Penile cancer

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泌尿專科口試考題

- 抽penile CA-> risk factor? biopsy要看什麼? PE要注意? 若lesion為4cm SCC如何治療?若病人有單側LN腫大如何治療?
- Penile cancer 的成因? risk factor? Penile cancer 的治療?LND 何時做? 如何做? 手術有何complication?
- 一位外勞 circumcision後半年傷口都無法愈合，秀一張照片, 請問你要怎麼處理，要考慮什麼疾病？（切切切）請問penile cancer risk factors 為何? 秀pathological report, T1N2Mx, 請問下一步治療(chemotherapy)？請問chemotherapy regimen?

Figure 37-1. **A, Cutaneous horn with underlying well-differentiated squamous carcinoma. B, Buschke-Löwenstein tumor. C, Bowen disease involving penile shaft skin.**

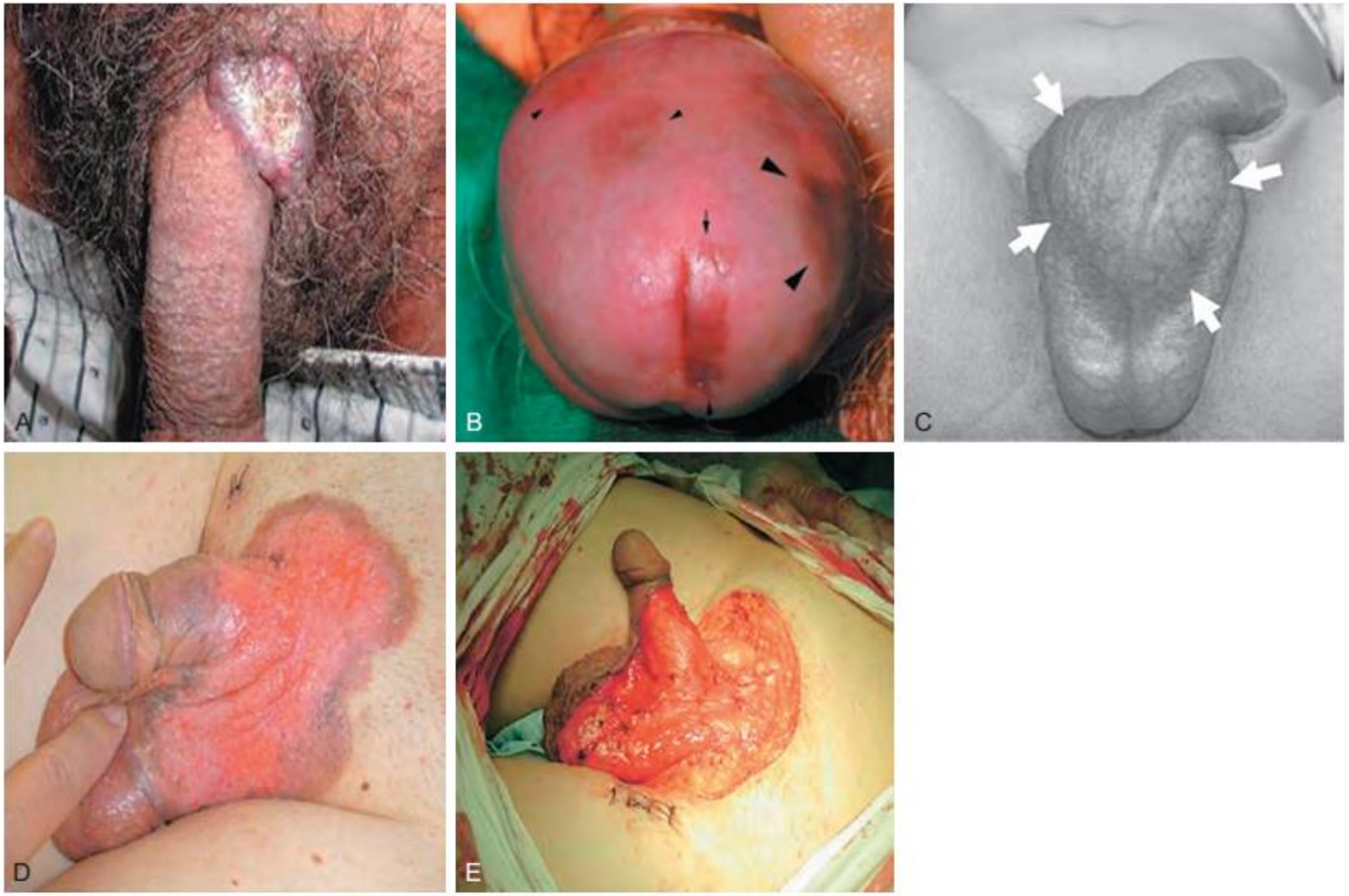


Figure 37-5. Clinical examination findings from non–squamous cell carcinomas involving the penis. A, Basel cell carcinoma. B, Melanoma. Note superficial spreading melanoma *(large arrowheads),* melanoma in situ *(arrow),* and two areas of possible melanosis *(small arrowheads).* C, Leiomyosarcoma *(arrows).* D, Paget disease. E, Paget disease after resection.

Anatomy

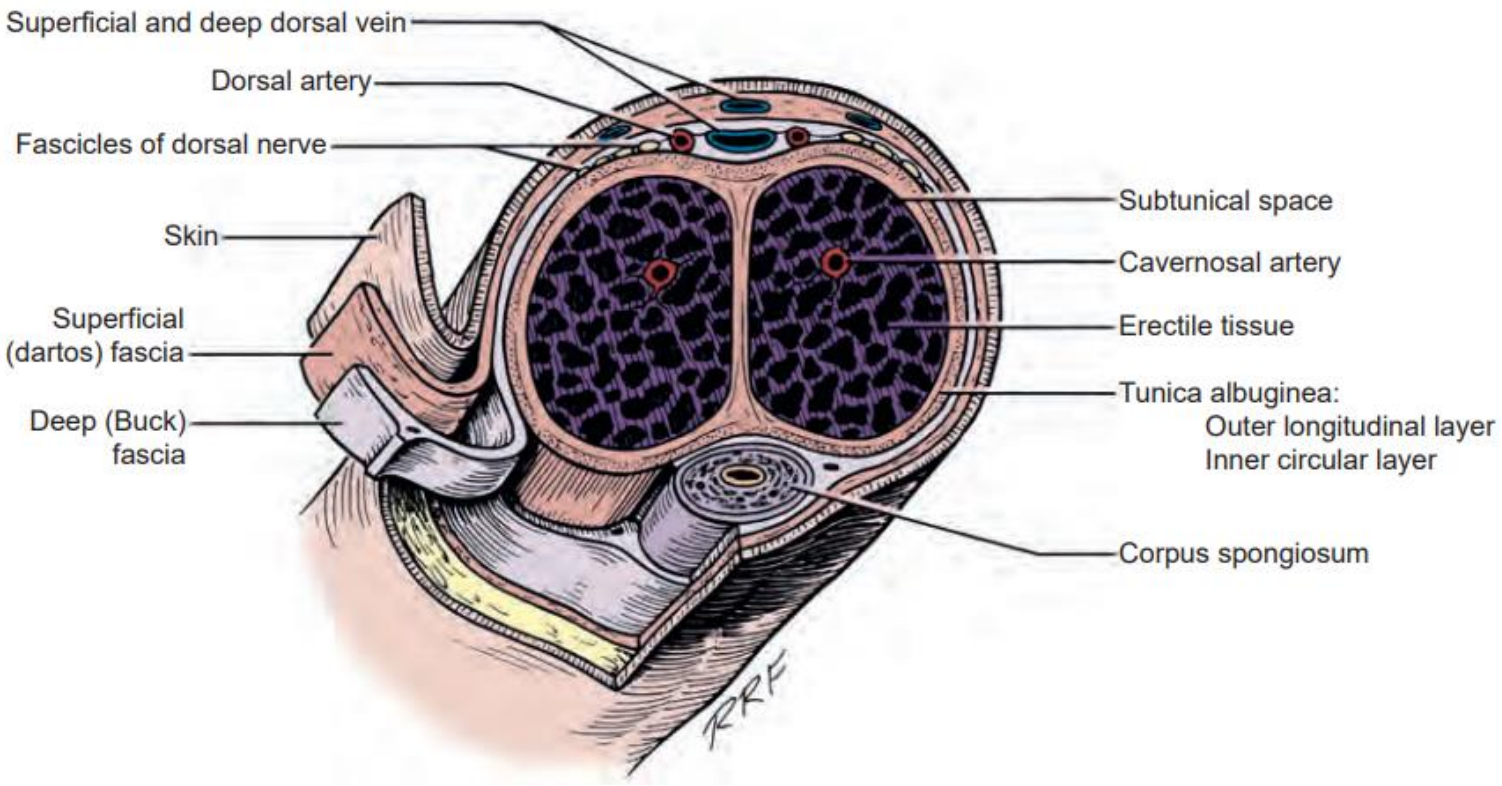


Figure 21-31. **Cross section of the penis, demonstrating the relationship between the corporal bodies, penile fascia, vessels, and nerves. (From Devine CJ Jr, Angermeier KW. Anatomy of the penis and male perineum. AUA Update Series 1994;13:10–23.)**

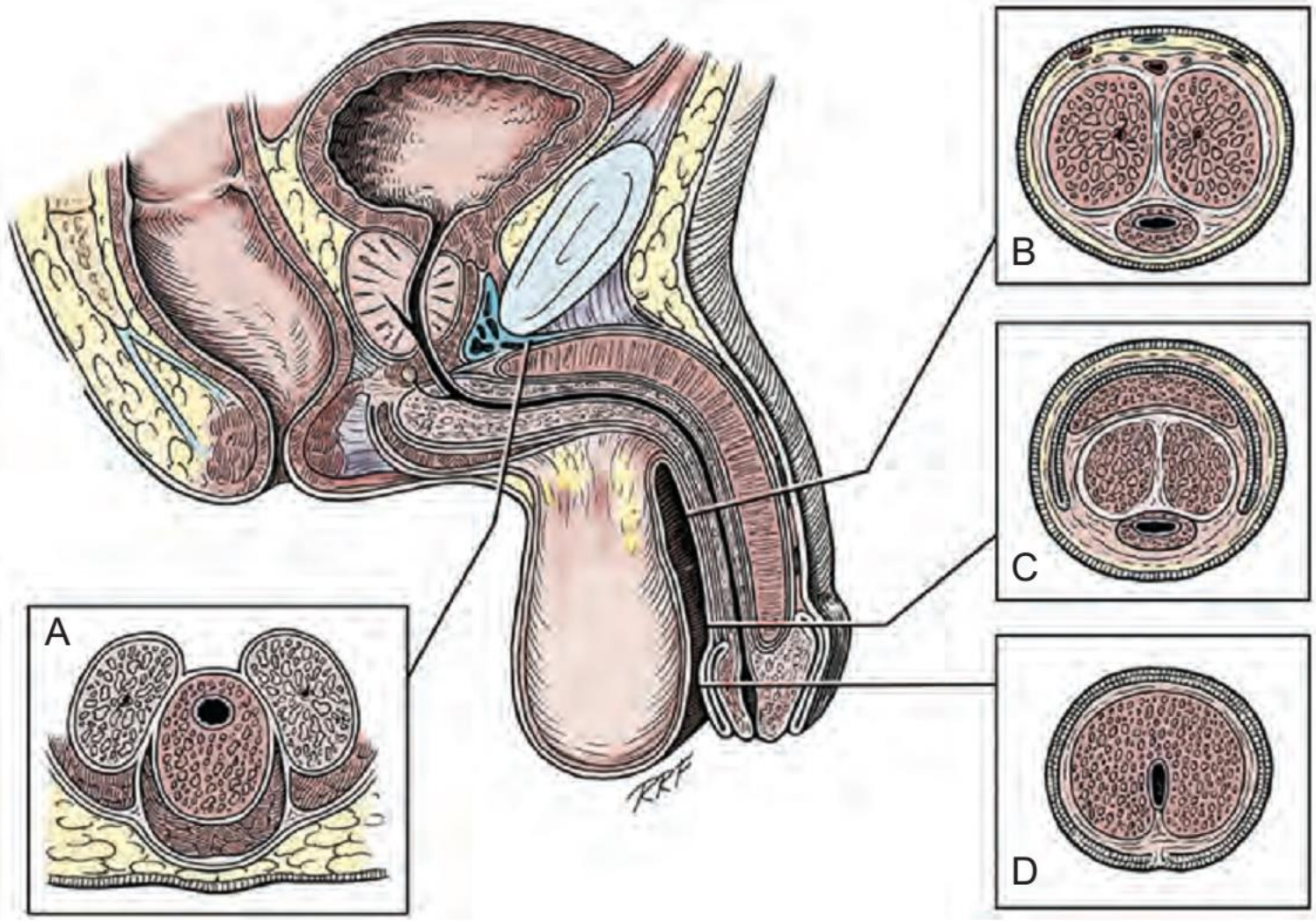


Figure 40-6. **Diagrammatic cross sections of the anterior urethra. A, The bulbous urethra. The**

Risk factors

- Incidence : 1/100,000 males in Europe and the USA
- phimosis, hygienic, sexual partner, HPV, smoking

Table 1: Recognised aetiological and epidemiological risk factors for penile cancer

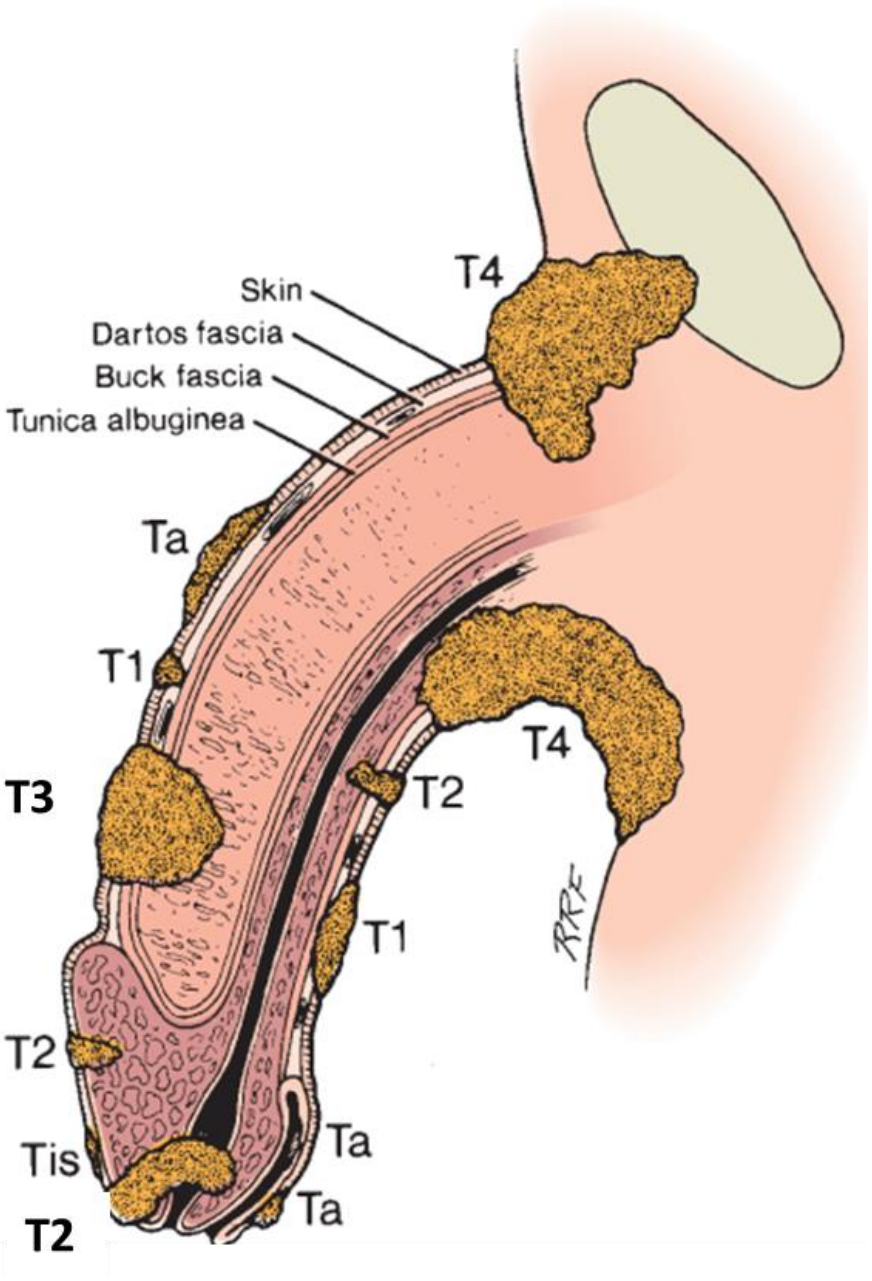
Risk factors	Relevance
Phimosis	Odds ratio 11-16 vs. no phimosis
Chronic penile inflammation (balanoposthitis related to phimosis), lichen sclerosus	Risk
Sporalene and ultraviolet A phototherapy for various dermatological conditions such as psoriasis	Incidence rate ratio 9.51 with > 250 treatments
Smoking	Five-fold increased risk (95% Confidence interval (CI): 2.0-10.1) vs. non-smokers
HPV infection, condylomata acuminate	22.4% in verrucous squamous cell carcinoma 36-66.3% in basaloid-warty
Rural areas, low socio-economic status, unmarried	
Multiple sexual partners, early age of first intercourse	Three to five-fold increased risk of penile cancer

Table 1: Histological subtypes of penile carcinomas, their frequency and outcome

Subtype	Frequency (% of cases)	Prognosis
Common squamous cell carcinoma (SCC)	48-65	Depends on location, stage and grade
Basaloid carcinoma	4-10	Poor prognosis, frequently early inguinal nodal metastasis [10]
Warty carcinoma	7-10	Good prognosis, metastasis rare
Verrucous carcinoma	3-8	Good prognosis, no metastasis
Papillary carcinoma	5-15	Good prognosis, metastasis rare
Sarcomatoid carcinoma	1-3	Very poor prognosis, early vascular metastasis
Mixed carcinoma	9-10	Heterogeneous group
Pseudohyperplastic carcinoma	< 1	Foreskin, related to lichen sclerosus, good prognosis, metastasis not reported
Carcinoma cuniculatum	< 1	Variant of verrucous carcinoma, good prognosis, metastasis not reported
Pseudoglandular carcinoma	< 1	High-grade carcinoma, early metastasis, poor prognosis
Warty-basaloid carcinoma	9-14	Poor prognosis, high metastatic potential [11] (higher than in warty, lower than in basaloid SCC)
Adenosquamous carcinoma	< 1	Central and peri-meatal glans, high-grade carcinoma, high metastatic potential but low mortality
Mucoepidermoid carcinoma	< 1	Highly aggressive, poor prognosis
Clear cell variant of penile carcinoma	1-2	Exceedingly rare, associated with human papilloma virus, aggressive, early metastasis, poor prognosis, outcome is lesion-dependent, frequent lymphatic metastasis [12]

Table 9: 2016 TNM clinical and pathological classification of penile cancer [51]

Clinical classification	
T - Primary Tumour	
TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
Tis	Carcinoma *in situ*
Ta	Non-invasive verrucous carcinoma*
T1	Tumour invades subepithelial connective tissue
T1a	Tumour invades subepithelial connective tissue without lymphovascular invasion and is not poorly differentiated
T1b	Tumour invades subepithelial connective tissue with lymphovascular invasion or is poorly differentiated
T2	Tumour invades corpus spongiosum with or without invasion of the urethra
T3	Tumour invades corpus cavernosum with or without invasion of the urethra
T4	Tumour invades other adjacent structures
N - Regional Lymph Nodes	
NX	Regional lymph nodes cannot be assessed
N0	No palpable or visibly enlarged inguinal lymph nodes
N1	Palpable mobile unilateral inguinal lymph node
N2	Palpable mobile multiple or bilateral inguinal lymph nodes
N3	Fixed inguinal nodal mass *or* pelvic lymphadenopathy, unilateral or bilateral
M - Distant Metastasis	
M0	No distant metastasis
M1	Distant metastasis
Pathological classification	
The pT categories correspond to the clinical T categories. The pN categories are based upon biopsy or surgical excision	
pN - Regional Lymph Nodes	
pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis in one or two inguinal lymph nodes
pN2	Metastasis in more than two unilateral inguinal nodes or bilateral inguinal lymph nodes
pN3	Metastasis in pelvic lymph node(s), unilateral *or* bilateral extranodal or extension of regional lymph node metastasis
pM - Distant Metastasis	
pM1	Distant metastasis microscopically confirmed
G - Histopathological Grading	
GX	Grade of differentiation cannot be assessed
G1	Well differentiated
G2	Moderately differentiated
G3	Poorly differentiated
G4	Undifferentiated


Skin
Dartos fascia
Buck fascia
Tunica albuginea
T4
Ta
T1
T3
T4
T2
T1
T2
Tis
Ta
Ta
T2

Diagnosis

- Penile biopsy (prefer excisional biopsy)
- Primary lesion : PE為主，US & MRI with artificial erection可評估深度
- LN: inguinal 以PE為gold standard
- Non-palpable LN(25% LN mets): invasive lymph node staging in intermediate- and high-risk patients;
- Palpable LN: 加做pelvic CT或PET/CT
- Metastasis: 若N+ 加abdomino-pelvic CT & CXR ; bone scan for症狀或多處轉移

6.1.6 *Guidelines for stage-dependent local treatment of penile carcinoma*

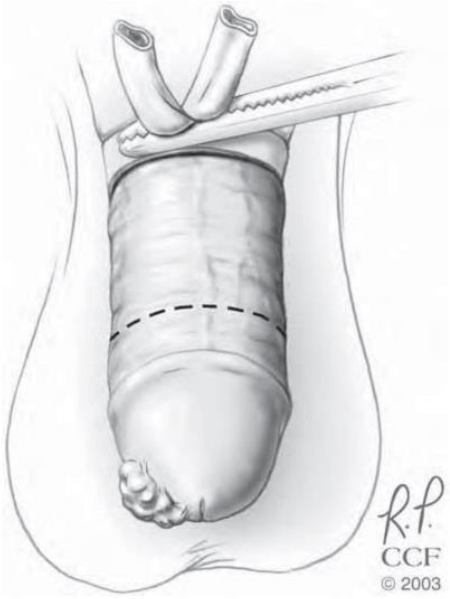
Primary tumour	Use organ-preserving treatment whenever possible	Strength rating
Tis	Topical treatment with 5-fluorouracil (5-FU) or imiquimod for superficial lesions with or without photodynamic control.	Strong
	Laser ablation with carbon dioxide (CO_2) or neodymium:yttrium-aluminium-garnet (Nd:YAG) laser.	
	Glans resurfacing.	
Ta, T1a (G1, G2)	Wide local excision with circumcision, CO_2 or Nd:YAG laser with circumcision.	Strong
	Laser ablation with CO_2 or Nd:YAG laser.	
	Glans resurfacing.	
	Glansectomy with reconstruction.	
	Radiotherapy for lesions < 4 cm.	

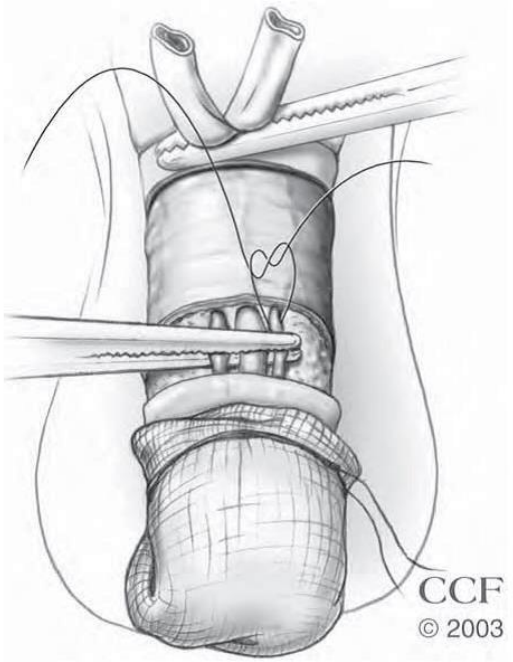
T1b (G3) and T2	Wide local excision plus reconstruction.	Strong
	Glansectomy with circumcision and reconstruction.	
	Radiotherapy for lesions < 4 cm in diameter.	
T3	Partial amputation with reconstruction or radiotherapy for lesions < 4 cm in diameter.	Strong
T3 with invasion of the urethra	Partial penectomy or total penectomy with perineal urethrostomy.	Strong
T4	Neoadjuvant chemotherapy followed by surgery in responders or palliative radiotherapy.	Weak
Local recurrence	Salvage surgery with penis-sparing in small recurrences or partial amputation.	Weak
	Large or high-stage recurrence: partial or total amputation.	

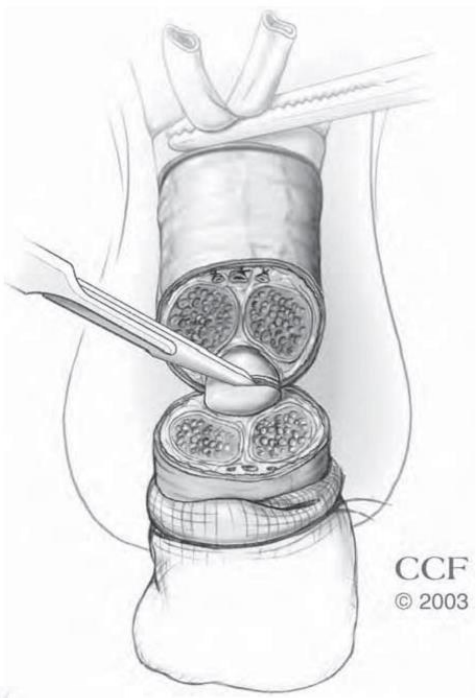
Recommendations for treatment strategies for nodal metastases		
Regional lymph nodes	**Management of regional lymph nodes is fundamental in the treatment of penile cancer**	**Strength rating**
No palpable inguinal nodes (cN0)	Tis, Ta G1, T1G1: surveillance.	Strong
	> T1G2: invasive lymph node staging by either bilateral modified inguinal lymphadenectomy or dynamic sentinel node biopsy.	Strong
Palpable inguinal nodes (cN1/cN2)	Radical inguinal lymphadenectomy.	Strong
Fixed inguinal lymph nodes (cN3)	Neoadjuvant chemotherapy followed by radical inguinal lymphadenectomy in responders.	Weak
Pelvic lymph nodes	Ipsilateral pelvic lymphadenectomy if two or more inguinal nodes are involved on one side (pN2) or if extracapsular nodal metastasis (pN3) reported.	Strong
Adjuvant chemotherapy	In pN2/pN3 patients after radical lymphadenectomy.	Strong
Radiotherapy	Not recommended for nodal disease except as a palliative option.	Strong

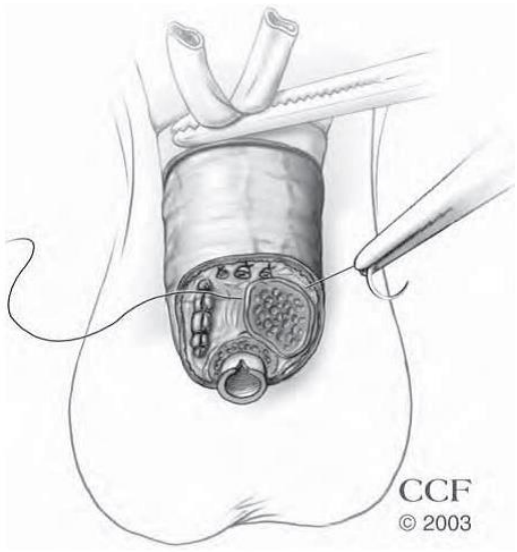
- Non-palpable:
  - low risk-> surveillance ;
  - high risk(>T1G2)->modified ILND or DSNB
- cN1& 2: ILND
- cN3: neoadjuvant +ILND
- 同側超過2個或extranodal extension就清pelvic LN
- Chemotherapy:
  - Neoadjuvant: 4 course of cisplatin- and taxane-based regimen
  - Adjuvant: 3~4 of cisplatin, taxane and 5-fluorouracil or ifosfamide

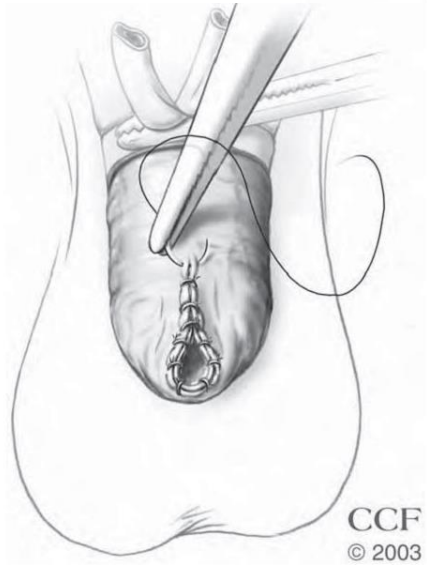
Partial penectomy







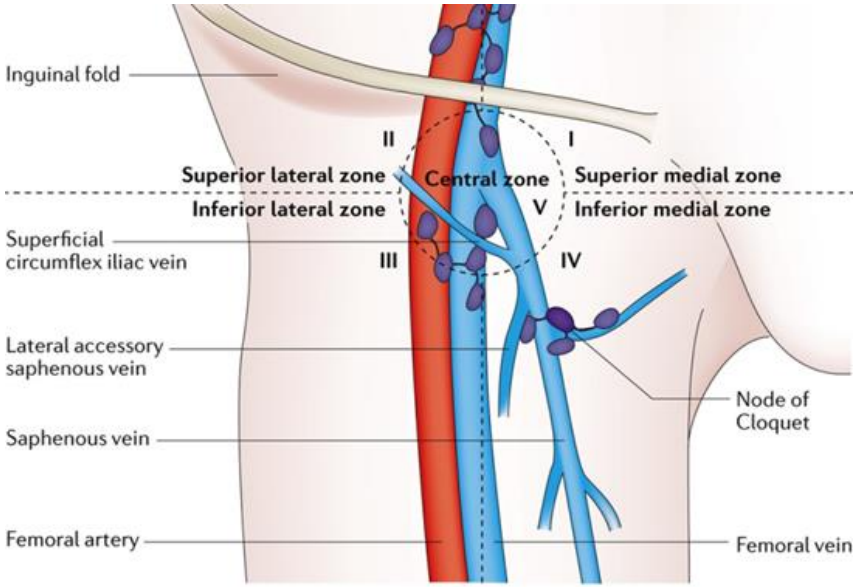




Invasive nodal staging

- dynamic sentinel-node biopsy (DSNB)
  - Technetium-99m (99mTc) nanocolloid is injected around the penile cancer site on the day before surgery often combined with patent blue. A gamma-ray probe is used intra-operatively to detect the sentinel nodes, which is possible in 97% of cases.

- modified inguinal lymphadenectomy (mILND)
  - medial superficial inguinal lymph nodes and those from the central zone are removed bilaterally, leaving the greater saphenous vein untouched



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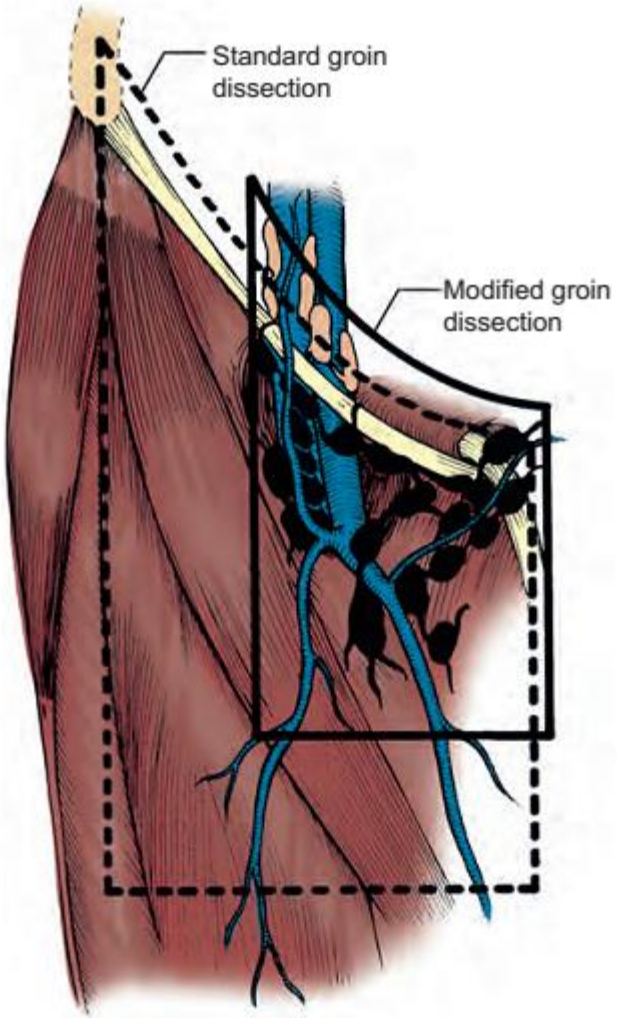

Figure 39-6. Limits of standard and modified groin dissection. (From Colberg JW, Andriole GL, Catalona WJ. Long-term follow-up of men undergoing modified inguinal lymphadenectomy for carcinoma of the penis. Br J Urol 1997;79:54–7.)

Inguinal lymph node dissection

TABLE 37-6 Lymphadenectomy Complications in Four Surgical Series

	JOHNSON AND LO (1984b)	RAVI (1993b)	ORNELLAS ET AL (1994)	BEVAN-THOMAS ET AL (2002)
No. of dissections	101	405	200	106
Period	1948-1983	1962-1990	1972-1987	1989-1998
COMPLICATIONS (%)				
Skin edge necrosis	50	62	45	8*
Lymphedema	50	27	23	23†
Wound infection	14	17	15‡	10
Seroma formation	16	7	6	10
Death	0	1.3	Not stated	1.8

*Significantly lower than in the three other reported series (all $P = .0001$).
†Significantly lower than in the series of Johnson and Lo ($P = .0001$).
‡Incidence among 85 lymphadenectomies performed by Gibson-type incision.
From Bevan-Thomas R, Slaton JW, Pettaway CA. Contemporary morbidity from lymphadenectomy for penile squamous cell carcinoma: the MD Anderson Cancer Center experience. J Urol 2002;167:1638–42.

Endoscopic and Robotic Inguinal Lymphadenectomy

- there is evidence to suggest that the morbidity of an endoscopic inguinal lymph node dissection is lower than previously reported for open contemporary series with a similar number of nodes being harvested.

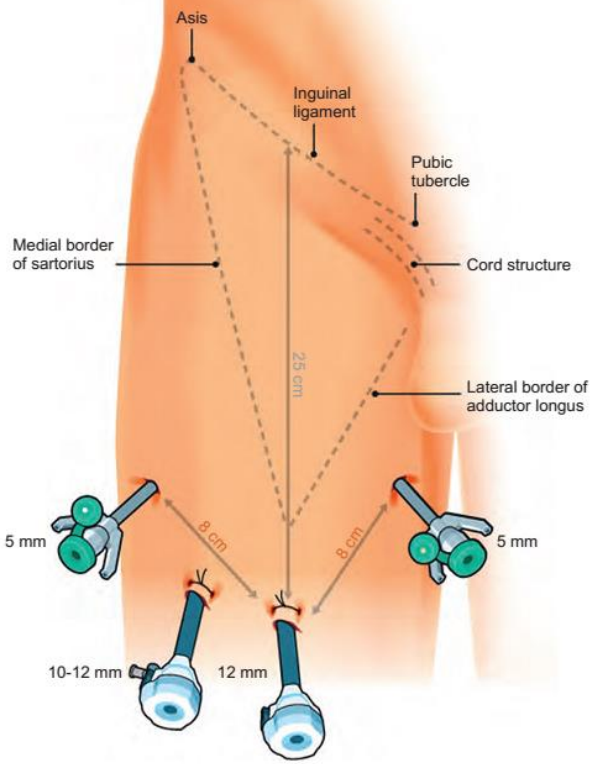

Figure 39-11. **Landmarks and trocar placement for right inguinal node dissection.**

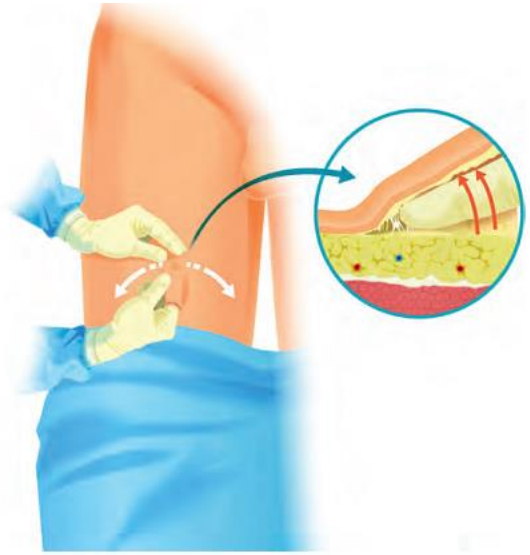

Figure 39-13. **Sweeping finger dissection dissects the potential space beneath Scarpa fascia to develop the skin flaps at the apex of the triangle.**

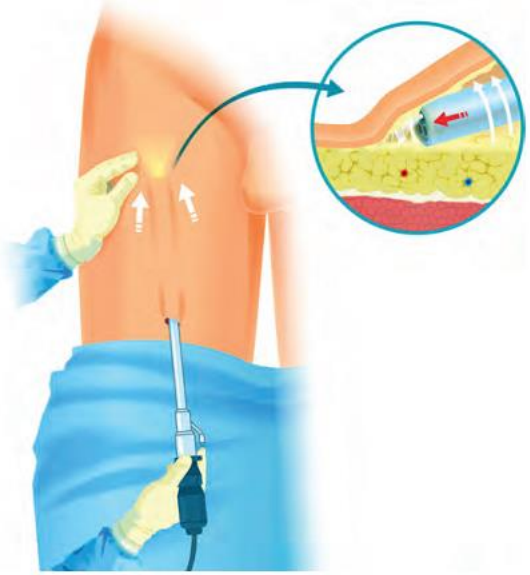

Figure 39-14. **The subcutaneous workspace is extended with the endoscope by sweeping with the lens.**

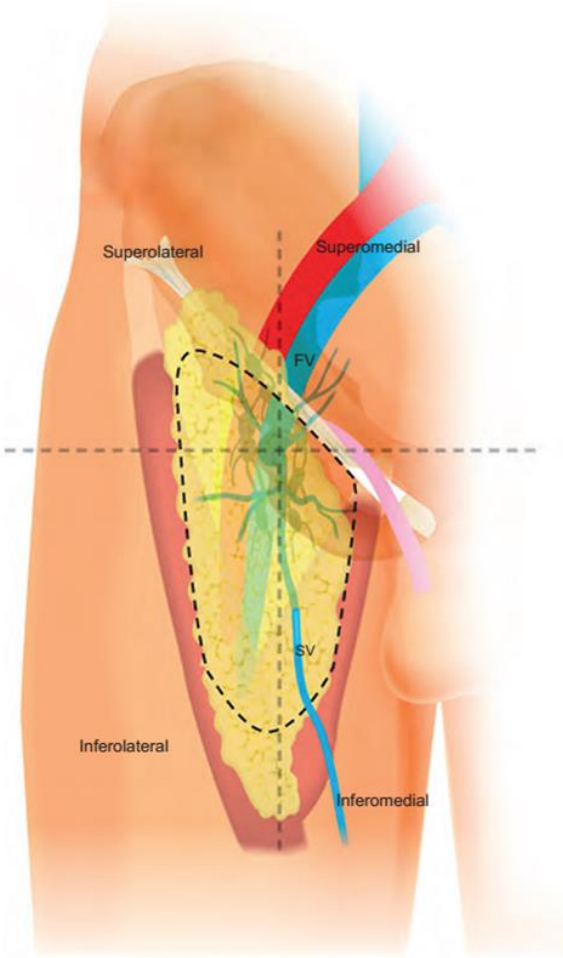

Figure 39-16. **Boundaries of the inguinal node dissection. FV, femoral vein; SV, saphenous vein.**

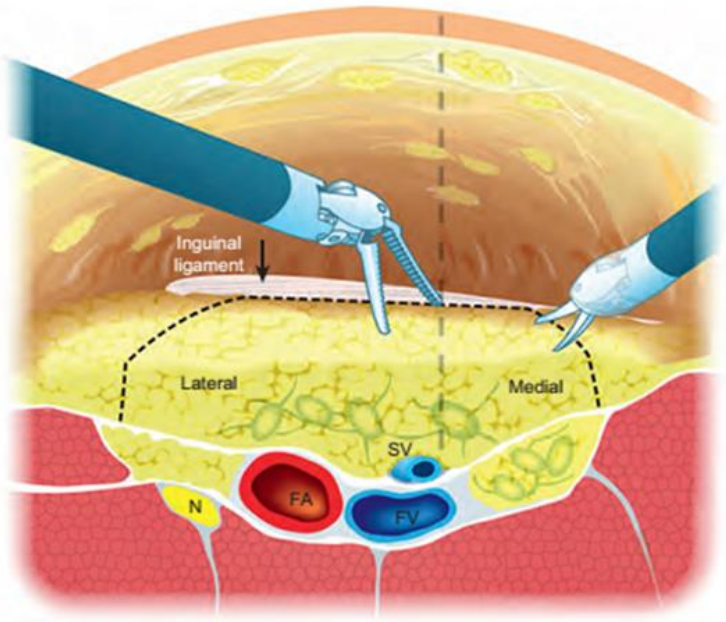

Figure 39-15. A superficial subcutaneous space is created under Scarpa fascia. FA, femoral artery; FV, femoral vein; N, femoral nerve; SV, saphenous vein.

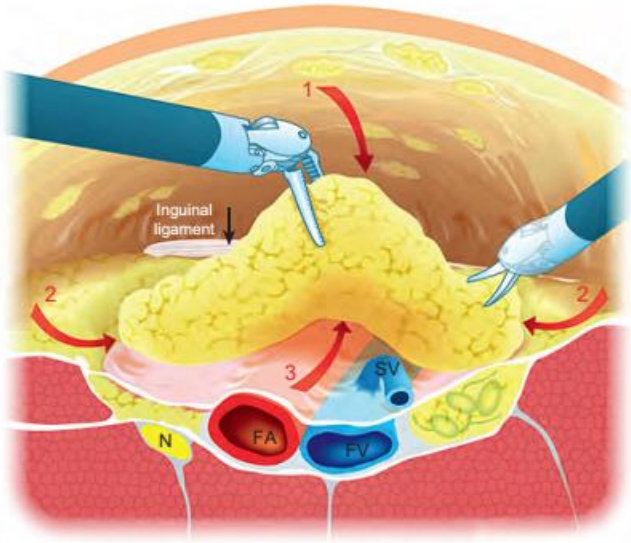

Figure 39-17. Steps in dissection of the nodal tissue; see corresponding text. FA, femoral artery; FV, femoral vein; N, femoral nerve; SV, saphenous vein.

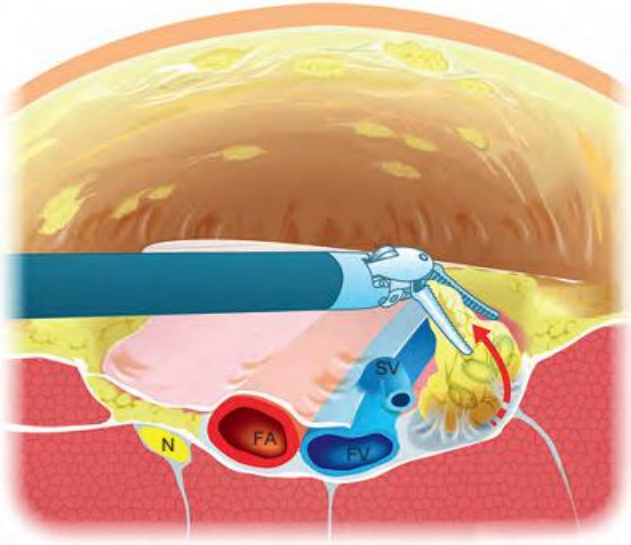

Figure 39-18. Resection of the deep inguinal nodes. FA, femoral artery; FV, femoral vein; N, femoral nerve; SV, saphenous vein.

Chemotherapy

TABLE 37-12 Safety and Efficacy of Multidrug Penile Cancer Regimens without Bleomycin

	CHEMOTHERAPY	RESPONSE RATE	TREATMENT-RELATED DEATH	MEDIAN OVERALL SURVIVAL (mo)
Di Lorenzo et al, 2012*	Fluorouracil, 800-1000 mg/m^2/day, days 1-4 Continuous infusion cisplatin, 70-80 mg/m^2, day 1; cycle q3wk	32%	0/25	8
Pagliaro et al, 2010	Paclitaxel, 175 mg/m^2, day 1 Ifosfamide, 1200 mg/m^2, days 1-3 Cisplatin, 25 mg/m^2, days 1-3; cycle q3wk	50%	0/30	17.1†
Theodore et al, 2008	Irinotecan, 60 mg/m^2, days 1, 8, 15 Cisplatin, 80 mg/m^2, day 1; cycle q4wk	30.8%	0/28	4.7
Nicholson et al, 2013	Docetaxel, 75 mg/m^2, day 1 Cisplatin, 60 mg/m^2, day 1 Fluorouracil, 750 mg/m^2/day, days 1-5; cycle q3wk	38.5%	0/28	13.9

*Retrospective study.
†Neoadjuvant setting (N2-3, M0).

References

- EAU Guidelines on Penile Cancer (2022)
- Campbell-Walsh Urology - 11th Edition, Chapter 37 Tumors of the penis, Chapter 39 and 40
- Operative Urology, Chapter 42

Thank you!