Penile Squamous Cell Carcinoma With Urethral Extension Treated With Mohs Micrographic Surgery

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RESIDENT **PEARL**

- Penile squamous cell carcinoma (SCC) often is treated with partial or total penectomy, especially when there is urethral extension. Mohs micrographic surgery for penile SCC results in equivalent or better overall cure rates and decreases morbidity.

Penile squamous cell carcinoma (SCC) with considerable urethral extension is uncommon and difficult to manage. It often is resistant to less invasive and nonsurgical treatments and frequently results in partial or total penectomy, which can lead to cosmetic disfigurement, functional issues, and psychological distress. We report a case of penile SCC in situ with considerable urethral extension with a focus of cells suspicious for moderately well-differentiated and invasive SCC that was treated with Mohs micrographic surgery (MMS). A review of the literature on penile tumors treated with MMS also is provided.

Cutis. 2018;101:E15-E18.

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Mohs micrographic surgery with distal urethrectomy and reconstruction is a valuable treatment technique for cases of SCC involving the glans penis and distal urethra. It offers equivalent or better overall cure rates compared to more radical interventions. Additionally, preservation of the penis with MMS spares patients from considerable physical and psychosocial morbidity. Our case, along with growing body of literature,[1-4] calls on dermatologists and urologists to consider MMS as a treatment for penile SCC with or without urethral involvement.

Case Report

A 61-year-old man presented to the dermatology department with a pruritic lesion on the penis that had been present for 6 years. Shave biopsy demonstrated SCC in situ with a focus of cells suspicious for moderately well-differentiated and invasive SCC. Physical examination revealed an ill-defined, 2.2×1.9-cm, pink, eroded plaque involving the tip of the penis and surrounding the external urinary meatus (Figure 1). There was no palpable inguinal lymphadenopathy.

Distal penectomy and lymph node biopsy was recommended following evaluation by the urologic oncology department, but the patient declined these interventions and presented to our dermatology department (A.H.) for a second opinion. The tumor, including the invasive perineural portion, was removed using MMS several weeks after initially presenting to urologic oncology. Ventral meatotomy allowed access to the SCC in situ portion extending proximally up the pendulous urethra (Figure 2). Clear margins were obtained after the eighth stage of MMS, which required removal of 4 to 5 cm

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The authors report no conflict of interest.
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FIGURE 1. Penile squamous cell carcinoma. Physical examination revealed an ill-defined, 2.2×1.9-cm, pink, eroded plaque involving the tip of the penis and surrounding the external urinary meatus of 6 years' duration. There was no palpable inguinal lymphadenopathy.

of the distal urethra (Figure 3). Reconstruction of the wound required urethral advancement, urethrostomy, and meatoplasty. A positive outcome was achieved with preservation of the length and shape of the penis as well as the cosmetic appearance of the glans penis (Figure 4). The patient was satisfied with the outcome. At 49 months' follow-up, no evidence of local recurrence or disease progression was noted, and the distal urethrostomy remained intact and functional.

Comment

Penile SCC is a rare malignancy that represents between 0.4% and 0.6% of all malignant tumors in the United States and occurs most commonly in men aged 50 to 70 years.[4] The incidence is higher in developing countries, approaching 10% of malignancies in men. It occurs most commonly on the glans penis, prepuce, and coronal sulcus, and has multiple possible appearances, including erythematous and indurated, warty and exophytic, or flat and ulcerated lesions.[5] Some reports indicate that more than 40% of penile SCCs are attributable to human papilloma virus,[6] while lack of circumcision, chronic inflammation, poor hygiene, balanitis xerotica obliterans, penile trauma, human immunodeficiency virus, UVA treatment of penile psoriasis, and tobacco use are known risk factors.[5]

Invasive penile SCC generally is treated with penectomy (partial or total), radiation therapy, or MMS; SCC in situ can be treated with topical chemotherapy, laser therapy, and wide local excision (2-cm margins) including circumcision, complete glansectomy, or MMS.[5] Squamous cell carcinoma in situ with urethral involvement treated with nonsurgical therapies is associated with higher recurrence rates, ultimately necessitating more aggressive treatments, most commonly partial penectomy.[7] The high local recurrence rate of SCC in situ with urethral involvement treated with nonsurgical therapies reflects the fact that determining the presence of urethral extension is difficult and, if present, is inherently inaccessible to these local therapies because the urethra is not an outward-facing tissue surface; MMS represents one possible solution to these issues.

FIGURE 2. Ventral meatotomy performed in a patient with penile squamous cell carcinima requiring multiple stages of Mohs micrographic surgery allowed access to the in situ portion of the tumor extending proximally along the pendulous urethra. The fourth stage of Mohs micrographic surgery is shown here.

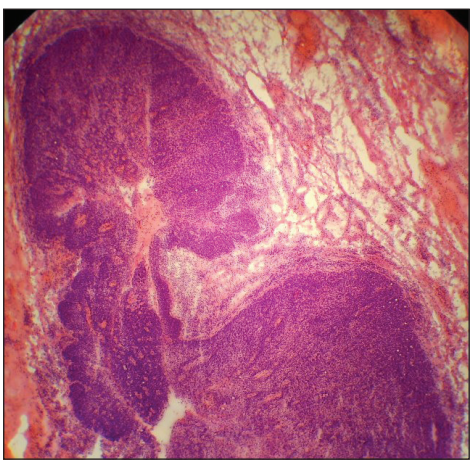

FIGURE 3. Low-power microscopic view of the fourth Mohs micrographic surgery stage showed squamous cell carcinima in situ with epithelial cell proliferation abutting upon the urethra (H&E, original magnification ×20).

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Across all treatment modalities, the most prognostic factor of cancer-specific survival in patients with penile SCC is pelvic lymph node involvement. Some reports cite 5-year survival rates as low as 0% in the setting of pelvic lymph node involvement,[5] whereas others had cited rates of 29% to 40%[4]; 5-year survival rates of higher than 85% have been reported in node-negative patients.[4] Recurrence rates vary widely by treatment modality, ranging from less than 10% with partial penectomy and long-term follow-up[8] and up to 50% within 2 years with penile-preserving approaches (eg, topical chemotherapy, laser therapy, radiotherapy).[5] Multiple case series of penile cancer (the most common of which was SCC/SCC in situ) treated with MMS report comparable and at times superior survival and recurrence data (Table).[1-4] Slightly higher recurrences of penile SCC treated with MMS compared to penectomy have been reported, along with considerably higher recurrence rates compared to nonpenile cutaneous SCC treated with MMS (reported to be less than 3%).[4] The elastic and expansile nature of penile tissue may lead to distortion from swelling/local anesthesia when taking individual Mohs layers. Additionally, as a large percentage of penile SCCs are attributable to human papillomavirus, difficulty in detecting human papilloma virus–infected cells (which may have oncogenic potential) with the naked eye or histologically with typical staining techniques may help explain the higher recurrence rate of penile SCC treated with MMS compared to penectomy. Despite the higher recurrence rates, survival is comparable or higher in cases treated with MMS (Table).

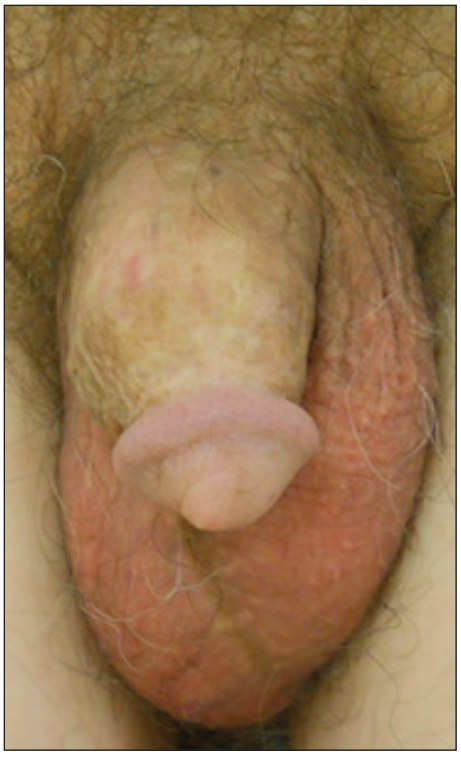

FIGURE 4. Reconstruction of the wound following ventral meatotomy in a patient with penile squamous cell carcinoma required urethral advancement, urethrostomy, and meatoplasty. A positive outcome was achieved with regard to preservation of the length and shape of the penis and the appearance of the glans.

Partial penectomy also has a negative impact on health-related quality of life. Kieffer et al[9] compared the impact of penile-sparing surgery (PSS)(including MMS) versus partial or total penectomy on sexual function and health-related quality of life in 90 patients with penile cancer. Although the association between the extent of surgery (partial penectomy/total penectomy/PSS) surgery type and extent and most outcome measures was not statistically significant, partial penectomy was associated with significantly more problems with orgasm ($P=.031$), concerns about appearance ($P=.008$), interference in daily life ($P=.032$), and urinary function ($P<.0001$) when compared to patients treated with PSS.[9] Although this

Case Series of Penile Tumors Treated With Mohs Micrographic Surgery

Reference (Year)	No. of Reported Cases	Recurrence Rate, %	Outcome	Mean Follow-up Period, mo
Brown et al (1987)[1]	20 (11 SCC, 7 SCC in situ, 1 verrucous carcinoma, 1 leiomyosarcoma)	29	Not reported	36
Mohs et al (1992)[2]	31 (All SCC and SCC in situ)	26	80.6% (5-year survival)	60
Shindel et al (2007)[3]	41 (10 SCC, 25 SCC in situ, 4 verrucous carcinoma, 1 epidermoid carcinoma, 1 basal cell carcinoma)	32	92% (5-year survival)	58
Machan et al (2016)[4]	26 (SCC in situ)(4 cases involved the urethra)	10 (0/4 involving the urethra)	100% (cure rate)	94.9
	22 (SCC)	9.1	100% (cure rate)	77

Abbreviation: SCC, squamous cell carcinoma.

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study included only laser/local excision with or without circumcision or glans penis amputation with or without reconstruction as PSSs and did not explicitly include MMS, MMS is clearly a tissue-sparing technique and the study results are generalizable to MMS. The fact that MMS was not included as a PSS also may underscore the fact that MMS for penile cancer may not yet be available in certain regions; this study was conducted in the Netherlands.

Conclusion

Penile SCC with considerable urethral extension is uncommon, difficult to manage, and often is resistant to less invasive and nonsurgical treatments. As a result, partial or total penectomy is sometimes necessary. Such cases benefit from MMS with distal urethrectomy and reconstruction because MMS provides equivalent or better overall cure rates compared to more radical interventions.[1-4] Importantly, preservation of the penis with MMS can spare patients considerable physical and psychosocial morbidity. Partial penectomy is associated with more health-related quality-of-life problems with orgasm, concerns about appearance, interference in daily life, and urinary function compared to PSSs such as MMS.[9] This case, and a growing body of literature, are a call to dermatologists and urologists to consider MMS as a treatment for penile SCC, even with involvement of the urethra.

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