Surgical Treatment of Chronic Gluteal Hidradenitis Suppurativa: Reused Skin Graft Technique

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BACKGROUND. The treatment of chronic lesions in hidradenitis suppurativa (HS) remains a challenge for dermatologists. In most cases, wide surgical excision of the affected skin reduces the recurrence rate to a minimum. Split-thickness skin grafts have usually been applied to resurface large postoperative defects.

OBJECTIVE. The aim of this study is to introduce an alternative method of skin grafting, called “reused” or “recycled” skin graft, for the reconstruction of the large skin defect with chronic gluteal HS.

METHODS. The study consisted of six patients (two females and four males) with gluteal HS. After a wide en bloc excision, the wound was immediately recovered with meshed-skin graft, made from the resected skin itself. Thus, the sacrifice of the skin donor is spared. The drum dermatome (Padgett-Hood) is suitable to take the split-skin graft from the resected skin of the affected buttock. The thickness of grafts was set between 12/1,000 and 20/1,000 inches, and all grafts were meshed with 1.5 times the expansion. The skin grafts were secured in place on the wound and a tie-over dressing was applied.

RESULTS. Postoperative complications were usually minor ones, such as hematoma, discharge, and small areas of graft skin necrosis (less than 1 cm²), although one patient developed a 3 × 4 cm² graft necrosis and wound infection. The follow-up period after surgery ranged from 8 to 36 months. No patient experienced any functional disabilities or recurrence during follow-up years.

CONCLUSION. When the epidermal involvement remains mild to moderate, this reused skin graft technique is an alternative choice to resurface the surgical defect of gluteal HS. It is superior to the conventional procedure, which requires fresh skin donor site.

H.-W. KUO, MD, AND K. OHARA, MD HAVE INDICATED NO SIGNIFICANT INTEREST WITH COMMERCIAL SUPPORTERS.
All patients demonstrated longer than a 1-year history of repeated episodes of acute inflammatory process with pain, local heat, and foul-smelling secretion on their gluteal regions (Figure 1). There was fusion of the cystic lesions, indurated cords or plaques, and some fistula openings that were connected each other under the skin on physical examination. Medical therapy had been attempted without benefit. These lesions were histologically similar, showing fistulous tracts, cysts, and folliculitis or abscesses embedded in granulating or fibrosing tissue (Figure 2A). Pathologic diagnosis was HS. Patients with severe scar tissue, resulting in a less intact epidermis, were excluded.

Presurgery
All patients received a 1-month course of oral antibiotics and analgesics to control the active inflammatory stage before surgery. In four patients, incision and drainage were needed for highly inflamed cysts and abscesses. Oral corticosteroid (20 to 30 mg of prednisolone per day) was administered in three patients to reduce acute inflammation.

Surgical Procedure
Making the radical wide excision. Under spinal or general anesthesia, the surgical margin was drawn well beyond the clinical border of activity. If the patient had more than one area involved, surgical markings were made separately (Figure 3A). Asepsis was performed with povidone–iodine. Local anesthesia (1% lidocaine) with epinephrine at a concentration of 1:200,000 was infiltrated into the incision lines and beneath the lesion to lessen bleeding during the operation. En bloc excision of the involved area included the sinus tracts, fibrosis, all cystic lesions, and the overlying skin. The
depth of the surgical margin was down to the uninvolved deep subcutaneous fat or the healthy fascia that had no fistulae, necrotic tissue, nor the inflammatory reaction (Figure 3B). After adhesion of the skin onto the drum was secured, the drum was held upside down. The graft thickness was set between 12/1,000 and 20/1,000 inches. When the surgeon was moving the blade forward smoothly, an assistant gently pulled the stitches downward to provide tension to cut skin graft easily and evenly (Figure 4C).

**Harvesting the split-thickness skin graft from the resected tissue.** Drum dermatome (Padgett-Hood) is best suitable to make the graft skin in this procedure. One or two stitches were sutured on the one end of the removed tissue. The graft thickness was set between 12/1,000 and 20/1,000 inches. The epidermal side of the resected tissue was attached tightly to the drum surface of the dermatome with double-sided adhesive tape (Figure 4A,B). After adhesion of the skin onto the drum was secured, the drum was advanced through a mesh dermatome. The meshed-skin graft was secured in place with sutures and staples at variable spots along the graft. Small lesions without connection to main large lesion were closed primarily. Tie-over bolster dressing was used to secure the graft.

**Meshing the skin graft and reconstructing the defect.** After the split-skin graft was removed, it was placed on a plastic carrier with 1.5 times expansion, and the carrier was advanced through a mesh dermatome. The meshed-skin graft was secured in place with sutures and staples at variable spots along the graft. Small lesions without connection to main large lesion were closed primarily. Tie-over bolster dressing was used to secure the graft.

**Postsurgery**

The tie-over bolster dressing was removed on the 5th postoperative day. Systemic antibiotics and analgesics were prescribed for 1 week. Postoperative complications, if any, were recorded. The incidence and degree of wound contracture, hypertrophic scar, and HS recurrences were also recorded within the follow-up period.

**Results**

Patient characteristics and results are summarized in Table 1. Most of the postoperative complications were minor ones, including hematoma, discharge, and small areas of graft skin necrosis (less than 1 cm²), although one patient developed a 3 x 4 cm² graft necrosis and wound infection. Necrotic areas had epithelialized with conservative treatment satisfactorily. The median follow-up period after surgery was 21 months (range of 8–36 months). No patient experienced severe skin contracture that might limit the motion of the lower limbs, and no recurrent skin lesions within the graft areas were noted during the follow-up period (Figure 5).

**Discussion**

HS is a chronic inflammatory skin disorder that annoys the patients from physical and psychological burden, especially with increasing severity of the disease and recalcitrant course.3,5 Research is still
Figure 4. Surgical procedure. (A) One stitch was sutured on the end of the resected tissue. (B) The epidermal side was attached to the drum surface of the dermatome with double-sided tape. (C) When the surgeon moved the blade smoothly, an assistant gently pulled the stitch downward. The skin was cut and ready to reuse as a meshed graft.
needed to clarify the pathogenesis of this disorder. Squamous cell carcinoma is a rare but dreaded complication from long-standing disease.\textsuperscript{6,7}

The treatment strategy should be selected properly for each individual patient in most suitable way, according to the following condition: that is, the duration of the disease, early or long-standing; the phase of the inflammation, acute or chronic; width of the involved skin, narrow or wide; and how grave and annoying the disease is. Treatment of the acute lesions requires intensive cleansing, use of systemic antibiotics, and anti-inflammatory agents. If necessary, surgical drainage with or without curettage can be performed to accelerate the remission of acute inflammation. Many other therapies have been used, including systemic or intralesional corticosteroids, hormones, isotretinoin, and cyclosporine.\textsuperscript{4,13,14} However, nonsurgical approaches can only provide transient improvement and relief of symptoms to lead inevitable relapse. Surgical modalities include incision and drainage, unroofing of the sinus tracts, and simple excision of the troublesome lesion; these techniques might offer early relief of pain and avoid the morbidity of wide ablative excisions but result in recurrence with high incidence.\textsuperscript{8,15} In some cases with early lesions, CO\textsubscript{2} laser treatment combined with secondary intention healing may provide another method of treatment.\textsuperscript{16} However, it is clear that most authors agree that radical wide excision of the affected skin is the curative way and reduces the recurrence rate to a minimum.\textsuperscript{9–12}

The large skin defect after radical wide excision might be allowed to heal secondarily over time.\textsuperscript{12} However, whenever possible, primary closure of the wound is advisable in an attempt to minimize postoperative morbidity. Closure techniques include split-skin or meshed-skin grafts or pedicle flaps. Although some authors do not agree with the relation of recurrent rate to the thickness of reconstructed skin,\textsuperscript{10} others have favored thinner skin without pilosebaceous apparatus where this disease originates.\textsuperscript{9,17}

The concept of replantation of the intact part of the affected skin, the “reused” or “recycled” skin graft technique, is adopted from the similar way of “autografting of avulsed skin in degloving injury.”\textsuperscript{18,19} Degloving injuries of the limbs are best treated by excision of the nonviable tissue and closure of the wounds with skin grafts taking from “filleted glove.”\textsuperscript{18} The degloved skin itself can be used as a donor for this...
graft. In a similar way, the intact part of the skin, overlying HS, serves as a useful skin donor without sacrificing other healthy skin. One more benefit of this procedure is that the harvested skin does not contain pilosebaceous apparatus and thus has no chance of recurrence of the disease.

Histologic examination revealed that there was enough thickness of viable skin, good to transplant, upon the fibrotic cystic or fistulous lesions (Figure 2B). We paid attention and made good use of this viable layer for wound coverage, as is done in degloving injuries. Our data showed that the reused skin grafts were well accepted, and no hypertrophic scars or graft contracture were noted during the follow-up period. The problem of obtaining large, uniform-thickness skin grafts from the resected tissue was solved by using the drum dermatome and pulling one end of resected tissue during the procedure. If hand or power-driven dermatome is used, other methods should be considered.

We propose this alternative reconstructive approach to avoid taking skin grafts from healthy skin and causing cosmetically unacceptable scars at those sites; this is especially important in young people. Our postoperative results and patient courses were satisfactory. A case report of this procedure was first made by one of the authors (Ohara) in the Fourth Proceeding of Japanese Society of Dermatological Society, in Japanese, 2000. Clinical usefulness was reconfirmed by another dermatologist.

References