

Penile preserving surgery in penile cancer management

Dear Editor,

Penile cancer is a condition that accounts for approximately 0.4% of cancers among Singapore males.¹ Overall, this is an uncommon cancer with higher rates in developing countries (2.8–6.8 per 100,000) compared to Western countries (as low as 0.3 per 100,000).² However, in the UK, which is a developed country, there was a recent report of an increase in incidence rates from 1.10 to 1.33 per 100,000.³ This was attributed to the greater exposure to sexually transmitted oncogenic human papilloma viruses, which are associated with up to 40% of penile cancer cases.² The most common site for penile cancer is the glans (48%), followed by prepuce (21%), glans and prepuce (9%), coronal sulcus (6%) and the shaft (<2%).²

Patients with invasive penile cancer typically receive partial or total penectomy as treatment for their primary cancer. The amputation surgery plus bilateral inguinal lymph node dissection for lymph node management bring about significant morbidity to the patient. In Singapore, 2 separate case series reported a total of 46 (7 and 39 respectively) patients with penile cancer. Of these cases, 30 (65%) were treated with amputation surgery, 12 (26%) were treated with excisional biopsy, 2 (4%) were treated with primary radiotherapy, 1 (2%) was treated with palliative chemotherapy and 1 (2%) was treated with primary chemotherapy for lymphoma histology.^{1,4}

Penile preserving surgery is increasingly recognised as a standard of care for early penile cancers due to the improved functional and cosmetic outcomes compared to amputation surgery. Specifically, glansectomy should be considered for T1/T2 cancers involving the glans penis.⁵ We describe the first locally reported case of glansectomy and split skin graft (SSG) reconstruction and discuss the rationale and benefits of penile preserving surgery.

A 42-year-old uncircumcised Chinese man who smoked cigarette for 20 years presented with a 3cm warty lesion involving the prepuce and glans from 7 to 12 o'clock position (Fig. 1A). He had no palpable inguinal lymph nodes. A limited circumcision with incision biopsy showed a well-differentiated squamous cell carcinoma. Local staging using MRI penis with artificial erection showed that the disease did not involve the corpora cavernosum (\leq T2). He underwent

glansectomy with split skin graft reconstruction similar to the technique described by Parnham et al.⁶

The final histology showed well-differentiated invasive squamous cell carcinoma involving the corpus spongiosum and a 3mm negative margin (pT2G1). The patient had a partial graft loss at 2 weeks that healed without any surgical intervention. He declined surgical staging of his inguinal lymph nodes. Functionally, he had a stretched penile length loss of 2cm from 9cm to 7cm. He had a normal post-operative erectile function and had resumed sexual activities at 6 months. He voided in a standing position and he was not bothered by spraying of urine. There was no local recurrence or distant metastasis 10 months post-operation (Fig. 1B).



Fig. 1. A: Pre-operative photo. B: Post-operative neo-glans at 10 months. Yellow arrow indicates neo-meatus. Red arrow indicates skin graft coverage of the corpus cavernosa.

TNM reclassification of corpus cavernosum involvement from T2 to T3. Two recent refinements to the penile cancer management guidelines have provided impetus towards increasing the utility of penile preserving surgery. Firstly, the eighth edition of the Tumor-Node-Metastasis staging classification for penile cancer published around 2016 has reclassified tumour invasion into corpus cavernosum as T3. While previously grouped with T2, studies have shown that corpus cavernosum invasion is associated with higher inguinal lymph node involvement (48.6–52.5% versus 33–35.8%) and worse survival when compared to corpus spongiosum invasion.⁷ With this update, there is clearer distinction in oncological outcomes for patients with \leq T2 disease who are eligible for penile preserving surgery. Moreover, penile MRI with artificial erection has been shown to be an accurate modality in predicting corpus cavernosum invasion, achieving sensitivity of 82.1% and specificity of 73.6%.⁸

Acceptance of a shorter negative margin. Secondly, the traditional 2cm surgical margin for penile cancer has been challenged by recent studies. When the oncological outcome of a large series of 179 patients treated with penile preserving surgery was reviewed, a surgical margin of 5mm was considered adequate.⁹ The European Association of Urology now recommends a grade-based differentiated approach, with 3mm for grade 1, 5mm for grade 2, and 8mm for grade 3.¹⁰ With this change to the required width of negative surgical margins, more patients become candidates for penile preserving surgery.

Oncological outcomes comparable to amputation surgery. There has been concern with higher rate of local recurrence following penile preserving surgery. However, more recent series revealed local recurrence rates of 4–9.3%, which were comparable to that of partial penectomy.^{6,11,12} The largest reported cohort of glansctomy by Parnham et al. looked at 177 patients who underwent glansctomy between 2005 and 2016. They reported a 9.3% local recurrence during a median follow-up of 41.4 months; cancer specific mortality was 10.7% and overall survival was 83%. The proportion of Clavien Grade 3 complications including graft loss and meatal stenosis was 9%.⁶ Veeratterapillay et al. reported 65 patients who underwent penile preserving surgery including total glansctomy, glanuloplasty, partial glansctomy, glans resurfacing and distal penectomy with glans reconstruction with a median follow-up of 40 months. They found local recurrence in 4 patients (6%) despite 72% having intermediate or poorly differentiated tumours and 30% with T2 disease.¹¹

Improved functional outcomes. A systematic review by Maddineni that examined patients' quality of life post-surgery for penile cancer revealed that up to 40% of patients had a poorer quality of life, and up to two-thirds of patients reported a reduction in sexual function.¹³ On the other hand, patients who underwent glansctomy with SSG were able to retain erectile, orgasmic and ejaculatory function, even with reduced glans sensation.¹⁴ Smith et al. also reported that most patients who were sexually active pre-operatively had been able to continue sexual intercourse after glansctomy. The procedure resulted in maximum phallic length preservation and a cosmetically satisfactory appearance.¹² Studies that directly compare the oncological and functional outcomes after penile preserving surgery and partial penectomy are eagerly awaited.

In conclusion, penile preserving surgery such as glansctomy with SSG reconstruction should be

considered for all penile cancer \leq T2 that does not involve the corpus cavernosum. This procedure is associated with a comparable oncological outcome and an acceptable complication rate. It potentially offers better cosmetic satisfaction, as well as improved psychosexual and urinary function.

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