar contracture is also common. Random skin flaps have limited reliability in reconstructing large skin defects. Indeed, the ideal method for resurfacing the raw defect on the flexor aspect of a joint is a flap. To overcome the problem of scar contracture and recurrence in this series, several choices of flap have been proposed, including rotational flaps, regional pedicle flaps, and even free flaps. The skin island flap is suitable for a large defect but needs the identification of perforators. Latissimus dorsi or pectoralis major myocutaneous flap has been used for post-burn scar contracture, but the excessive bulk of muscle limits adduction of the arm. Free flaps can also be resurfaced but the operation is technically more difficult and requires complicated postoperative care.

The recommended reconstruction method is random or transpositional fasciocutaneous flaps. This thin, elastic, well-vascularized skin provides an excellent gliding surface on the subaxillary region. In addition, it offers an excellent color and texture matched by simple advancement or rotation, depending on the requirement of area and contour. Because the vasculation of the flap comes from deep fascial plexus, which is supplied by perforating arterial, subcutaneous arterial, or subfascial arterial systems, the skin is very vascular so that the flap can be raised with no fear of necrosis. It is best to inspect the area under the surface of the flap at operation to make sure that the deep fascia has been included. The donor area remains hidden under garments.

The skin territory of the transpositional flap is a topic that will have to be investigated further. How large a flap can survive remains to be clarified. Emphasis should be placed on the safety ratio of 1:2 in such a random flap. The largest flap measured 13 x 10.5 cm in our series. No completed flap failure developed in this series, except for 1 case of distal margin congestion due to inadequate flap size. The single complication encountered with the flap appeared to be attributable to technical error that can be avoided with increased experience.

This application of a basic surgical principle has worked successfully in covering axillary defects resulting from wide excision of chronic HS in our patients. The advantages of the flap are quick and simple design, rapid dissection of the flap, the versatile range of transposition, prompt closure of the wound with little tension, direct closure of the donor site in a hidden area, essentially normal mobility in the short postoperative period, minimal scar contracture, and acceptable cosmetic results. The application of the transpositional fasciocutaneous flap is an easy, reliable, conventional technique, which can provide satisfactory functional and esthetic outcomes in the reconstruction of small and medium-sized axillary defects.

References