

# Surgery Illustrated



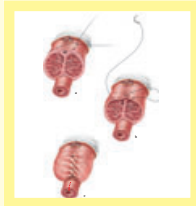
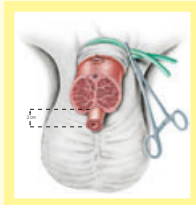
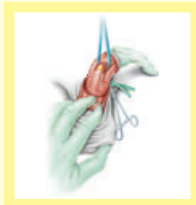
## Surgical Atlas

### Surgical management of penile carcinoma: the primary lesion

KEVIN R. LOUGHLIN

*Harvard Medical School, Brigham and Women's Hospital, Boston, MA, USA*

Illustrations by STEPHAN SPITZER, [www.spitzer-illustration.com](http://www.spitzer-illustration.com)



#### INTRODUCTION

Penile carcinoma occurs almost exclusively in uncircumcised men and is associated with poor hygiene and papilloma virus infection. The primary lesion can occur on the prepuce, glans or on the shaft of the phallus. It is a rare lesion in the USA and Europe, with a yearly incidence of 0.5–1.0 per 100 000 men [1]. However, in underdeveloped areas where circumcision is less common, the incidence of penile cancer is much higher, and may account for 10–20% of all male malignancies [2].

The treatment of the primary lesion of penile cancer should have two goals: first, the extirpation of the local lesion; and second, preservation of function where possible. Alternatives to traditional surgical treatment have been published; these include external beam radiation therapy, brachytherapy, laser therapy and Mohs micrographic surgery [3–7]. Although these alternatives have been embraced by some urologists, the cornerstone of treating the primary penile cancer remains partial and total penectomy.

#### PLANNING AND PREPARATION

All patients with a penile lesion that is suspicious for malignancy should first have a biopsy taken to confirm the diagnosis. After a histological diagnosis has been established, the surgeon must decide whether a partial or total penectomy is the appropriate therapy. The size of the lesion and the length of the phallus are the major determinants of the choice of surgical approach.

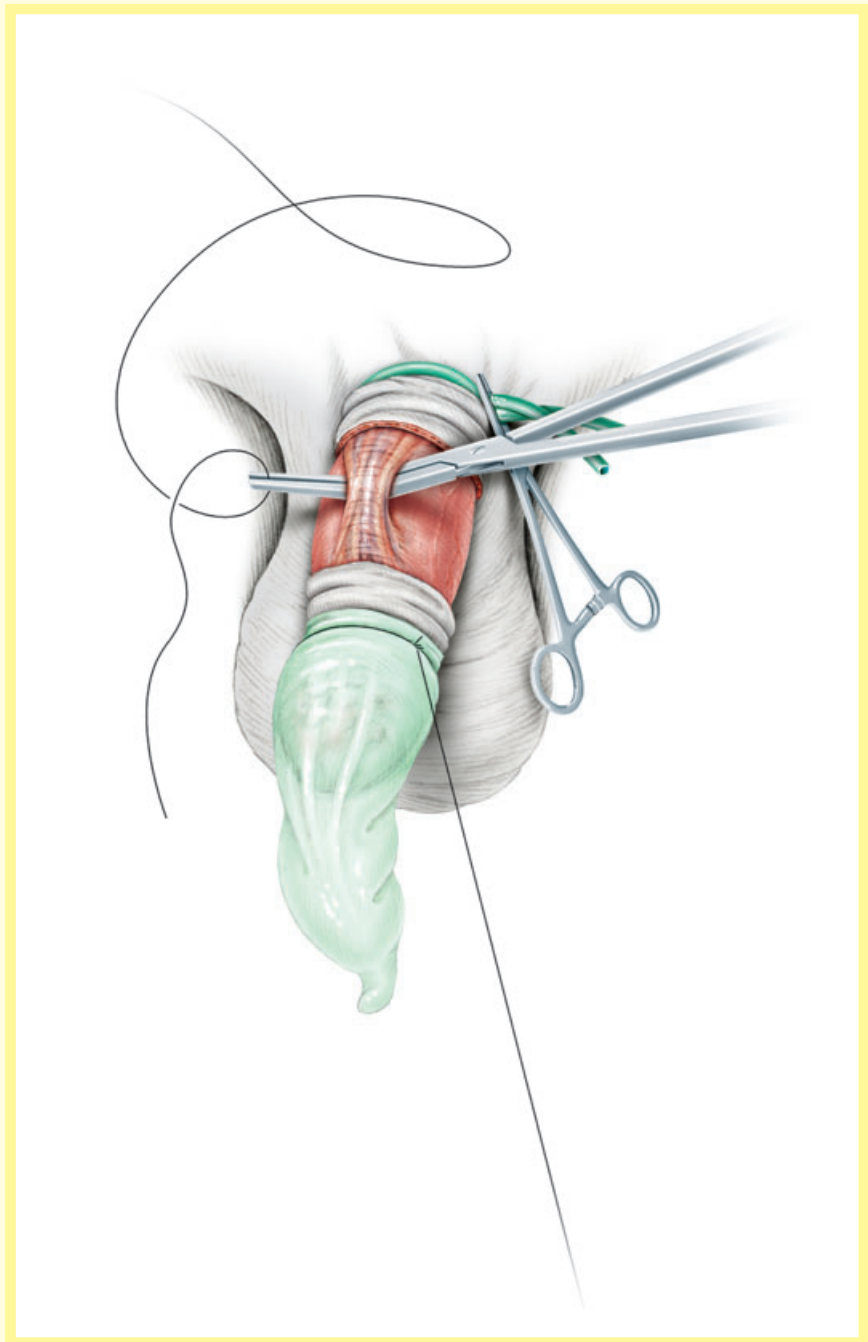
In surgical planning, MRI or penile ultrasonography can be useful in helping to determine the proximal extent of the penile lesion. The traditional teaching has been that a 2 cm margin is necessary for surgical care [8]. However, my experience has been that a clear surgical margin of any width is likely to ensure local control [9]. The surgeon must then decide if a partial penectomy will leave the patient with a phallus adequate for voiding while standing, and to permit sexual activity [10].

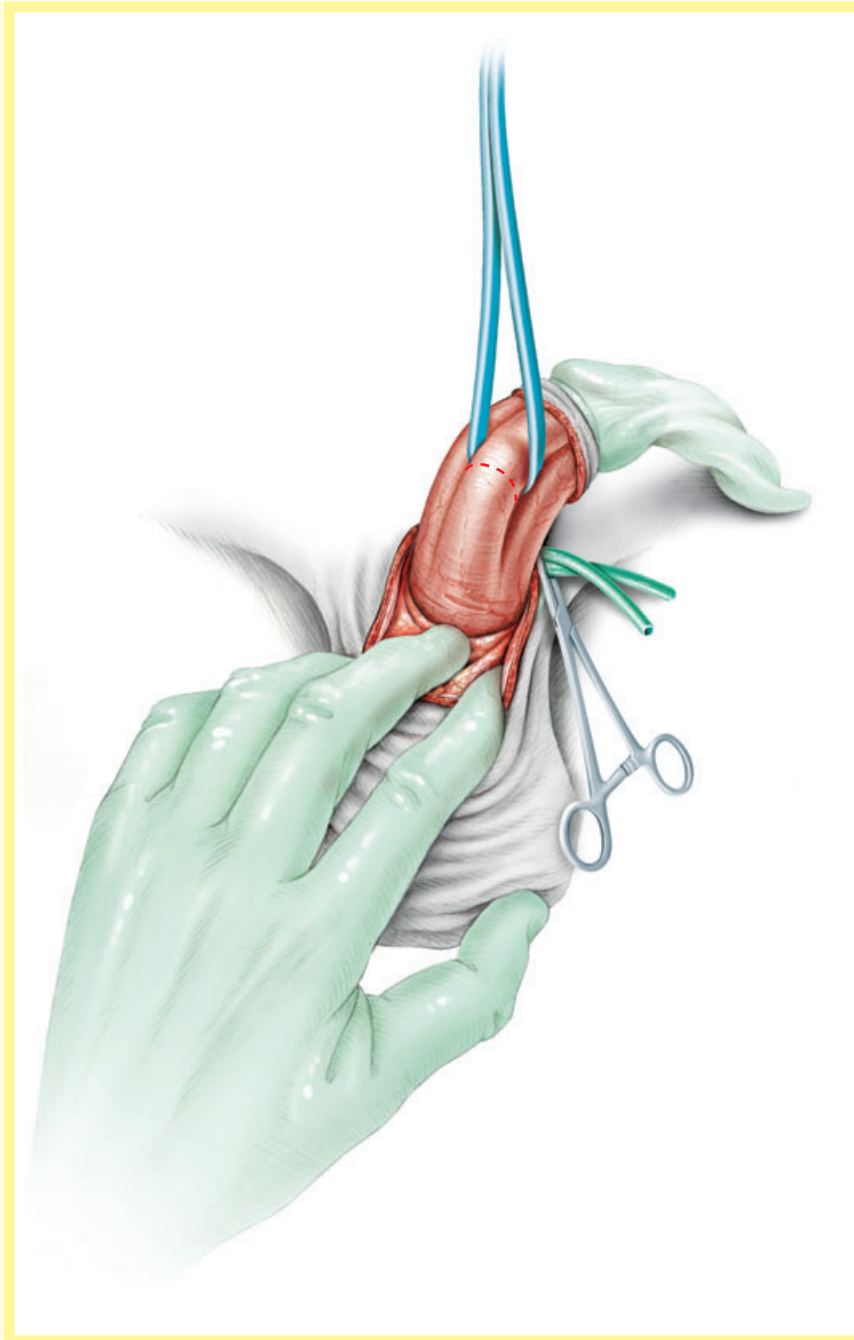
**Figure 1***Partial penectomy*

After adequate spinal or general anaesthesia has been achieved, the patient is placed supine and his genitalia prepared and draped in a sterile manner. A tourniquet is placed around the base of the penis and a surgical pen is used to mark out the circumferential skin incision on the penis. A condom or surgical glove can be placed over the penile lesion, depending on the surgeon's preference.

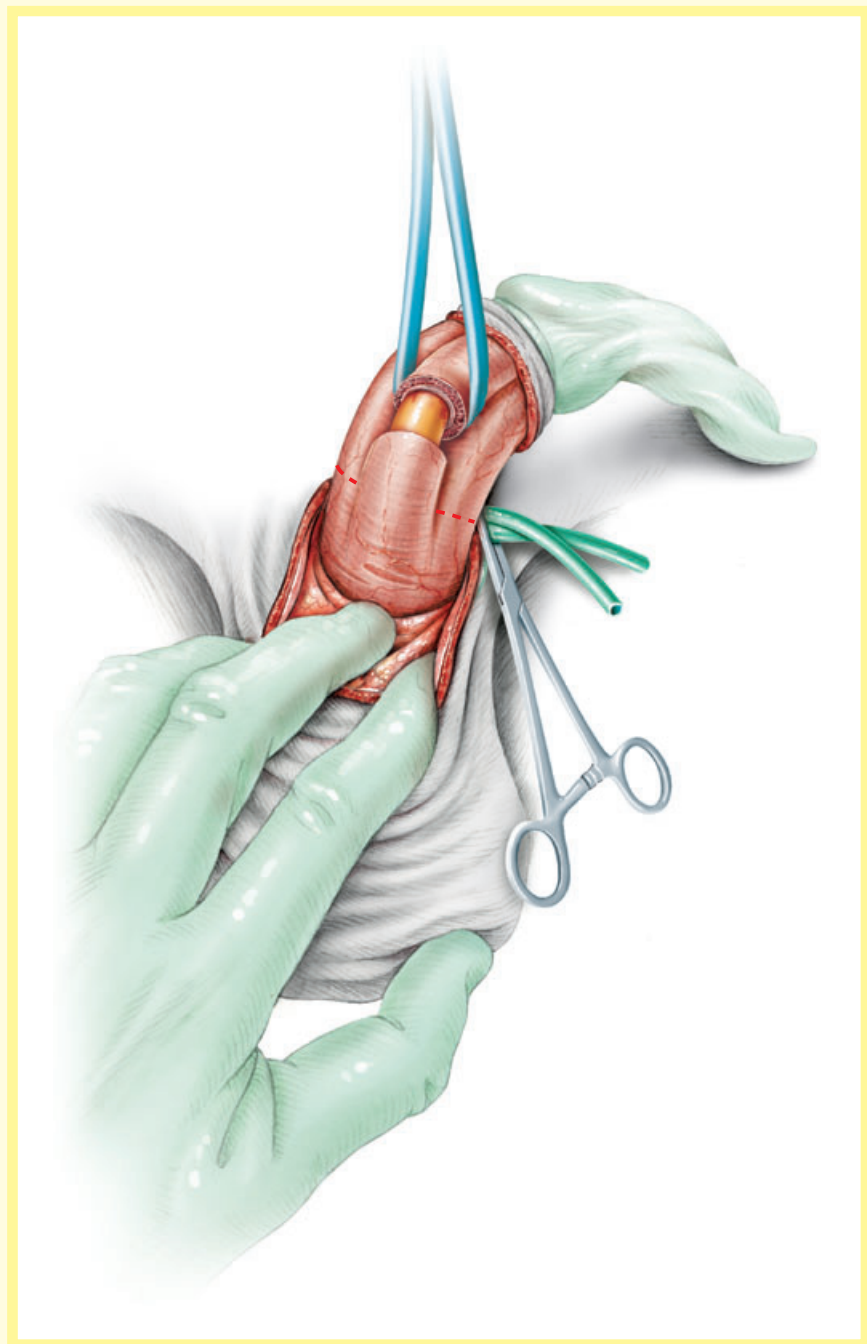
**Figure 2**

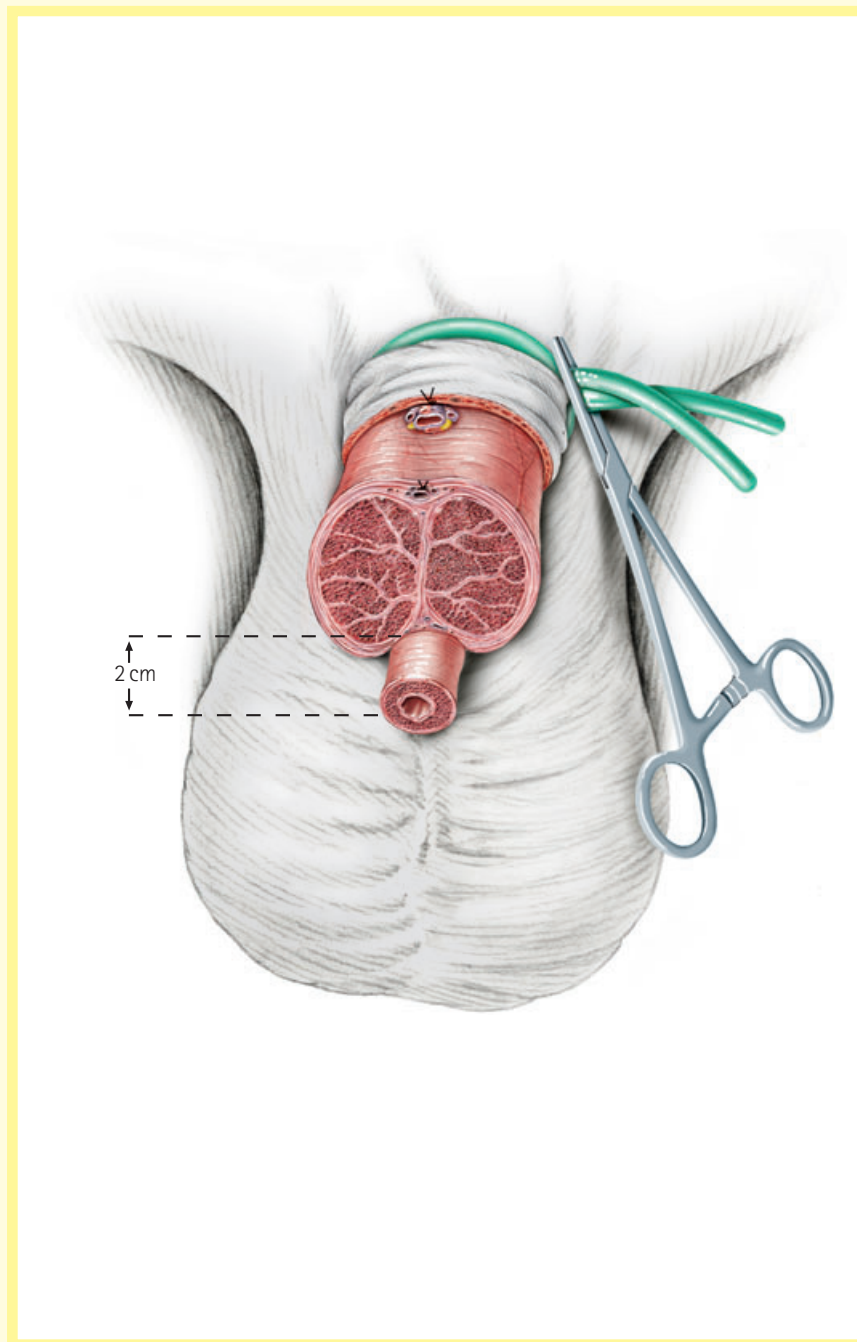
The incision is carried down through the skin and subcutaneous tissue to the corpora. The neurovascular bundle on the dorsum of the corpora cavernosa is mobilized and separately ligated.



**Figures 3 and 4**

The corpus spongiosum is mobilized to provide additional urethral length. If clinically suspicious, a frozen section of the proximal urethral margin can also be analysed.

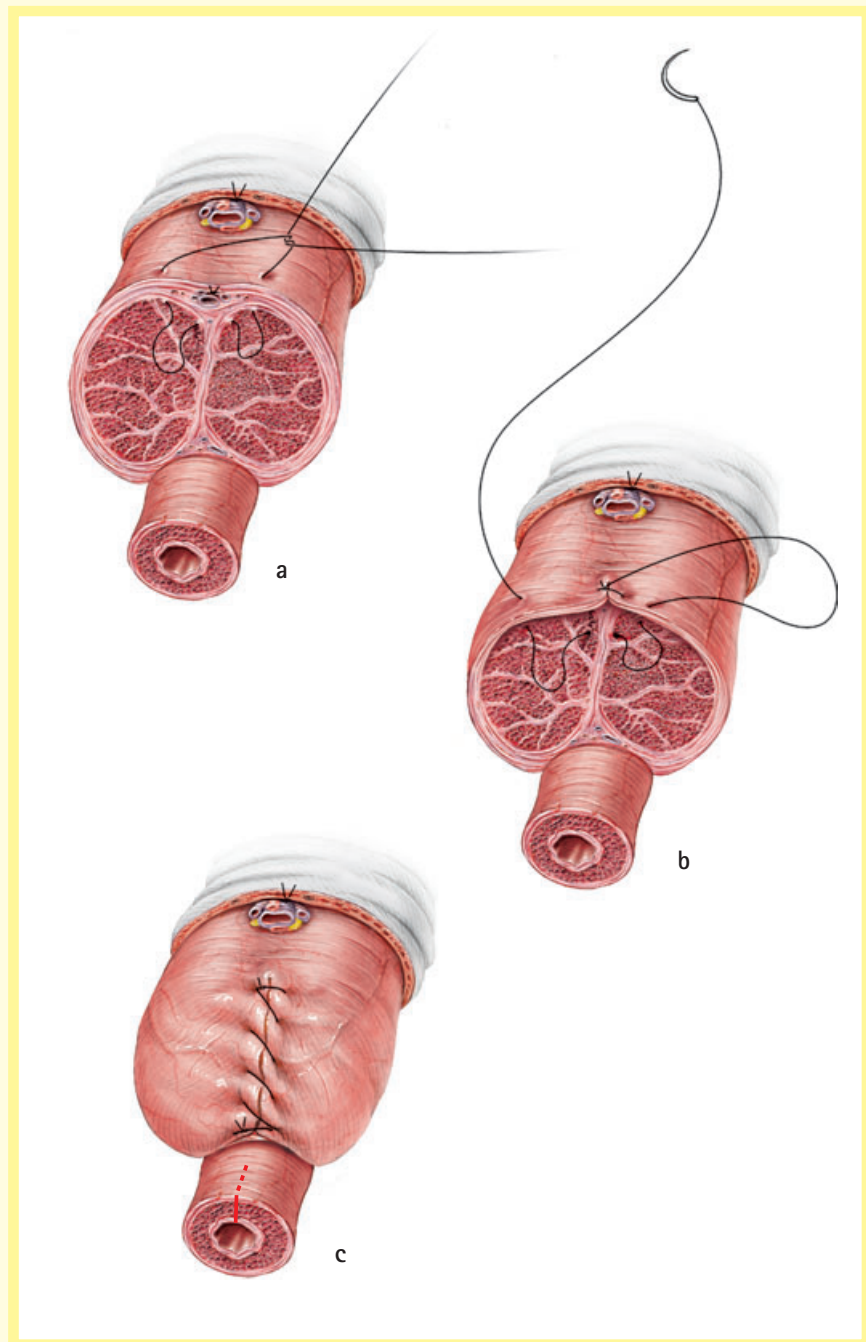


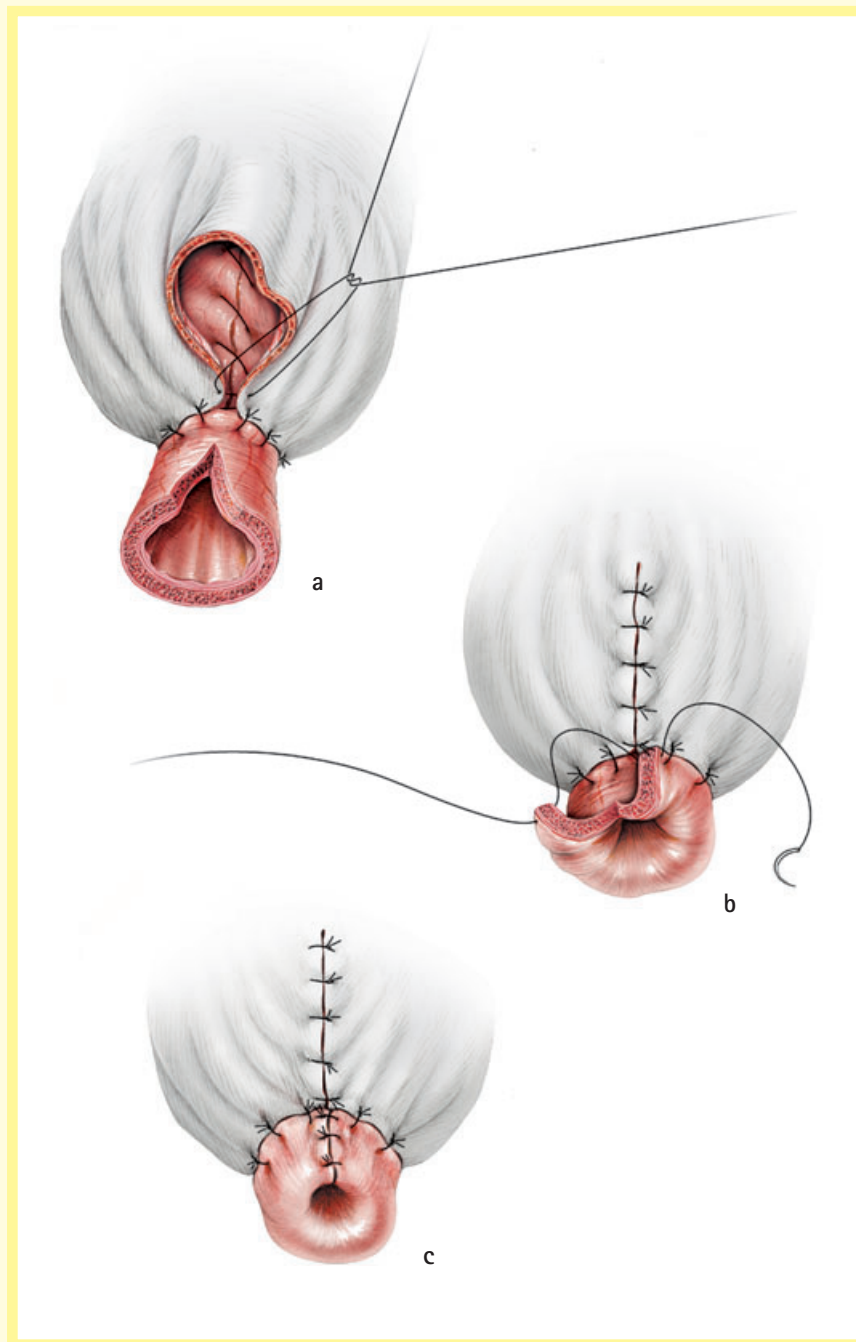
**Figure 5**

The corpora cavernosa are then sharply divided proximal to the palpable tumour. A frozen section is analysed from the in-situ margins of both corpora.

**Figure 6**

The proximal corpora cavernosal stumps are then closed with a running 3-0 polyglactin suture. The tourniquet is released and haemostasis is assessed.



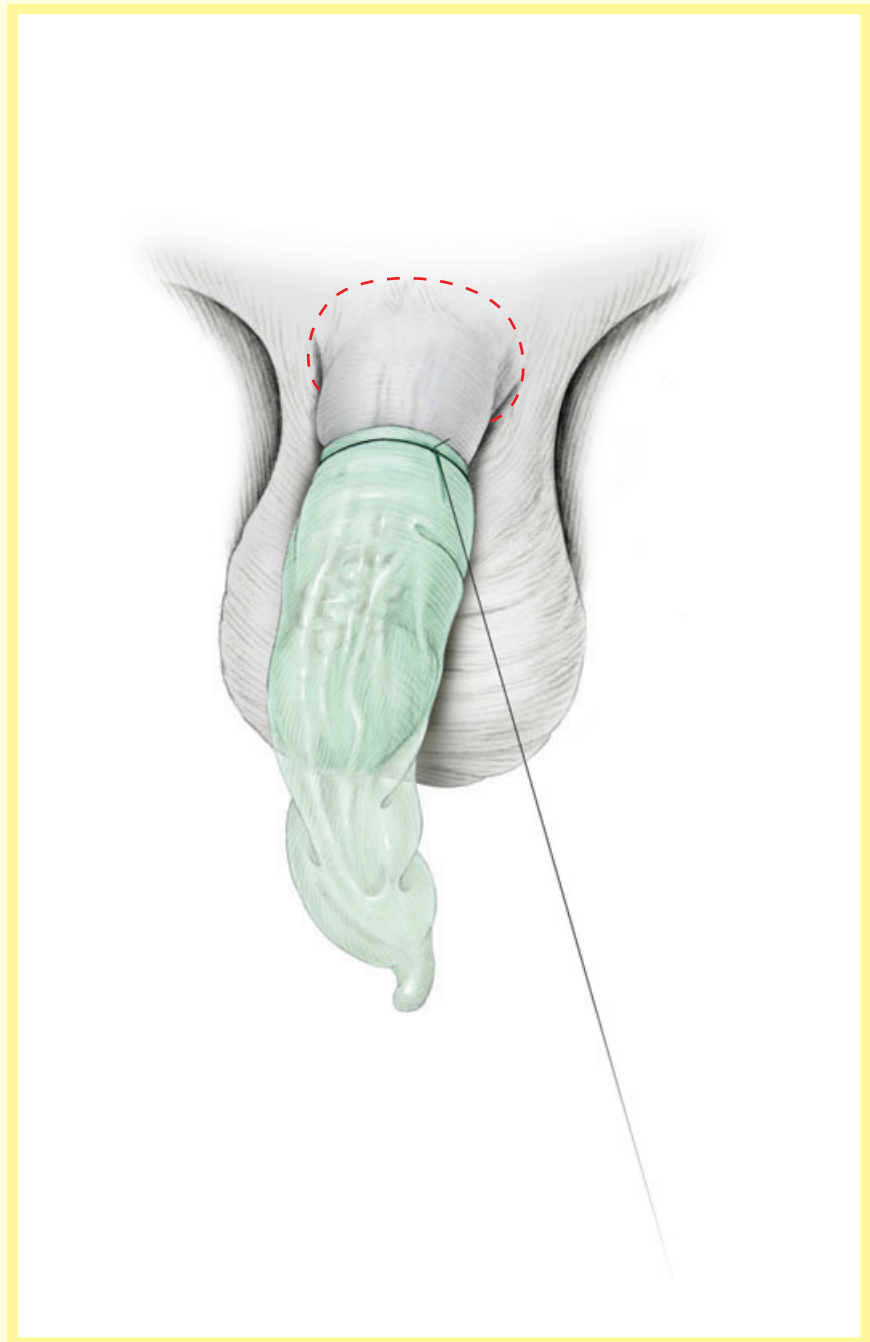
**Figure 7**

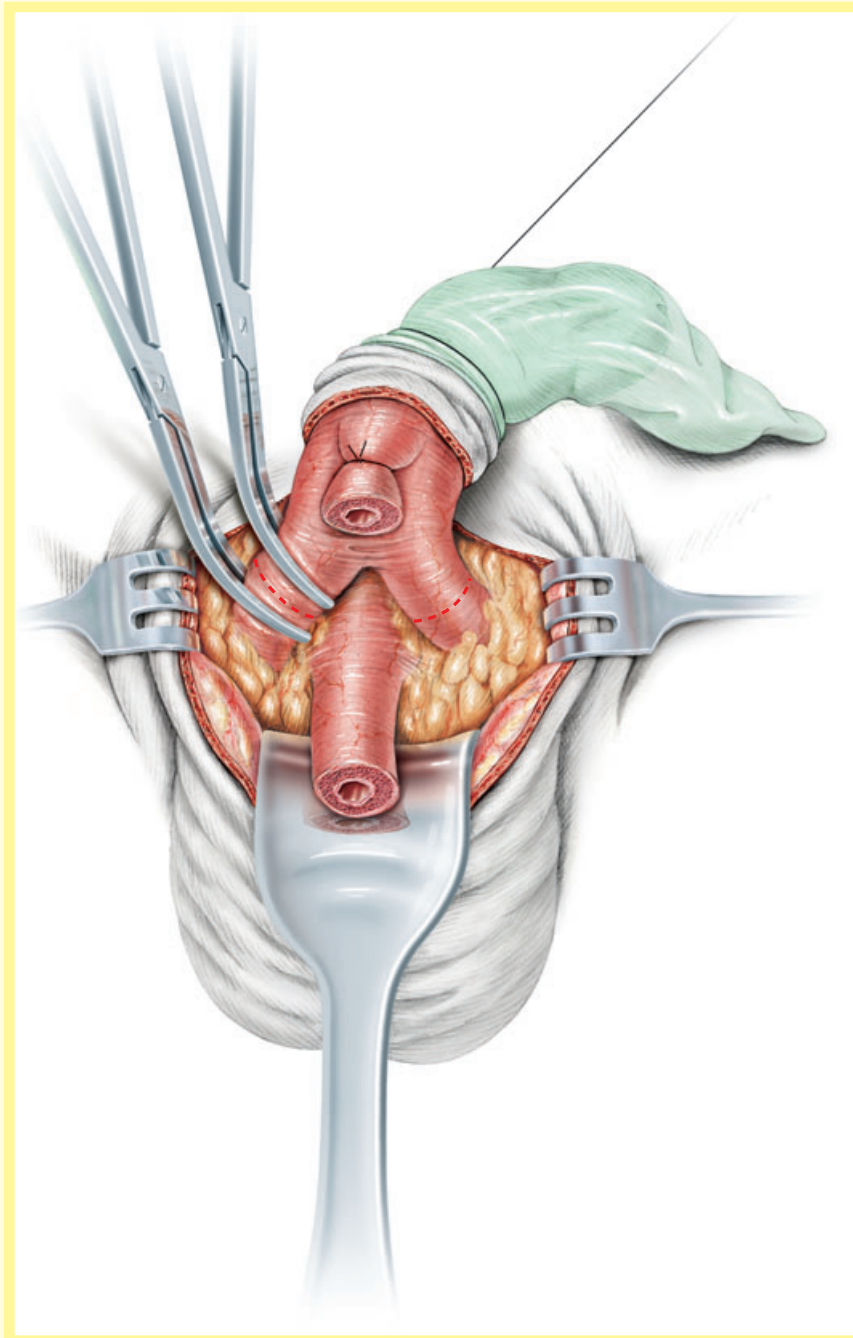
Attention is turned to creating the neomeatus. If the urethra has been adequately mobilized, there should be sufficient urethral length to spatulate the urethra and to create a 'rosebud', similar to the technique used in maturing an ileal conduit stoma [9]. A urethral catheter is left indwelling for 24–48 h and a small Penrose drain is brought out through a separate incision in the penile skin, and removed the next morning.

**Figure 8***Total penectomy*

If the primary lesion is large or the phallus small, a total penectomy will be required to provide surgical cure and a good functional result.

After adequate spinal or general anaesthesia, the patient is placed in the dorsal lithotomy position and his genitalia are prepared and draped in a sterile manner. A circumferential incision is made at the base of the penis and a tourniquet is placed.

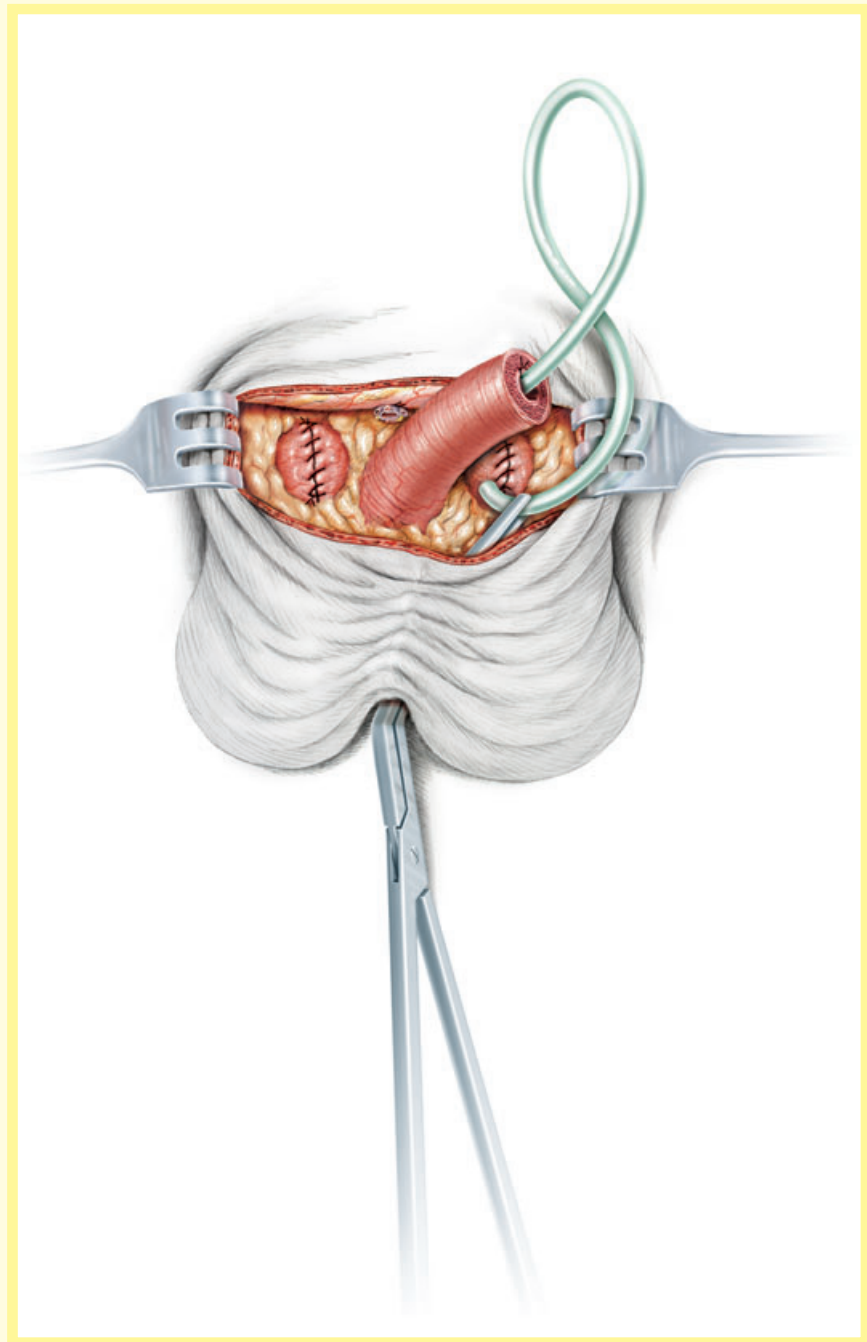


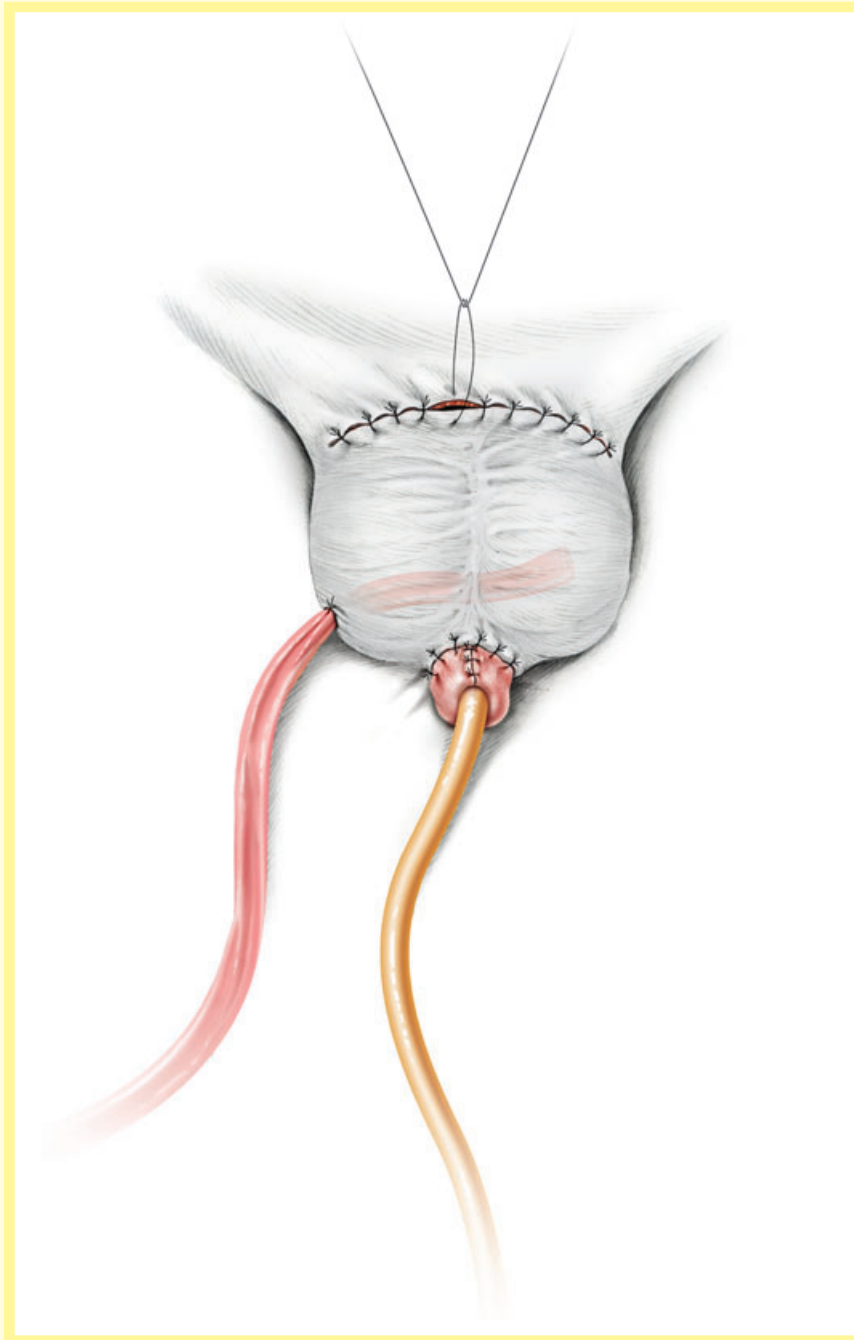
**Figure 9**

In a manner similar to a partial penectomy, the corpora cavernosa are mobilized. Depending on the extent of the penile lesion, both corpora cavernosa can be mobilized down to the penile crura beneath the symphysis. If the penile lesion is more distal, the corpora may be divided where convenient and the stumps of the crura left in place. A frozen section is analysed from the corporal margins.

**Figure 10**

After verifying the surgical margins, attention is turned to the perineal urethrostomy. Placing an infant-feeding tube into the urethra facilitates urethral mobilization. A site is selected for the perineal urethrostomy and then a right-angle clamp is placed through the perineal incision, the infant-feeding tube is grasped, and the urethra is delivered through the skin incision.



**Figure 11**

The perineal urethrostomy is matured using the rosebud technique described above. A Penrose drain is brought out through a separate skin incision and left overnight, and a urethral catheter is left in place for 48 h.

## REFERENCES

- 1 **Gloeker-Ries LA, Hankey BF, Edwards BK** eds, *Cancer Statistics and Review 1973–87*, Bethesda, MD. NIH Publication no. 90–2789. US Department of Health and Human Services, Public Health Service. National Institutes of Health, 1990
- 2 **Narayana AS, Olney LE, Loening SA et al.** Carcinoma of the penis. Analysis of 219 cases. *Cancer* 1982; **49**: 2185–91
- 3 **Hellberg D, Valentin J, Eklund T et al.** Penile cancer: is there an epidemiological role for smoking and sexual behaviour? *Br Med J (Clin Res)* 1987; **295**: 1306–8
- 4 **Ravi R, Chaturvedi HK, Sastry DV.** Role of radiation therapy in the treatment of carcinoma of the penis. *Br J Urol* 1994; **74**: 646–51
- 5 **Windahl T, Andersson SO.** Combined laser treatment for penile carcinoma: results after long-term followup. *J Urol* 2003; **169**: 2118–21
- 6 **Frimberger D, Hungerhuber E, Zaak D et al.** Penile carcinoma. Is Nd: YAG laser therapy radical enough? *J Urol* 2002; **168**: 2418–21
- 7 **Mohs FE, Snow SN, Larson PO.** Mohs micrographic surgery for penile tumors. *Urol Clin North Am* 1992; **19**: 291–304
- 8 **Hoffman MA, Renshaw AA, Loughlin KR.** Squamous cell carcinoma of the penis and microscopic pathologic margins: how much margin is needed for local cure? *Cancer* 1999; **85**: 1565–8
- 9 **Loughlin KR.** Penile cancer: New answers to 6 controversial questions. *Contemp Urol* 2005; **17**: 26–34
- 10 **Loughlin KR.** The rosebud technique for creation of a neomeatus after partial or total penectomy. *Br J Urol* 1995; **76**: 123–4

**Correspondence:** Kevin R. Loughlin, Harvard Medical School, Brigham and Women's Hospital, 45 Francis Street, Boston, MA 02115, USA.  
e-mail: kloughlin@partners.org