Urethral flap glanuloplasty after partial penectomy for penile carcinoma:
Evaluation of urinary, sexual and quality of life outcomes

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Oncology

Urethral flap glanuloplasty after partial penectomy for penile carcinoma can significantly affect patients’ quality of life. Several techniques have been described to overcome these adversities; nevertheless, glans reconstruction remains a major surgical challenge. While cutaneous flaps do not achieve adequate cosmetic results, the main disadvantage of oral mucosal flaps is that the receptor site is mobile and neovascular formation is compromised. Glanuloplasty with a scrotal flap has acceptable cosmetic results with an acceptable stenosis rate, however, it requires definitive scrotal hair removal and is a two-stage surgical technique. As an alternative, we successfully treated a patient with urethral flap glanuloplasty and assessed his quality of life, sexual and urinary function.

Case presentation

Clinical history

A 41-year-old patient arrived at our institution’s emergency department on August 2014 with a large exophytic and ulcerated lesion of approximately 5 × 5 cm located on the foreskin and glans. Inguinal lymph nodes were not palpable and CT scan ruled out metastatic disease. Partial penectomy was performed since the proximal penile shaft was unaffected and a penile stump of > 2 cm could be preserved to allow the patient to urinate standing up. Complete excision was corroborated with a trans-operative biopsy confirming negative surgical margins. The patient was discharged after 3 days without a transfurethral catheter. Histopathological analysis reported a verrucous squamous cell carcinoma (SCC), well differentiated, affecting the lamina propria without lymphovascular invasion. His clinical stage was pT1aN0M0; therefore inguinal lymphadenectomy was not performed. Two months after discharge, his urine stream became progressively weaker until eventually developing acute urinary retention, which was resolved with the insertion of a suprapubic catheter (Fig. 1A). Physical examination revealed total meatal stenosis, therefore a preoperative urethrogram was performed through the suprapubic catheter to rule out other urethral stenotic areas. Antegrade urethrogram revealed a permeable urethra along its entire length. For this reason, a urethral flap glanuloplasty was offered to the patient.

Intervention

The urethra was first dissected and mobilized from distal to proximal up to the penoscrotal junction. This step allows a 2 cm urethral advance on the distal edge of the corpora cavernosa and a tension-free suture (Fig. 1B). Hemostasis was achieved and a 2.5 cm portion of the urethra was spatulated on its ventral side (Fig. 1C). The obtained urethral flap covered the distal surface of the corpora cavernosa and was sutured to the edge of the tunica albuginea with a 4–0 absorbable polyfilament suture (Fig. 1D). The skin was then sutured to the proximal edge of the tunica albuginea. An 18 Fr urethral catheter was left in place for 72 hours to keep the area dry (Fig. 1E).

Outcome

The patient was satisfied with the final penile appearance and meatal stenosis did not recur. Maximum urinary flow rate (Qmax) was measured in April 2015, reporting a Qmax of 12.5 ml/s. The Spanish versions of IIEF-5 and SF36 questionnaires were applied at 2 years follow-up to evaluate sexual function and health-related quality of life (HRQOL), respectively. A score of 24 was obtained for sexual function, classifying him with no erectile dysfunction; and 86 out of 100 for HRQOL. At the time of responding the questionnaire, the patient had a stable partner with satisfactory sexual relations. Qmax at last follow-up could not be measured yet he remains free of voiding symptoms.

Discussion

Partial penectomy for penile cancer is technically uncomplicated with a short hospital stay and a rapid recovery to good physical health. Nevertheless, satisfactory reconstruction remains a major surgical
challenge and penile amputation has long-term distressing and psychological effects on patients. Urethral flap glanuloplasty offers significant advantages over other reconstruction methods, such as absence of extra genital incisions or the need for a plastic surgeon with microsurgical skills to develop free vascularized flaps. Belinky et al. assessed urethral flap vitality and tumor recurrence rate using this technique on 10 patients. The authors reconstructed the neoglans at the same time of resection and followed patients for an average of 11 months. Although no meatal stenosis was observed, a 10% recurrence rate and 10% penile curvature rate was recorded in the short follow-up. This finding was made despite a 2 cm surgical margin. This previously accepted dogma has been challenged by the use of intraoperative frozen section; however, tumor grade, stage and extent need to be considered when deciding on conservative treatment methods such as glansectomy.

To our knowledge, this is the first reported case of a patient with penile carcinoma treated with urethral flap glanuloplasty due to meatal stenosis secondary to partial penectomy with assessment of sexual function and quality of life outcomes in an intermediate-term follow-up. Potential limitations to this technique are flap ischemia with subsequent necrosis and retraction of the flap with penile shortening. It is well recognized that penile SCC is often associated with glandular and retrograde urethral extension of lichen sclerosis. The use of potentially affected urethral tissue is not recommended in these cases due to an increased risk of urethral stenosis, which is why cautious patient selection is advised. Prospective studies with pre- and postoperative functional questionnaires are necessary to effectively evaluate urine stream spraying, penile curvature and recurrence rates in the long-term.

**Conclusion**

Urethral flap glanuloplasty provides an adequate glans reconstruction with excellent vascularization. Sutures are not used in the meatus which explains the good results in terms of urethral stenure. It is a one-staged, simple and reproducible technique with intermediate-term satisfactory cosmetic and functional results.

**Declarations**

Consent for publication: Written informed consent for publication of clinical details and images was obtained from the patient.

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**Authors contributions**

RS drafted the manuscript and performed the surgical management, AH analyzed and interpreted patient data regarding sexual function and quality of life, EC supervised the surgical management, AM supervised and edited the final document.

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**Abbreviations**

- SCC: squamous cell carcinoma
- Qmax: maximum urinary flow rate
- IIEF: international index of erectile function
- HRQOL: health-related quality of life

**References**