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Case Report

Vulvar reconstruction with a lotus petal flap in recurrent vulvar carcinoma: a case report

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ABSTRACT

Vulvar cancer is an uncommon gynecologic malignancy with a significant risk of local recurrence following surgical treatment. Management of recurrent disease often requires wide local excision, resulting in extensive soft-tissue defects that pose reconstructive challenges. We report the case of a 61-year-old woman with recurrent vulvar squamous cell carcinoma who underwent wide local excision followed by immediate vulvar reconstruction using a lotus petal musculocutaneous flap. The postoperative course was complicated by partial flap necrosis, which was managed conservatively with satisfactory healing. Histopathology confirmed tumor-free margins, and adjuvant radiotherapy was planned due to close margins and recurrent disease. This case highlights the reliability, versatility, and functional benefits of the lotus petal flap in reconstructing complex vulvar defects after radical excision in recurrent vulvar carcinoma.

Keywords: Vulvar cancer, Recurrent vulvar carcinoma, Vulvar reconstruction, Lotus petal flap, Squamous cell carcinoma

INTRODUCTION

Vulvar cancer is a relatively rare gynecologic malignancy, accounting for approximately 5% of all female genital tract cancers; however, its incidence has increased over recent decades, largely due to rising human papillomavirus (HPV) infection rates and increased life expectancy.[1] The disease predominantly affects postmenopausal women, with peak incidence between 65 and 70 years of age. Squamous cell carcinoma constitutes more than 85% of vulvar malignancies and typically follows an indolent course with late metastatic spread.[2]

The disease initially spreads locally and subsequently through an orderly lymphatic pathway, involving the superficial inguinal nodes followed by the inguinofemoral and pelvic nodal chains. Surgery remains the cornerstone of treatment, ranging from wide local excision in early-stage disease to radical vulvectomy with lymphadenectomy in advanced cases or when adjacent organs are involved.[3] Despite effective local control, surgical treatment is associated with considerable morbidity, including wound complications, sexual dysfunction, and lymphedema.

Recurrence of vulvar squamous cell carcinoma occurs in 12-38% of patients, with most recurrences developing within two years of initial treatment.[4] Isolated local recurrences, which account for 20-23% of cases, have a relatively favorable prognosis and are primarily managed with wide local excision and reconstruction.[5] In contrast, groin and distant recurrences are associated with poor outcomes.[6,7] Repeated radical excisions often result in large soft-tissue defects, delaying wound healing and significantly impairing quality of life.

Therefore, vulvar reconstruction has become an essential component of surgical management following radical

excision. The use of myocutaneous and musculocutaneous flaps has increased in recent years; however, data on functional outcomes and quality of life remain limited, underscoring the importance of reporting reconstructive strategies in recurrent vulvar carcinoma. Here we discuss a case of 61 year old lady with a recurrent malignant vulvar lesion.

CASE REPORT

A 61-year-old woman presented with a recurrent malignant vulvar lesion to Purbanchal Cancer Hospital in 2078 B.S. She had a known history of vulvar squamous cell carcinoma treated previously at B. P. Koirala Memorial Cancer Hospital. In 2071 B. S., she underwent a radical vulvectomy with bilateral inguinal lymph node dissection. Subsequently, in 2074 B.S., she developed a local recurrence involving the clitoral region, for which a wide local excision was performed at the same institution. Adjuvant radiotherapy was not administered following either procedure.

At the current presentation, the patient complained of a recurrent vulvar growth. Clinical examination and imaging revealed a localized vulvar lesion without evidence of regional lymphadenopathy or distant metastasis. Given the history of multiple recurrences and the need for adequate oncologic clearance, a wide local excision of the vulva was planned, followed by immediate reconstruction.

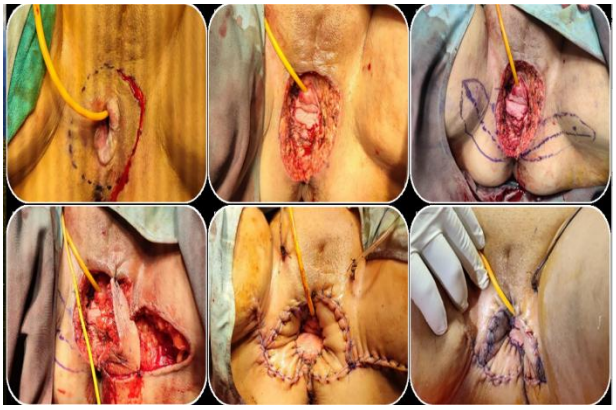

Figure 1: Lotus petal flap reconstruction.

The patient underwent wide local excision of the recurrent vulvar tumor, resulting in a significant soft-tissue defect. Vulvar reconstruction was performed using a lotus petal musculocutaneous flap to achieve optimal coverage, restore anatomy, and facilitate wound healing (Figure 1). The postoperative period was complicated by partial flap necrosis, which was managed conservatively with regular wound care and daily dressings. The flap subsequently healed well, and the patient was discharged in stable condition with healthy wound margins and satisfactory scar formation (Figure 2).

Histopathological examination of the resected specimen confirmed tumor-free margins; however, due to the presence of close surgical margins and the patient's history of recurrent disease, adjuvant radiotherapy was planned to reduce the risk of further recurrence.

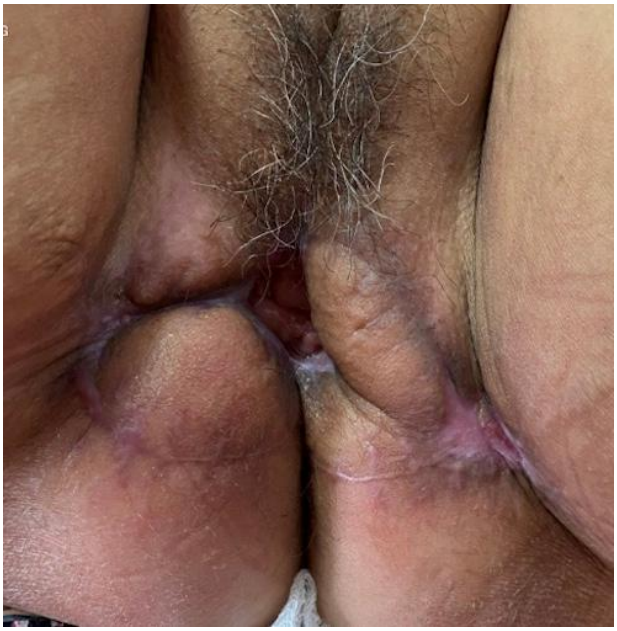

Figure 2: Final post-op scar after 1 month.

DISCUSSION

Reconstruction following surgery for recurrent vulvar cancer is challenging and requires a multidisciplinary approach to achieve oncologic safety while preserving function and quality of life. The primary goals of vulvar reconstruction include providing durable soft-tissue coverage, restoring the vaginal introitus, maintaining the central position of the urethral meatus, obliterating dead space, and facilitating timely postoperative recovery and adjuvant therapy when indicated.[2]

The choice of reconstructive technique depends on the size, location, and depth of the defect. Available options include primary closure, skin grafts, local fasciocutaneous flaps, and myocutaneous flaps. In recurrent disease, repeated wide excisions often result in large, complex defects with limited local tissue availability, making flap reconstruction preferable. Flap coverage improves wound healing, reduces postoperative pain, and enhances functional outcomes.[3,5]

The lotus petal flap is a reliable reconstructive option for vulvovaginal defects. It is based on perforators of the internal pudendal artery and designed around the vaginal orifice, allowing easy transposition to the defect while enabling primary closure of the donor site. The flap design resembles the petals of a lotus flower, although it can be modified according to the defect's requirements. Preservation of the perforators at the base of the flap is essential, and inclusion of the fascia enhances flap vascularity. When necessary, the flap can be islanded on a

single perforator to increase mobility and reduce tension at the pivot point.[2]

An important advantage of the lotus petal flap is its reliable vascular supply, which remains intact even in patients who have previously undergone radical vulvectomy with bilateral inguinal lymph node dissection, where external pudendal perforators are often sacrificed. In such cases, flaps based on internal pudendal artery perforators particularly those designed along the gluteal folds provide dependable coverage with the excellent donor-site cosmesis.[3]

In our case, lotus petal musculocutaneous flap reconstruction provided adequate coverage of the post-excisional defect with acceptable postoperative morbidity. Partial flap necrosis occurred but was successfully managed conservatively, and the wound healed satisfactorily. This outcome highlights the safety, versatility, and effectiveness of the lotus petal flap in managing complex defects following surgery for recurrent vulvar carcinoma.

CONCLUSION

Lotus petal musculocutaneous flap reconstruction is a safe and effective option for managing complex vulvar defects following surgery for recurrent vulvar carcinoma. It provides reliable vascularity, adequate tissue coverage, and acceptable morbidity, facilitating wound healing and improving functional outcomes while allowing timely adjuvant therapy when required.

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