

Surgical Management of Penile Buschke-Löwenstein Tumor: Case Report

Abdoul-Rahamane Binaté^{1*}, Evrard Kouamé Yao^{1,2}, Donafologo Daouda Yéo^{1,2},
Tawakaltu Bolassadé Adébayo^{1,2}, Nzibla Marie-Ange Yebouet¹,
Légnima Sekou Michel Tuo^{1,2}, Noel Coulibaly^{1,2}

¹Department of Urology, Treichville University Hospital, Abidjan, Ivory Coast

²Department of Surgery and Specialties, University of Felix Houphouët Boigny, Abidjan, Ivory Coast

Email: *abdoulrahamanebinaté13@gmail.com

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Abstract

Introduction: Buschke-Löwenstein tumor (BLT), also known as giant condyloma acuminatum, is a rare anogenital lesion predominantly linked to human papillomavirus (HPV) types 6 and 11. Although histologically benign, it demonstrates locally aggressive behavior with a high risk of recurrence and potential malignant transformation. **Case Report:** We describe a 62-year-old man with a large verrucous penile tumor evolving over 10 years in the context of poor hygiene. Clinical examination revealed a 10 cm exophytic, papillomatous, cauliflower-like lesion that was foul-smelling and painless. Histology confirmed a giant condyloma acuminatum without invasive malignancy. Wide surgical excision was performed with preservation of the corpora cavernosa, followed by reconstruction using a pedicled suprapubic skin flap. Definitive histopathology confirmed BLT without squamous cell carcinoma or malignant transformation. Postoperative recovery was favorable, with no recurrence after 12 months of follow-up. **Conclusion:** Penile BLT is a rare entity best managed by complete surgical excision when feasible. Comprehensive histological evaluation of the specimen is crucial to exclude focal malignant transformation. Reconstructive techniques provide effective coverage after extensive excision, and long-term clinical surveillance remains essential due to the risk of recurrence.

Keywords

Buschke-Löwenstein Tumor, Penis, Flap

1. Introduction

Buschke-Löwenstein tumor (BLT), or giant condyloma acuminatum (GCA), is a

rare anogenital lesion associated with chronic infection by human papillomavirus (HPV), mainly genotypes 6 and 11 [1]. Its incidence is estimated at less than 0.1% in the general population, with a male predominance [2]. Although histologically benign, this tumor is characterized by slow growth, locally aggressive behavior, and a high recurrence potential [3]. BLT must be distinguished from verrucous carcinoma, as both lesions may share clinical and histopathological similarities, and its classification has long been controversial [4]. Transformation into invasive squamous cell carcinoma or verrucous carcinoma may occasionally occur, warranting thorough histopathological analysis of the lesion and excised specimen [3] [4]. The most frequent sites are ano-perineal and urogenital, while isolated penile involvement remains rare [5]. Optimal treatment is not standardized due to the rarity of this condition. Nevertheless, complete surgical excision with clear margins is the preferred approach for large, locally aggressive forms [6]. Following extensive excision, reconstructive techniques may be required to ensure adequate coverage of tissue defects while preserving urinary and sexual function. We report the case of a giant penile BLT treated by wide surgical excision with preservation of the corpora cavernosa and reconstruction using a pedicled suprapubic skin flap.

2. Case Report

We present the case of a 62-year-old man with no significant medical history, poor personal hygiene, and no history of multiple sexual partners. He was referred to dermatology department for management of a penile tumor evolving for approximately 10 years. Clinical examination revealed a large exophytic mass on the dorsal surface of the penis and suprapubic region, measuring about 10 cm in its longest axis. The lesion was verrucous and papillomatous, cauliflower-like, composed of multiple confluent lobules, foul-smelling, and painless. The tumor surface was irregular, hyperkeratotic, fissured, with grayish-brown areas alternating with pinkish patches. The perilesional skin was hyperpigmented. No preoperative imaging was performed, as clinical examination showed no urethral involvement, no deep extension, and no suspicious inguinal lymphadenopathy (**Figure 1**). Serologies for HIV, syphilis, and hepatitis B and C were negative. Histological study of a preoperative biopsy revealed a markedly exophytic hyperplastic epidermis with a festooned surface and focal parakeratosis. Vacuolated keratinocytes contained numerous koilocytes, indicating HPV cytopathic effect. The stroma was richly vascularized with an interstitial inflammatory infiltrate composed of lymphocytes, histiocytes, and some neutrophils (**Figure 2**). Given the local extension of the lesion, wide surgical excision was performed, removing all macroscopically infiltrated tissue while preserving the corpora cavernosa. The procedure was technically challenging due to the marked hypervascularization of the tumor (**Figure 3**). After complete excision, a large tissue defect of the dorsal penile surface and suprapubic region was observed. A pedicled suprapubic skin flap was designed according to the defect size. The flap was raised while preserving its vascular base, namely the superficial epigastric artery, and mobilized to cover the defect. Attention was paid to

maintaining flap vascularization.

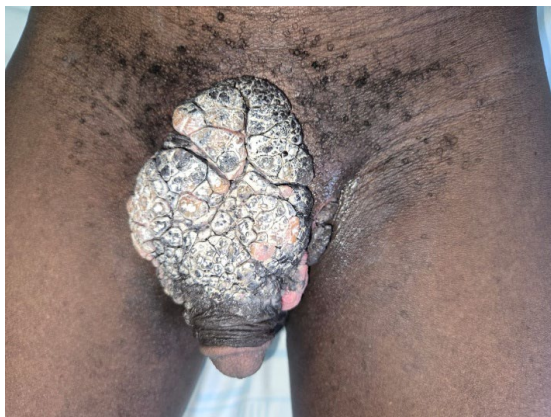


Figure 1. Cauliflower-like tumor located on the dorsal surface of the penis and the suprapubic region (frontal view).



Figure 2. Intraoperative view after complete excision of the tumor involving the dorsal surface of the penis and extending to the suprapubic region.

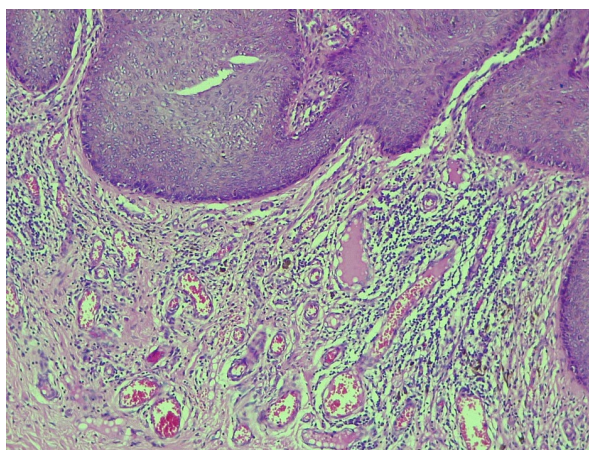


Figure 3. Histological section of a Buschke-Löwenstein tumor localized to the penis (H&E, $\times 100$).

The corpora cavernosa and urethra were preserved, and no urethral reconstruction was required. Definitive histopathological examination confirmed the diagnosis of BLT. No invasive squamous cell carcinoma or verrucous carcinoma was identified. No postoperative complications, including infection, urinary issues, or flap vascular compromise, were observed. The patient was reviewed at 2 weeks, 1 month, 3 months, 6 months, and 12 months postoperatively. Functionally, he was satisfied: micturition was normal, erectile function and penile sensitivity were preserved. At 12 months, clinical examination showed no local recurrence or suspicious inguinal lymphadenopathy (**Figure 4**).



Figure 4. Outcome one month after surgery.

3. Discussion

First described by Abraham Buschke and Ludwig Löwenstein in 1925, BLT differs from classical condylomas by its infiltrative nature, extensive growth, and malignant potential [6]. Several risk factors have been associated with BLT, including immunosuppression, smoking, poor hygiene, sexually transmitted infections, and delayed diagnosis [2] [7]. In our case, the chronicity of the lesion combined with poor hygiene likely favored tumor progression. Diagnostic delay, frequently reported in resource-limited settings, may span several years before specialized consultation [3]. Clinically, BLT typically presents as a large exophytic papillomatous mass with an irregular cauliflower-like surface, often malodorous and locally destructive [6]. Isolated penile localization remains uncommon compared to anoperineal forms [5]. Diagnosis relies primarily on histopathology. Key microscopic features include marked epithelial hyperplasia, pronounced papillomatosis, hyperkeratosis, and koilocytes reflecting HPV cytopathic effect [1]. However, super-

ficial biopsies may miss focal malignant degeneration, justifying multiple deep samples before therapeutic planning. Wide surgical excision with clear margins remains the gold standard [6], offering better local control and reducing recurrence risk. In our case, conservative surgery with preservation of the corpora cavernosa was feasible despite the tumor's size. Reconstructive techniques are essential after extensive excision. Reported methods include skin grafts, local flaps, and pedicled flaps [6] [8]. In our case, a pedicled suprapubic flap provided satisfactory coverage, preserved urinary function, and yielded acceptable cosmetic results. Other therapeutic modalities for BLT include topical agents such as imiquimod and podophyllotoxin, cryotherapy, electrosurgery, and CO₂ laser therapy. Additional options include interferon, radiotherapy, or chemotherapy [6] [9]. Despite adequate treatment, recurrence rates remain high, ranging from 30% to 60% in recent series [3] [6]. Long-term clinical surveillance is therefore mandatory. In our case, no recurrence was observed after 12 months of follow-up.

Prevention relies mainly on HPV vaccination, early treatment of condylomas, and improved genital hygiene.

4. Conclusion

Penile BLT is a rare condition with significant local destructive and recurrent potential. Early diagnosis and wide surgical excision remain the cornerstones of management. Reconstructive techniques allow satisfactory functional and aesthetic outcomes. Long-term surveillance is essential due to the high risk of recurrence and malignant transformation.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and associated clinical photographs.

Ethical Considerations

Institutional ethics committee approval was obtained prior to publication of this case report.

Author Contributions

Abdoul-Rahamane Binaté: Manuscript writing, literature review, surgical management and patient follow-up. Evrard Kouame Yao: Surgical management and patient follow-up. Donafologo Daouda Yéo: Surgical management and patient follow-up. Tawakaltu Bolassadé Adébayo: Analysis and interpretation of the results. Nzibla Marie-Ange Yebouet: Literature review, collection of clinical data and imaging. Légnima Sekou Michel Tuo: Analysis and interpretation of the results. Noel Coulibaly: Supervision and final approval.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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