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IDEAS AND INNOVATIONS

Reconstructive

A Novel Technique for Securing a Bolster For Skin Grafting after Extensive Vulvar Resection

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Summary: Patients with stage III hidradenitis suppurativa of the vulva and adjacent areas, unresponsive to other therapies, may require extensive surgeries. These include excision of diseased areas on the buttocks, vulva, groins, and abdomen, followed by delayed skin grafting. Negative pressure wound therapy has been used over grafts, but it can be difficult to maintain a seal when extensive areas have been resected. We present a novel technique to bolster skin grafts for optimal success. A total vulvectomy and resection of the buttocks, groins, and abdomen are first performed for stage III HS, incorporating all diseased tissue. Negative pressure wound therapy is applied and changed on postoperative day 3–4. On postoperative day 7, split-thickness skin grafts are applied. The skin grafts are covered by Adaptic gauze (3M Company, Minn.), cotton, and a layer of Reston foam (3M Company, St. Paul, Minn.) which is cut to fit the size of the wound. Ostomy skin barriers (Hollister Incorporated, Libertyville, Ill.) are placed on the skin surrounding the excised areas. Pediatric Foley catheters are then placed through the ostomy skin barriers and tied together to prevent movement of the bolster. The use of ostomy skin barriers and pediatric Foley catheters to secure bolsters has not previously been described. We demonstrate a well-tolerated technique, using common surgical supplies, to provide consistent uniform pressure over the graft site. This technique also allows for easy bedside dressing change(s) when indicated. *(Plast Reconstr Surg Glob Open 2021;9:e3939; doi: 10.1097/GOX.0000000000003939; Published online 16 November 2021.)*

INTRODUCTION

Extensive vulvar surgery can be required for benign and malignant conditions. Poor wound healing is a possible complication of any surgery, but is especially common following vulvovaginal procedures, occurring in up to 17%–39% of patients.[1] The vulva's moist, warm environment likely increases the infection risk and interferes with dressing adherence.[2]

Hidradenitis suppurativa (HS) is a common chronic vulvar condition which can require extensive surgery. This inflammatory skin condition affects the hair follicle sebaceous units, most commonly in the axillary, inguinal, perianal, perineal, mammary, and inframammary regions.[3] It can affect any area of the vulva, but is more commonly seen on the mons pubis and labia majora, rather than the labia minora. The true prevalence of HS is not known. In one study, Jemec et al found a prevalence of 4.1% with a 1-year prevalence of 1.0%.[4] Prevalence depends on race, ethnicity, and gender. It disproportionately affects female, young adult, African American, and biracial patients.[5]

The Hurley clinical staging system categorizes patients with HS into three stages based on severity. Stage III HS is the most severe, but least common stage, found in 4%–13% of patients.[6,7] Patients with stage III HS, unresponsive to other therapies, can require complete vulvar, buttock, groin, and abdominal resections followed by delayed skin grafting. A variety of methods exist to apply pressure to the grafts, including cotton, foam, gauze, and/or negative pressure wound therapy [wound vacuum-assisted closure (VAC)]. These are secured in place to provide external protection and help maintain an appropriate environment for optimal healing.[2,8–10] The wound VAC works well to stabilize the wound environment and reduce edema; however, maintaining a seal is difficult in areas near the urethra, vagina, and anus.[11,12] Tips to obtain an adequate seal have been reported for use after radical resection and following grafting.[11] While a wound VAC leak is of concern at any time, it is particularly worrisome after skin grafting when harm to the graft can occur due to an inadequate vacuum seal.[12] With extensive surgeries

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where minimal skin remains to adequately seal a wound with VAC, especially in moist environments, a bolster may be considered to cover the skin graft. and apply adequate pressure for regrowth.

The use of a sponge to provide pressure over a skin graft has been commonplace over the past century.[13] Reston (3M Company, Minn.) is a polyurethane self-adhering foam which has been in use for several decades as a bolster.[14–16] In vitro studies, first performed in the 1980s, demonstrated that Reston provides uniform and physiologic pressure over the skin graft sites.[14] This benefit, in addition to the porosity of the material which helps in eliminating drainage, makes it an ideal bolster for recipient sites.[14,15] Reston is also relatively inexpensive, costing less than $3 per 20 × 30 cm sheet.[16] It is usually held in place by staples to the skin edge, tie-over methods, or other adhesives, with consistently successful results.[14,15,17,18] However, due to the moist environment of the vulva (with significant serous drainage), the dressings often become moist 48 hours after surgery and may require replacement. Therefore, the optimal bolster must have the ability to be changed after a few days, to avoid compromising the healing process.

We report a new technique using ostomy skin barriers (Hollister Incorporated, Ill.) and pediatric Foley catheters to secure bolsters following buttock, vulva, groin, and abdomen resections with skin grafting. This new technique allows for easy bedside dressing change(s) when indicated.

TECHNIQUE

A total vulvectomy and resection of the buttocks, groins, and abdomen are first performed for stage III HS, incorporating all diseased tissue. Negative pressure wound therapy is applied for 1 week, changing midway through the week. We start in prone position, and then turn the patient to lithotomy, applying two separate VAC Granufoam dressings and SENSATRAC pads (3M Company, Minn.) for the vulva/groins/abdomen and buttocks, respectively. These are then connected using a Y-connector to a single vacuum device with continuous pressure at 125 mm Hg. On postoperative day 7, the patient returns to the operating room for wound debridement and split-thickness skin grafting. The Foley catheter and rectal tube are replaced. The wound is debrided, irrigated, and made hemostatic. Split-thickness skin grafts are harvested from the posterior and lateral thighs bilaterally at a thickness of 15/1000 of an inch and meshed 1.5:1. The skin grafts are applied to the recipient sites and stapled in place. Adaptic nonadhering petrolatum-impregnated gauze (3M Company, Minn.) is then used to cover the skin grafts to prevent disruption of the graft bed. A cotton roll is then overlaid over the gauze, followed by a layer of Reston foam cut to fit the size of the wound.

Ostomy skin barriers (two on each side of the vulva/groins/abdomen and the buttocks, respectively) are then placed on the skin surrounding the wounds. A small opening is then made in the clear plastic portion of each ostomy barrier to allow insertion of a pediatric Foley catheter. The catheters are then tied together using rubber bands at the center of the graft site to prevent movement of the bolster (Figs. 1, 2).

As this is an extremely moist area, on the second postoperative day, at the bedside, the rubber bands around the

Takeaways

Question: What is the optimal bolster for skin grafts in difficult-to-adhere locations, such as the vulva and buttocks?

Findings: A total vulvectomy was performed, and split-thickness skin grafts were stapled in place. These were covered by Adaptic (3M) gauze and cotton, then a layer of Reston foam. We then used ostomy skin barriers and pediatric Foley catheters to ensure immobilization of the Reston bolster. This technique allows for easy bedside dressing change(s) when indicated.

Meaning: We demonstrate a well-tolerated technique using common surgical supplies which provides consistent uniform pressure over the graft site, resulting in reliable graft take.

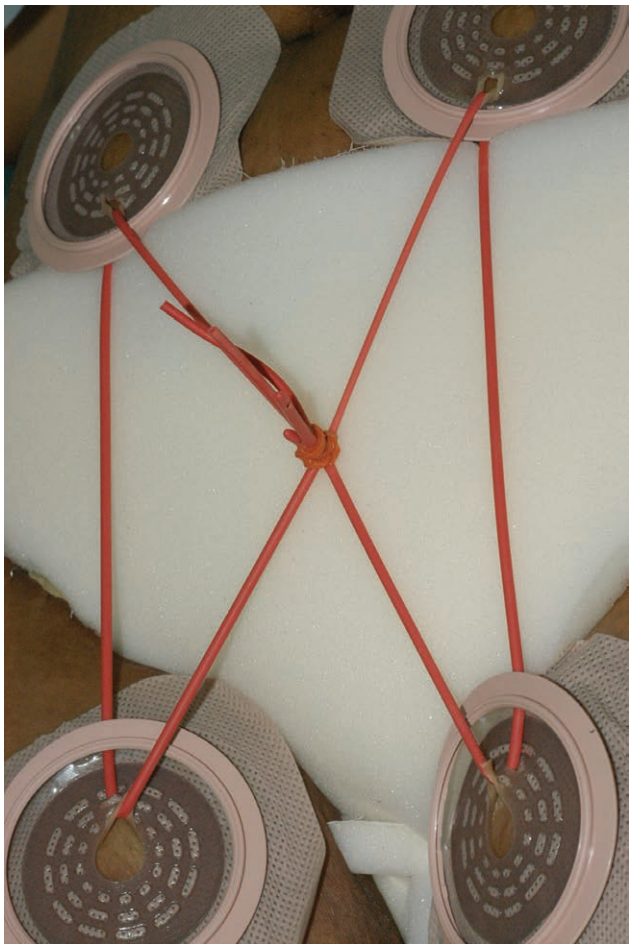

Fig. 1. Demonstration of use of ostomy skin barriers, pediatric Foley catheters, and rubber bands to secure Reston foam bolster over split-thickness skin graft on the vulva, groins, and abdomen.

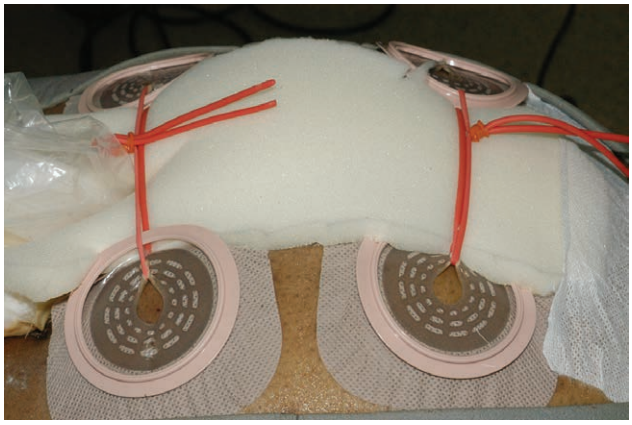

Fig. 2. Demonstration of use of ostomy skin barriers, pediatric Foley catheters, and rubber bands to secure Reston foam bolster over split-thickness skin graft on the buttocks. In this image, the Foley catheters are tied across horizontally. We found in subsequent patients that tying the catheters diagonally across the buttocks provided optimal, uniform pressure over the graft.

Foley catheters are released, and the bolsters are removed. The Adaptic gauze is left in place. The cotton rolls and Reston foam are replaced, and the Foley catheters are again tightened over the bolsters. This is well-tolerated and, in our experience, there have been no disruptions to the dressing during the hospitalization. The patient remains bed-bound for 2 weeks while the wound VAC and Reston foam bolster are used. Oral and intravenous narcotics are used as needed.

The catheters, ostomy skin barriers, Reston, cotton rolls, and Adaptic gauze are removed after 5 days. In all cases, there has been excellent take of the skin graft on the vulva, groins, abdomen, and buttocks (Figs. 3, 4). The staples are removed 2 weeks after skin grafting.

CONCLUSIONS

We have demonstrated a well-tolerated technique using common hospital supplies (ostomy barriers and Foley catheters) to stabilize a Reston foam bolster over the buttocks, vulva, groins, and abdomen. This is a promising system that should continue to be evaluated in future patients. This technique provides a consistent, uniform pressure over the graft site, with the ability to easily change the dressing when needed, secondary to the moisture in these areas.

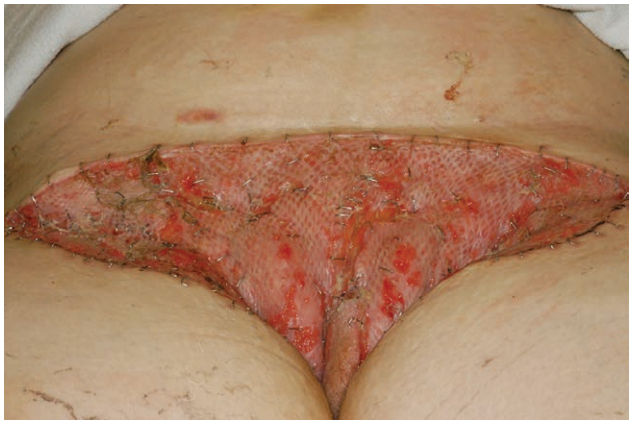

Fig. 3. Vulvar skin graft recipient site 14 days after graft procedure.

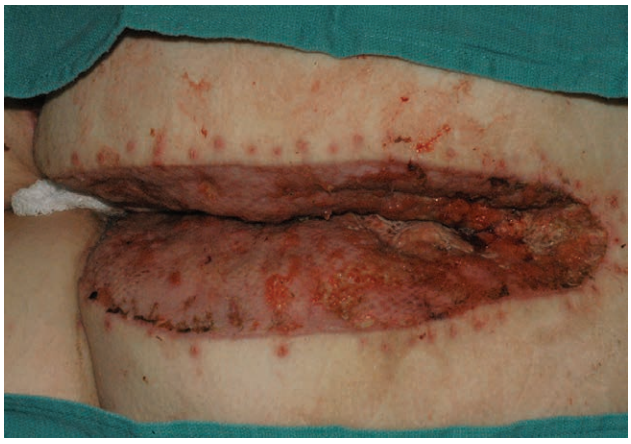

Fig. 4. Buttocks skin graft recipient site 14 days after graft procedure.

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