Penile Cancer – Lymph Node Management

Based on EAU Guidelines 2024/2025

Importance of Lymph Node Management

- Nodal status is the single most important prognostic factor in penile cancer.
- Early detection and surgical treatment significantly improve overall survival rates.
- Delays in diagnosis or treatment are strongly associated with worse oncological outcomes.
- Patients with nodal metastases have a 5-year survival of 27–65%, compared to >85% in node-negative cases.

References: Horenblas S, J Urol, 1993; Graafland NM, J Urol, 2011

Management of cNo Patients (Non-palpable LN)

- Low-risk disease (pTis, Ta, T1a G1): surveillance is sufficient.
- Intermediate/high-risk disease (≥ pT1b or G2/G3): staging is mandatory.
- Preferred staging method: Dynamic Sentinel Node Biopsy (DSNB).
- Alternative method: Modified Inguinal Lymph Node Dissection (mILND).
- Both methods aim to detect micro-metastases that are not clinically evident.

References: Leijte JA, Eur Urol, 2007; Graafland NM, BJU Int, 2010

Management of cN+ Patients (Palpable LN)

- All patients with palpable lymph nodes require surgical exploration.
- Unilateral palpable LN → ipsilateral radical inguinal lymph node dissection (ILND).
- Bilateral palpable LN → bilateral ILND.
- ILND should not be delayed due to risk of disease progression.

References: Horenblas S, J Urol, 1993; Protzel C, Eur Urol, 2009

Surgical Techniques in LN Dissection

- Standard ILND: removal of both superficial and deep inguinal lymph nodes.
- Modified ILND: limited dissection designed to reduce morbidity while providing accurate staging.
- Pelvic Lymph Node Dissection (PLND): indicated if ≥ 2 positive inguinal nodes or extranodal extension.
- Complications include wound breakdown, lymphedema, and infection; minimized by experienced surgeons.

References: Protzel C, Eur Urol, 2009

Advanced Disease and Neoadjuvant Therapy

- Patients with bulky, fixed, or bilateral nodes (cN3) are poor candidates for upfront surgery.
- Recommended approach: Neoadjuvant chemotherapy with TIP regimen (Paclitaxel, Ifosfamide, Cisplatin).
- Response rates to chemotherapy ~50%; responders may undergo consolidative ILND ± PLND.
- Non-responders typically have poor prognosis and may require palliative approaches.

References: Pagliaro LC, J Clin Oncol, 2010

Follow-up after LN Dissection

- Close follow-up is critical due to high recurrence risk.
- Clinical examination every 3–6 months for the first 2 years, then annually.
- Imaging (CT/MRI/PET-CT) as indicated based on stage and recurrence risk.
- Early detection of recurrence improves chances for curative salvage treatment.

References: Graafland NM, J Urol, 2011

Summary

- Lymph node management is crucial for survival in penile cancer.
- DSNB is the gold standard for staging cNo patients at intermediate/high risk.
- Radical ILND is mandatory for cN+ patients.
- PLND is reserved for patients with ≥2 positive inguinal nodes or extranodal extension.
- Neoadjuvant chemotherapy (TIP) is essential in advanced nodal disease.
- Management should be centralized in expert centers to minimize morbidity and maximize survival outcomes.

References: Solsona E, Eur Urol, 2001

References

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