Videoendoscopic inguinal lymphadenectomy in penile cancer: technical aspects


ABSTRACT

Introduction: Squamous cell carcinoma of the penis is a rare pathology in Europe and North America and represents 0.4-0.6% of all neoplasms. The presence and extension of lymph node metastases is the most important prognostic factor; therefore lymphadenectomy is an important part of treatment and is curative in up to 75% of cases. The patient presented here had penis-invading squamous cell carcinoma and underwent circumcision for localization and then videoendoscopic inguinal lymphadenectomy.

Objective: To demonstrate technical aspects of videoendoscopic inguinal lymphadenectomy in penile cancer.

Case presentation: Patient is a sixty-nine-year-old man whose disease began with vegetative-type tumoral lesion on dorsal prepuce for which wide-resection circumcision was carried out. Histopathological report showed invasive squamous cell carcinoma (T1, N0, M0, G2) and videoendoscopic inguinal lymphadenectomy was then performed.

Conclusions: Videoendoscopic inguinal lymphadenectomy is a safe and feasible technique in cases of squamous cell carcinoma of the penis that can reduce postoperative morbidity.

Key words: Penile cancer, lymphadenectomy, endoscopy, Mexico.
INTRODUCTION

In Western countries penile squamous cell cancer is a rare pathology, with an incidence of < 1 per 100,000 men in Europe and North America and it represents 0.4-0.6% of all neoplasms.\(^1\) Squamous cell carcinoma makes up more than 95% of cases of penile cancer.\(^2\) Primary tumor and regional lymph nodes must be correctly staged in order to provide the most appropriate treatment.\(^3\) In some small series it has been shown that physical examination provides more reliable information than ultrasound study (US) for judging primary lesion infiltration into the corpus cavernosum, even though definitive staging is through histopathological evaluation.\(^4\) Primary lymphatic drainage in penile cancer is towards the inguinal lymph nodes. Lymphatic dissemination is reported to be related to tumor grade, local stage disease, and histological tumor type. The presence and extension of lymphatic metastasis is the most important prognostic factor and is localized in 28-64% of patients at the time of diagnosis, even though 47-85% of cases are confirmed. However, 25% of cases will have metastasis with no palpable lymph nodes.\(^5-6\) There is clearly a strong correlation between lymph node metastasis and tumor grade (G) (0-29% G1 vs 33-50% G3) and local stage (pT) (50-100% in pT3/pT4 and 50-70% in pT2). Unfortunately there is very little information on metastasis to the lymph nodes in pT1G2 penile cancer.\(^9\)\(^10\) Due to the fact that 5-year survival drops to under 50% from 65-75% when there is lymph node invasion, lymphadenectomy plays a very important role in treatment. It is curative in 75% of cases with 1-2 invaded lymph nodes and 20% in cases of pelvic invasion, thus bilateral ilioinguinal lymphadenectomy is the most effective treatment for eradicating lymph node metastases.\(^5\)\(^11\) Lymphadenectomy is a procedure that has a high level of morbidity and an attempt has been made to reduce morbidity but provide the same oncological results with the use of new videoendoscopic techniques.\(^12\)\(^14\) The present article is a review of the advantages of videoendoscopic surgery.

OBJECTIVE

To demonstrate technical aspects of videoendoscopic inguinal lymphadenectomy in penile cancer.

CASE PRESENTATION

Patient is a 69-year-old man born and living in Mexico City who is Catholic, married, and retired, and whose past medical history includes hemorrhoidectomy and 20-year progression of smoking. Present illness began with inability to retract prepuce, presence of 1.5 cm hard, vegetative, exophytic, ulcerated tumor of rapid growth with satellite ulcers located on the dorsal portion of the prepuce (Image 1). There were no palpable lymph nodes in the inguinal region. Wide-resection circumcision produced histopathological report of moderately differentiated subepithelial invading squamous cell carcinoma with tumor-free surgical margins (4 mm), located in prepuce with vascular permeability. According to Tumor, (Regional) Lymph Node, Distant Metastasis, Grade (TNMG) classification of the 2010 American Joint Committee on Cancer (AJCC), tumor was stage T1b, N0, M0, G2 and was categorized as intermediate risk as defined by the European Association of Urology (EAU). Modified videoendoscopic inguinal lymphadenectomy was carried out with no complications. Patient had good postoperative progression and was released after 5 days. On day 8 he presented with lymphocele that was drained and sclerosed and successfully resolved.

Procedure description: Patient was initially placed in decubitus supine position with thigh abduction (Image 2) and Daseler dissection zones I, IV, and V were marked as the principle objective (Image 3). The first 1-2 cm distal incision of the inferior vertex of the femoral triangle was carried out, elaborating a dissection plane at the fascia of Scarpa level, placing a 10 mm trocar and insufflating CO\(_2\) at 15 mmHg through it. The second and third incisions were made 5 cm proximal, medial, and lateral to the first incision, forming a triangle, and...
10 mm trocars were placed in them (Images 4A, 4B, and 4C). Videoendoscopic radical inguinal lymphadenectomy was carried out with the same principles as open technique, staying within anatomical landmarks: the long adductor muscle medially, the sartorius muscle laterally, and the inguinal ligament above, all of which were adequately visualized (Images 5 and 6). The saphenous vein was located and retrograde dissection of Daseler zones I, IV, and V was begun with Ligasure at the vertex of the femoral triangle moving towards the oval fossa. A proximal, distal clamp was placed on the saphenous vein and it was sectioned (Image 7). Lymph node groups were extracted and hemostasis was verified. Surgical margins and empty lymph node beds were observed (Image 8). Jackson-Pratt (JP) closed drain was placed. Surgery duration was 200 minutes with 50 cc blood loss. Patient had adequate postoperative progression, drain was removed and patient was released on fifth postoperative day. On eighth postoperative day patient presented with lymphocele that was drained and sclerosed with iodopovidone on 3 occasions and was successfully resolved.

■ DISCUSSION

Invasive penile squamous cell carcinoma is a pathology that has unfavorable prognosis in metastatic cases, and therefore treatment should be carried out as soon as possible. Surgical treatment is the cornerstone for curing patients with localized disease and with locoregional lymphatic dissemination. Surgical management is complex but early inguinal lymphadenectomy continues to be an integral part of treatment that improves patient prognosis. Its survival at 5 years is above 60%, and even in the presence of pelvic lymph node invasion, the same survival rate is achieved in 20% of patients. However, despite its being the recommended management, it is not without complications and reported morbidity is 24-87%. Complications include infection, flap necrosis,
wound dehiscence, lymphedema, or lymphocele, and procedure-related mortality is 1.3%. 10,11

In small series, Tobias-Machado M, Sotelo R, and Viraj Master recently described laparoscopic videoendoscopic inguinal lymphadenectomy developed for the purpose of reducing procedure-related morbidity while maintaining good oncological results. 12,13,15

Mean ideal number of lymph nodes obtained in superficial inguinal lymphadenectomy is 8-10; in radical inguinal lymphadenectomy it is 10-11; and the sum of lymph nodes in pelvic and inguinal lymphadenectomy is 22-25. 14 In the present case 8 lymph nodes were obtained and the only complication was lymphocele similar to that reported in the literature. This technique has a lower cutaneous complication risk, but a higher incidence of lymphocele (23%), when compared with open approach. It has an overall complication rate of 23%. 12,13

Image 5. Upper anatomical landmark: Inguinal ligament (black arrow).


Image 7. Retrograde dissection of Daseler zones going towards the oval fossa.
## CONCLUSIONS

Videoendoscopic inguinal lymphadenectomy is a safe and feasible technique in patients with invasive penile squamous cell carcinoma with palpable or non-palpable lymph nodes. Reported cases suggest that videoendoscopic inguinal lymphadenectomy can reduce postoperative morbidity without compromising oncological control. However, the number of lymph nodes obtained with this procedure appears to be less than that of open surgery and therefore patients must be carefully selected.

It is the present authors’ opinion that further studies should be carried out on a larger number of patients and should include long-term follow-up.

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**BIBLIOGRAPHY**