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Neourethral meatus reconstruction for vulvectomies requiring resection of the distal part of the urethra

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Abstract

Objective: Vulvar cancer is a relatively rare tumour accounting for just 5% of all gynaecological malignancies. Radical excision can sometimes involve the distal one-third to one-half of the urethra leading to postoperative problems with micturition, asymmetries and psychosexual distress. Although this topic has been largely addressed, no specific method for distal urethra reconstruction has been described. The aim of this paper is to assess the safety and reliability of our reconstructive technique.

Methods: We conducted a retrospective study of 47 consecutive patients who underwent neourethral meatus reconstruction with vaginal mucosa flap. The surgical technique is described step-by-step. We reviewed the patients' demographics, operative characteristics, as well as immediate complications and long-term outcomes.

Results: Neo-meatal reconstruction was combined to direct vulvar closure in 2 patients, rhomboid flaps in 3 cases, 1 bilateral lotus flap and 36 V-Y fasciocutaneous flaps, 4 rectus abdominis and 1 gracilis flap. Wound dehiscence at the site of the neourethral reconstruction occurred in only 4.3%, partial necrosis of the vaginal mucosa flap in 2.1%. Totally post-operative early complication rate including the whole procedures was 29.8% with a re-operation rate of 4.3%. Long-term outcomes were evaluated in 68.1% patients, including 18.7% of urinary incontinence, no urethral stenosis and 25% of narrowed vaginal introitus.

Conclusion: Neourethral meatus reconstruction using the vaginal mucosa flap is a simple, safe and reliable technique with a very low early complication rate. We suggest that this flap could be a good option to preserve and restore urinary function in case of distal urethral amputation.

Keywords: Vulvar cancer; Reconstruction; Flap; Neo-meatal reconstruction

Introduction

Vulvar cancer is a relatively rare tumour accounting for just 5% of all gynaecological malignancies. Approximately one third of patients with vulvar cancer present with locally advanced disease[1] and the radical excision of the primary lesion may impinge upon important structures such as the urethra or anus. Moreover, recurrent vulvar cancer affects approximately one third of patients, occurring in nearly 80% of the cases within the first two years of primary treatment. Patients with advanced or recurrent disease unfortunately experience the worst prognosis and a very poor quality of life. In fact, extensive local excision, even though combined with reconstructive efforts, can have a significant impact on wound healing, leading to wound dehiscence, extensive scarring and disfigurement. Treatment-related

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morbidity is chronic and irreversible, and may even get worse over time. It may include problems with micturition, coital difficulties, vulvar asymmetries and psychosexual distress.

Since the demonstration that skin flap repair of perineal defect after radical vulvectomy is superior to direct closure with regards to postoperative morbidity, anatomical and functional results,[2,3] several reconstructive options have been described over the years.[4–18] The reconstructive procedure is tailored to each patient, based on tumour size and location, the extent of surgery (radical vulvectomy or modified radical vulvectomy or hemivulvectomy), local tissue status, previous surgeries and irradiation. The main goals of reconstructive surgery are: to reduce morbidity by limiting the volume of tissue resected, to provide aesthetically appealing results as well as to restore organ function. Several algorithms of immediate reconstruction have been proposed.[19,20] Often, the reconstruction is the most challenging aspect of the surgery in preventing and managing vulvar debulking surgery-related morbidity.

Although extensive vulvectomies with simultaneous resection of the distal urethra have been reported in the published series,[4,20,21] no specific technique for distal urethra reconstruction has been described except those of multiple intercalated flaps or interrupted scars[22] to prevent postoperative strictures.

In the present paper we present our technique of neourethral meatus reconstruction by mobilization and advancement of the anterior and lateral vaginal mucosa after distal urethra resection. This technique can be combined with free-tension direct closure in case of small vulvar defects or with several surgical options for vulvo-perineal reconstruction in case of large defects.

Patients and methods

Surgical technique

After proper pre-operative preparation (bowel preparation, antibiotic and anti-thrombotic prophylaxis) and general or epidural anaesthesia, the patient is placed in the lithotomy position and radical vulvectomy and, if indicated, groin node dissection (sentinel node or complete lymphadenectomy) are carried out according to the standard oncologic procedures for the treatment of vulvar cancer.

At the end of the procedure of radical vulvectomy the vaginal orifice and urethra are exposed with a gap between them. The incision at the vaginal orifice has been made at least 1.5 cm from the tumour margins and the urethral meatus has been incised and removed to an adequate length to reach free margins. Meticulous hemostasis of the surgical field is achieved with electrocautery and the defect is evaluated to determine how much the vaginal mucosa needs to be mobilized. When the vaginal mucosa and urethra have been dissected off, Allis clamps are placed on the anterior vaginal margins below the urethral meatus. The anterior wall of the vagina is under tension and curved mayo scissors are used to undermine the vaginal mucosa to a distance of 3/4 cm from the incision margins (Fig. 1a,b). In fact the vaginal mucosa is mobilized and advanced cranially and laterally to reach the cranial periurethral area without tension.

The previously mobilized vaginal mucosa is longitudinally incised with scissors or cold knife to a 3 cm length and at the distal margins two small incisions are made (inverted Y incision) to create the new opening of the neourethra (Fig. 1c). The urethral stump is secured to the two vaginal hemi-flaps using single interrupted mucosa-to-

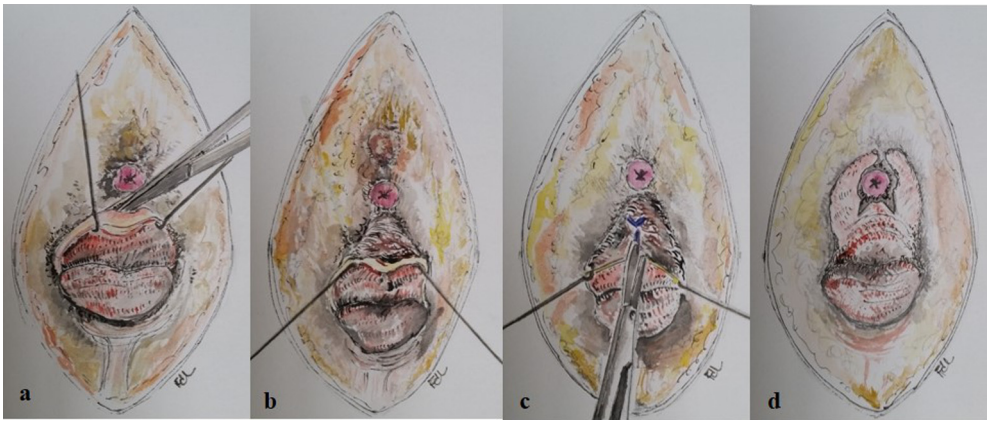

Figure 1. Schematic drawing of the vaginal mucosal flap.