

Casos Clínicos

Partial glansectomy for invasive glans penis cancer and immediate reconstruction with preputial flap: preliminary results

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Abstract

Aim: Although carcinoma of the penis is rare in Europe and in the United States, it is common in developing countries. Squamous cell carcinoma accounts for 95% of all cases, 48% of which affect the glans. The gold standard treatment consists of tumor excision by partial or total penectomy. However, due to the negative aesthetic and psychological impact of penile amputation, more efforts are now directed towards the development of organ-sparing techniques. This paper presents our results with conservative surgery for penile invasive carcinoma and immediate reconstruction with the preputial flap.

Methods: Between May 2001 and March 2006, eight patients were treated for glans-restricted penile cancer with partial glansectomy and immediate reconstruction with the preputial flap based on Buck's fascia.

Results: Patients were aged 45-81 years (median: 50.2 years). Follow-up ranged from 15 to 72 months (median: 45.3 months). Tumors ranged from 0.7 to 2.1 cm in diameter (mean: 1.7 cm). Seven of the tumors were found to be squamous cell carcinoma (SCC) and one to be verrucous. All resections were margin-negative. No evidence of local recurrence was observed upon the last follow-up visit.

Conclusions: Our findings suggest that conservative surgery with immediate reconstruction using the foreskin pedicle flap is safe and can help manage glans-restricted penile invasive

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carcinoma in selected patients. The technique is associated with positive cosmetic and functional results, minimal morbidity and cost, and does not appear to affect disease control.

Key words: penile cancer; carcinoma, squamous cell; organ-sparing surgery.

Introduction

Carcinoma of the penis is a rare malignancy in Europe and in the United States where it accounts for 0.4 to 0.6 % of all male cancers.⁽¹⁾ However, it is common in developing countries, such as India and a number of countries in Africa and South America,⁽²⁾ especially where circumcision is not performed routinely and genital hygiene is poor.

Squamous cell carcinoma (SCC) accounts for roughly 95% of all cases of penile cancer worldwide.⁽¹⁾ Invasive tumors initially occur on the glans in 48% of cases, followed by the prepuce (25%), glans and prepuce (9%), coronal sulcus (6%) and shaft (2%). It subsequently invades local structures, the corpora cavernosa and the urethra, and metastasizes to the inguinal lymph nodes.⁽³⁾

The primary lesion should be completely removed, which is usually best achieved by standard partial or total penectomy. However, due to the negative aesthetic and psychological impact of penile amputation, more efforts are now directed towards the development of organ-sparing techniques, such as unconventional forms of local excision or Mohs micrographic surgery.⁽⁴⁾

This paper presents our results with conservative surgery (partial glansectomy) for glans-restricted penile invasive carcinoma between May 2001 and March 2006.

Material and methods

Between May 2001 and March 2006, eight patients were treated for glans-restricted penile cancer with unconventional and tailored local surgical excision and immediate reconstruction with the preputial flap based on Buck's fascia. Patients were selected carefully taking into account the extension and location of the lesion, as well as the patients' own desire for surgery. Patients were deemed ineligible for this particular form of conservative surgery in case of lesions were too extensive, the urethra or corpora cavernosa were affected, lesions were not restricted to the glans or were associated with an extensive *in situ* area. Four of the selected patients were previously uncircumcised (Figure 1).

Conservative surgery of the glans penis consisted of local, margin-negative resection. Provided margins measured at least 0.5 cm, a deep tumor-shaped incision was made on the glans and the surrounding tissue was meticulously excised (Figure 2). After resection of the whole specimen, the margins were dyed and their boundaries marked with knots in order to facilitate the pathological examination (Figure 3). The latter included checking margin status and the extent of disease by frozen section. Once the margins were free, glans reconstruction was satisfactorily achieved by using the preputial and coronal pedicle flap, based on Buck's fascia (Figure 4) and performed as follows: A circumferential subcoronal incision was made about 5 mm from the corona in order to retract the penile shaft skin. The penile and preputial skin was dissected down to the superficial



Figure 1 – Preoperative view of glans-restricted tumor in uncircumcised patient.

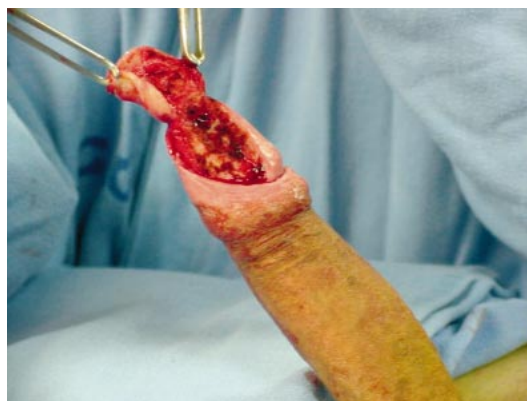


Figure 2 – Lesion at completion of excision (dorsal view)

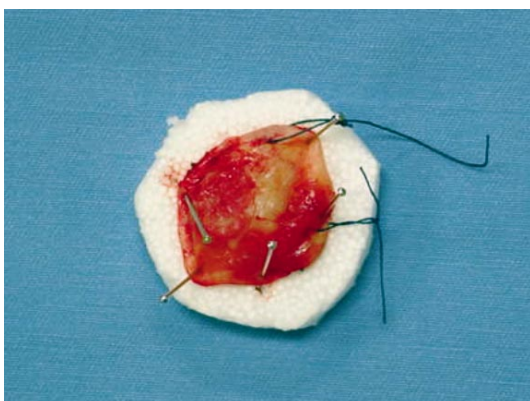


Figure 3 – Resection of tumor specimen.



Figure 4 – Final aspect after reconstruction using the foreskin pedicle flap (dorsal view).

lamina of Buck's fascia while preserving the arteries that serve as pedicle to the preputial flap. A distal part of the flap large enough to cover the defect between the distal glans and the coronal incision edges was prepared. Pedicle graft flaps extending beyond the area to be reconstructed were excised. The flap was sutured interruptedly with 4-0 absorbable sutures to reconstruct the glans, completing the repair up to the corona (Figure 4). Patients were followed at 3-month intervals for two years, then at 6-month intervals. Informed consent was obtained from all patients and the protocol was approved by the Research Ethics Committee of our Institution.

Results

All patients were submitted to complete primary tumor excision with preservation of uninvolved penile structures and immediate reconstruction. Tumors ranged from 0.7 to 2.1 cm in diameter (mean: 1.7 cm). In the pathological analysis, seven of the tumors were

found to be squamous cell carcinoma (SCC) and one to be verrucous. All of them were margin-free. Among the former, six were well differentiated, one only moderately. The seven cases of SCC were pathologically staged as pT1 while the verrucous tumor was found to be pTa.

Patients were aged 45-81 years (median: 50.2 years). Follow-up ranged from 15 to 72 months (median: 45.3 months). No evidence of local disease was observed upon the last follow-up visit. One patient presenting metastases to inguinal lymph nodes 13 months after surgery was submitted to ilioinguinal lymphadenectomy.

Prior to being admitted at our facility, two of our patients had undergone conservative surgery with local recurrence. However, the presence of small, recurrent lesions did not make these patients ineligible for local excision. In fact, both remain disease-free after 51 and 22 months, respectively.

Discussion

Radiotherapy and laser therapy play an important role in the treatment of selected patients with glans penis cancer. Laser therapy either in the form of ablation or excision is best reserved for superficial (pre-invasive) lesions. On the other hand, treatment of invasive tumors is associated with a high incidence of local failure^(5,6) and radiotherapy and laser have been particularly associated with severe local complications when used in the treatment of large invasive tumors. In addition, lesions treated with both forms of therapy become unusable for complete pathological evaluations.^(7,8,9)

The use of micrographic surgery for small, distally located penile tumors of up to one centimeter in diameter was first described by Mohs in 1992.⁽⁴⁾ The method consists of removing the tumor by excising tissues in thin layers. It includes color coding of excised specimens with tissue dyes, accurate orientation of excised tissue through construction of tissue maps, and microscopic examination of horizontal frozen sections.^(4,10,11,12)

Once a cancer-free level is reached, a thin final layer of fixed tissue is allowed to adhere from 2 to 8 days, when it is either spontaneously detached or removed by snipping the remaining strands. Until healed, the wound is covered with a gauze dressing. A treatment course usually requires from 1 to 7 days.⁽⁴⁾ Although this method achieves results comparable to those of partial penectomy of small lesions in selected patients^(4,10) it has not yet gained wide acceptance. This may be due to the fact that urologists are not familiar with this highly specialized technique or that it is felt to be too time-consuming.

Thus, many urologists may not have had the opportunity to use Mohs surgical techniques.⁽³⁾ In addition, wounds cannot always be closed immediately and must be left to spontaneous healing.

Bissada and coworkers reported a local recurrence rate of only 7.7% in 26 patients treated with conservative surgical techniques. Recurrences were subsequently treated without sacrificing function or affecting the overall outcome.⁽³⁾ With regard to tumor margin resection, it appears that local control can be obtained with margins measuring less than the standard (1.5-2.5 cm), even in tumors larger than 1.0 cm.⁽¹³⁾

Recently, Minhas and colleagues concluded that the conventional 2-cm excision margin is unnecessarily large when treating SCC of the penis and reported that conservative techniques involving excision margins of only a few millimetres provided excellent levels of oncological control.⁽¹⁴⁾ Another group of researchers reviewed 64 specimens from partial and total penectomy and found that less than 25% of the tumors presented microscopic spread beyond 5 mm of the gross tumor margin and, importantly, found no evidence of discontinuous spread.⁽³⁾ They concluded that excision margins of 2 cm may have resulted in the over-treatment of many tumors in the past.

In a study by Pietrzak and co-workers involving a series of 39 penile-preserving surgeries, 10 patients were submitted to partial glansectomy, half of them with primary repair and half with graft reconstruction. The mean follow-up time of the whole group was 16 months. Of those who had partial glansectomy, only one experienced tumor recurrence.⁽¹⁶⁾

Brown and co-workers described a technique in which a major part of the glans is removed leaving only a small ring of epithelium around the meatus. The mean follow-up period was 12 months and no recurrence has been observed to date,⁽¹⁷⁾ suggesting that conservative surgery of the glans is a safe procedure. Our technique differs from theirs in that we attempt to preserve as much of the glans as possible and in that a preputial flap is prepared which is large enough to cover the glans defect.

Although our sample of patients is too small to draw definitive conclusions, our results and those of the studies discussed above suggest that the unconventional conservative surgical techniques used on our patients are safe and can contribute to adequate tumor control. Likewise, the immediate reconstruction of the organ carried a substantial psychological benefit for the patients and allowed for better cosmetic results and a quick recovery. The preservation of the coronal pedicle

flap gave a more natural color and contour to the reconstructed glans.

Conclusions

Although the management of invasive penile carcinoma is by no means a simple matter, surgical ablation most likely represents the best alternative. Indication for conservative treatment deserves a more careful survey considering the relatively small number of patients treated and the lack of comparative data.

Our findings, which are supported by several studies published in indexed journals, suggest that unconventional conservative surgery with or without immediate reconstruction using the foreskin pedicle flap is safe and can help manage glans-restricted penile invasive carcinoma in selected patients. The technique is associated with positive cosmetic and functional results, minimal morbidity and cost, and does not appear to affect disease control.

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