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Mohs micrographic surgery for penile carcinoma with urethral invasion: A multidisciplinary approach

To the Editor: The tumor-node-metastasis classification of penile cancer was first described in the 1988 third edition of the American Joint Committee on Cancer's (AJCC's) *Cancer Staging Manual*. Initially, urethral invasion was considered to be T3 disease and, thus, was often treated with partial or complete penectomy that achieved satisfactory oncologic outcomes but yielded poor cosmetic, functional, and psychological results. With the updates in the eighth edition of the AJCC *Cancer Staging Manual*, first available for comments in 2016, tumor-node-metastasis staging is now independent of urethral involvement.[1] Urethral invasion without involvement of the corpora is defined as a low- or intermediate-risk tumor (Tis, Ta, T1a) and is not associated with a worse prognosis than that of a similar tumor without urethral invasion.[1,2]

The AJCC guidelines now support the use of penile organ-sparing Mohs micrographic surgery (MMS) for Tis, Ta, and T1a tumors with urethral invasion.[3] Currently, however, little is known about the surgical and functional outcomes after MMS for these tumors. We present our experience with 6 patients presenting with low-risk penile cancer and urethral extension treated with MMS followed by urologic reconstruction.

Six patients with penile carcinoma and urethral invasion who received MMS were retrospectively identified (Table I). Before MMS, a Foley catheter was placed to allow for urethral dissection, reconstruction, and healing. All patients received a ventral meatotomy and, if needed, a urethotomy, at the time of the first Mohs layer. In 4 of the 6 patients, the entire tumor, including the urethral invasion, was cleared with 2 or 3 MMS stages. Because of persistent proximal urethral involvement on Mohs frozen sections in 2 patients, a distal urethrectomy was done at the time of urologic reconstruction to achieve a negative margin, which was confirmed on intraoperative frozen sections and with permanent histology. Urologic reconstruction was performed 1 day after MMS and included urethroplasty with neomeatus (n = 5), glansplasty (n = 4), and advancement flap (n = 1). The postoperative care was uncomplicated in all patients. With a median follow-up time of 20.5 months (range: 10-26 months), all patients are recurrence free and have expressed great satisfaction with form and functionality. All but 1 can urinate standing, and all 6 have retained sexual function with the ability for sexual penetration (Fig 1).

Because of the low incidence of penile carcinomas (2120 cases in 2017), no randomized controlled studies have examined MMS for penile tumors.[4] To date, 4 case series have reported on using MMS for penile carcinoma, including Mohs et al (N = 35), Brown et al (N = 20), Shindel et al (N = 30), and Machan et al (N = 42).[5] Within these case series, MMS was attempted in 4 patients with urethral invasion, and in accordance with our findings, no tumor recurrence was reported at 4 to 91 months of follow-up.[5] Similar to the existing literature, the current study is limited by its retrospective design, the small number of patients, the short follow-up time, and the absence of validated instruments for functionality assessments. To our knowledge, our study represents the largest reported cohort of patients, to date, to receive MMS for penile carcinoma with urethral involvement.

In conclusion, MMS completely cleared 4 out of 6 early penile squamous cell carcinomas with urethral invasion. In 2 cases, the entire cutaneous involvement and distal urethral involvement were cleared with MMS, but further proximal urologic urethral resection was needed at the time of urologic reconstruction. Form and function were mostly preserved in all cases. Although small, the study adds to our understating of MMS as an effective, low-morbidity treatment for penile carcinoma and supports the use of MMS for patients with low- and intermediate-risk penile cancer with urethral invasion.

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Table I. Demographic and operative details for 6 patients with penile cancer and urethral involvement treated with Mohs micrographic surgery

Patient	Age, years	Race	Circumcised at birth	Recurrent	Pathologic diagnosis	Location	Urethral excision length	Tumor size before surgery, cm	Tumor stage	Ancillary test	MMS stages	MMS defect size, cm	Urethra cleared with MMS	Urologic reconstruction	Adjuvant therapy	Follow-up, months
1	77	W	No	No	SCC, 5-mm invasion	Glans/ prepuce	Yes, 0.5 cm resected	2.0 × 2.0	T1a	Cystoscopy (−) CT of chest, abdomen, pelvis (−)	2	4.0 × 3.3	Yes	Distal urethroplasty Glansplasty Circumcision	HPV-Vacc	19
2	87	W	Yes	No	SCCis	Glans	Yes, 5 cm resected	1.5 × 1.3	Tis	Cystoscopy (−) CT of chest, abdomen, pelvis (−)	3	2.5 × 2.0	No	Distal urethroplasty Glansplasty	HPV-Vacc	19
3	83	W	No	No	SCCis high grade, papillomatous	Glans/ prepuce	Yes, corrected with corrective flap	2.0 × 2.0	Tis	Cystoscopy (−)	3	6.0 × 3.5	Yes	Advancement flap Circumcision	None	25
4	79	B	No	No	SCCis, warty-basaloid PeIN	Glans	Yes, 0.3 cm resected	3.0 × 2.8	Tis	Cystoscopy (−) Ultrasonography of lymph node (−)	3	5.8 × 5.0	No	Distal urethroplasty Glansplasty Circumcision	Imiquimod	26
5	69	B	No	Yes	SCC, 0.2-mm invasion	Glans	Yes, 1.5 cm resected	1.8 × 1.9	T1a	Cystoscopy (−) CT of chest, abdomen, pelvis (−)	3	4.5 × 4.0	Yes	Distal urethroplasty Circumcision	None	10
6	70	W	Yes	No	SCCis	Glans/ shaft	Yes, unknown	1.5 × 1.5	Tis	Cystoscopy (+) CT of chest, abdomen, pelvis (−)	3	3.5 × 3.5	Yes	Distal urethroplasty Glansplasty 2-layer reconstruction	HPV-Vacc	22

(−), Negative result; *(+)*, positive result; *B*, black; *CT*, computed tomography; *HPV-Vacc*, human papillomavirus 9-valent vaccine series; *is*, in situ; *MMS*, Mohs micrographic surgery; *PeIN*, penile intraepithelial neoplasia; *SCC*, squamous cell carcinoma; *T1*, invasion of lamina propria; *W*, white.

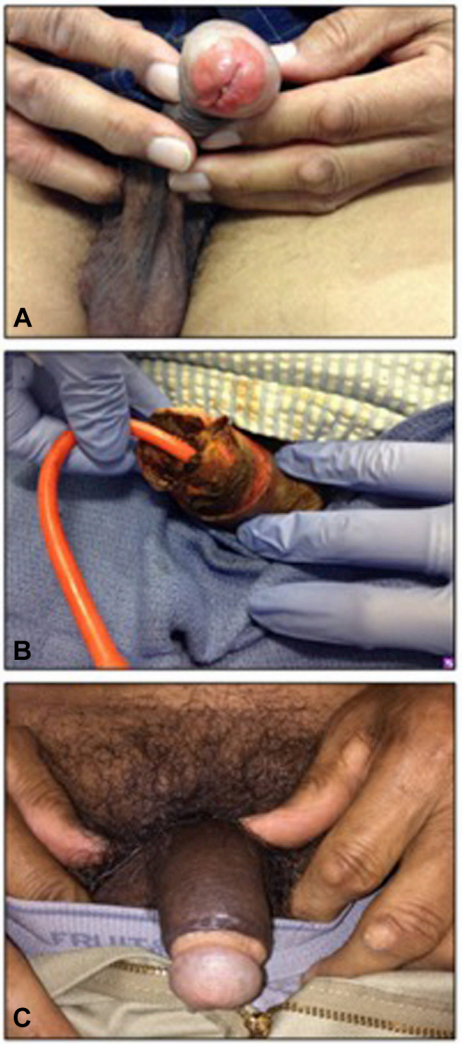

Fig 1. Penile squamous cell carcinoma in situ. **A**, 79-year-old man (patient 4) with superficial squamous cell carcinoma on the glans penis. **B**, After completed Mohs micrographic surgery and before urethral reconstruction. **C**, Four months after completed surgery; the patient is able to urinate standing and has normal sexual function.

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Basal cell carcinomas of the ear are more aggressive and have higher discordance rates between biopsy and Mohs histopathology

To the Editor: Although basal cell carcinomas (BCCs) have a low metastatic potential, aggressive variants have higher rates of incomplete excision, recurrence, and increased risk for perineural invasion. Treatment approaches vary based on histologic subtype, making accurate diagnosis critical for effective management. Studies demonstrated high variability in concordance rates (61%-82%) between diagnosis on biopsy and excision.[1,2] Ear BCCs are more