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CASE REPORT
Reconstructive

Freehand Apple-peeling Technique for Recycled Skin Graft Harvesting in a Case of Buttock Hidradenitis Suppurativa

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Summary: Hidradenitis suppurativa (HS) is a chronic inflammatory skin disorder that often necessitates extensive surgery when medical treatment fails, particularly in advanced stages. Traditional surgical approaches, including flaps and skin grafts, are effective for tissue coverage but can lead to vascular complications and recurrence of HS. This study introduces a novel technique, the apple-peeling procedure, combined with negative pressure wound therapy at −50 mm Hg for 5 days postoperatively. This approach demonstrated improved operative efficiency and a low complication rate. Over a 3-year follow-up, there were no signs of HS recurrence, and the patient exhibited satisfactory functional and cosmetic outcomes. This technique may offer a promising alternative for treating HS, reducing the need for additional donor sites and mitigating the risks associated with conventional methods. *(Plast Reconstr Surg Glob Open 2025; 13:e6469; doi: 10.1097/GOX.0000000000006469; Published online 21 January 2025.)*

Hidradenitis suppurativa (HS), also known as acne inversa or Verneuil disease, is a chronic, debilitating inflammatory skin disorder characterized by lesions around folliculopilosebaceous units. Chronic deep-seated nodules, abscesses, fistulae, skin tunnels, and scars in intertriginous areas lead to follicular epithelial hyperplasia of the ductal isthmus.[1,2] The Hurley staging system is a tool for clinicians to divide patients' severity of HS and assess therapeutic treatment for patients. Patients with severe refractory disease (Hurley stage II–III) should receive extensive surgery for resolving active inflammation. Numerous surgical reconstructive options are available for treating HS, but no single method is ideal for closing wounds in HS surgery.[3] Flaps are considered the most effective for tissue coverage, but they can displace diseased tissues and potentially lead to HS recurrence.[4] Skin flaps can result in larger scars and may also pose risks of vascular complications such as skin flap necrosis. Meanwhile, split-thickness skin graft (STSG) can lead to scars with limited elasticity. The primary objective of managing HS surgical wounds is to promote prompt healing while minimizing scar formation, ensuring a durable and aesthetically pleasing outcome and decreased donor site morbidity with sustained tensile integrity over time. Our novel technique, the "apple-peeling procedure," has demonstrated commendable performance in terms of operative efficiency and a low complication rate in long-term follow-up for treating buttock HS.

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MATERIALS AND METHODS

The research was carried out at Kaohsiung Medical University Hospital and was authorized by the Institutional Ethics Committee of Silesian Medical Chamber at KMUH. Patients provided informed consent to disclose their medical information and images.

CASE

A 28-year-old Taiwanese man with HS had bilateral buttock pigmentation and boil-like lumps with peripheral scarring for 5 years, progressing to tunneling wounds with pus discharge and malodor (Fig. 1). The condition was

Disclosure statements are at the end of this article, following the correspondence information.

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Fig. 1. HS on bilateral buttocks with pigmented appearance, abscess, and skin tunnels.

Fig. 2. Full-thickness excision from the left buttock.

categorized as Hurley stage III, and surgery intervention was indicated. The patient had no specific systemic underlying disease and denied associated history. He was fully independent in activities of daily living and his body mass index was 23.0 kg/m² at admission.

SURGICAL PROCEDURE AND POSTOPERATIVE CARE

Lesion from the buttock was radically excised from the epidermis to the subcutaneous layer, forming an en bloc excision (Fig. 2). Subsequently, we performed the apple-peeling procedure by utilizing a Goulian guard with 0.012″ gauge, 2–3/8″ (6 cm). Using Allis tissue forceps, tension was applied from each side to stretch and secure the full-thickness excision on a flat surface. A free-hand technique was then used to scrape, peel, and thin the excised tissue to 0.3 mm, achieving the appropriate thickness for an STSG. (**See figure, Supplemental Digital Content 1,** which displays the processed STSG with complete excision of pathological tissues performed by the apple-peeling technique with a Goulian knife, **http://links.lww.com/PRSGO/D801**.)

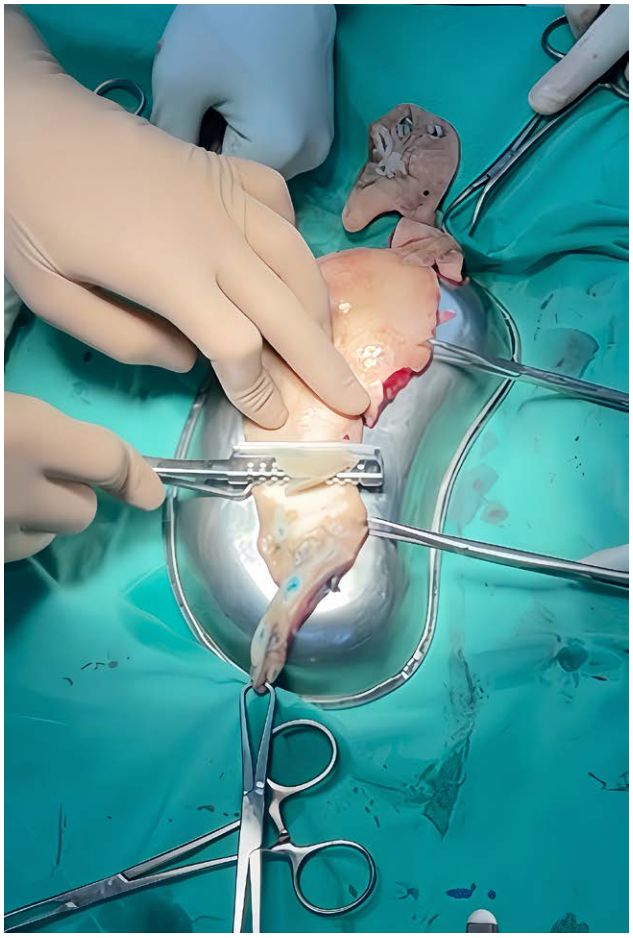

Fig. 3. Procedure of apple-peeling technique harvested with Goulian guard 0.012″ gauge, 2–3/8″ (6 cm). With fixation by Allis tissue forceps, a tension was given to our full-thickness excision. A 0.3-mm thickness of pathological tissues was then scraped and thinned with a Goulian knife to appropriate thickness by the free-hand technique.

The remaining processed graft was then repositioned on the wide excision area and secured by Prolene (4-0) suture along with surgical staples. (**See figure, Supplemental Digital Content 2**, which displays the processed STSG replaced back to wide excision area, fixed by sutures and surgical staples, **http://links.lww.com/PRSGO/D802**.) For postoperative management, negative pressure wound therapy (NPWT) at −50 mm Hg in continuous mode to the skin graft area was administered for 5 days, and the patient is discharged 15 days after the surgery. The same procedure was performed 1 month later, first on the right buttock and then on the left (Fig. 3).

RESULTS

Pain was tolerable under analgesic use. With NPWT use, successful graft take (>90%) on the right and left

Fig. 4. Functionally and cosmetically acceptable outcome was seen 3 years postoperatively without recurrence or infection.

buttocks was noted 3 and 5 weeks, respectively, after the surgery. Satisfactory functional and aesthetic results were achieved. During a 3-year follow-up period, no adverse events such as recurrence, infection, or hematoma were observed.

DISCUSSION

Surgical intervention is usually indicated for patients with HS who do not respond to conservative treatment. Harvesting recycled skin graft by the apple-peeling technique eliminates the need to sacrifice healthy skin or flap from an additional donor site and showed satisfactory results in treating HS.[5]

In contrast to axillary HS, where the skin layer is relatively thin and thus more amenable to incision by a scalpel, gluteal HS, on the other hand, presents strenuous efforts due to its significantly thicker anatomical structure of the dermis, necessitating extensive time for incision into STSG. By using the apple-peeling technique, we bypassed the conventional incision method, placing greater emphasis on the freehand approach. The use of a Goulian guard knife dermatome, instead of a drum dermatome, enabled us to achieve precise excision depths while allowing for customized intraoperative peeling. The lesions can be accurately targeted while preserving the surrounding healthy tissue. This facilitated the effortless removal of full-thickness excisions to the desired STSG depth.[6]

Applying STSG directly on the buttock is a challenge concerning fixation and long-term durability. For better skin graft fixation, we applied postoperative NPWT for 4 days, with favorable skin graft take.[7] In our patient, no recurrent HS was noted 3 years postoperatively. Even though occasional small comedones and localized redness occur, there have been no extensive spread and infection as experienced previously. The patient reported that in the first few months following the surgery, he felt that tissue in the buttocks had become thinner. However, this did not affect his daily life. Moreover, over time and with a return to normal activities, he noticed that the tissue in the buttocks gradually became thicker again. Cosmetic and functional results were also acceptable for the patient. Overall, he is satisfied with the outcome, praising that the surgery has greatly improved his life quality (Fig. 4).

CONCLUSIONS

The management of extensive skin defects in cases of HS lesions necessitates the application of contemporary reconstructive techniques. Established methods such as skin flaps and STSG are commonly used, albeit with inherent constraints. Although the extended-term outcomes of this approach are not yet fully elucidated, initial findings are promising. Utilizing the apple-peeling technique for recycled skin graft harvesting combined with NPWT for graft fixation can be a straightforward and effective treatment option.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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