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The first leg video endoscopic groin lymphadenectomy in vulvar cancer: A case report



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ABSTRACT

INTRODUCTION: The current management of vulvar cancer depends on the extension of disease, and includes primary tumor resection with safety margin as well as inguino-femoral lymph node staging. We report the case of the first leg videoendoscopic inguinal lymphadenectomy performed in a woman with a squamous cell vulvar carcinoma.

PRESENTATION OF CASE: A 74 years old female referred to our institution complaining of vulvar mass associated with bleeding and swelling from external genitals, vaginal burning sensation and dysuria for 5 months. A vulvar–vaginal examination under narcosis reported a right major labium lesion of 5 cm with an irregular and ulcerated surface, easily bleeding on palpation, involving anteriorly the clitoral region and with a histological finding of a poorly differentiated squamous cell invasive carcinoma of the vulva ulcerating the surface epithelium. We performed, after adequate informed consent, a radical vulvectomy with a standard right inguino-femoral lymphadenectomy and a contralateral simultaneous video endoscopic inguinal lymphadenectomy–Leg procedure.

DISCUSSION: Our minimally invasive VEIL-Leg approach, performed for the first time in literature in a woman with vulvar cancer, could reduce the presence of high risk factors represented by surgical incision and by procedure-related complications, including wound infection and breakdown, hematoma, cellulitis and hernia formation.

CONCLUSION: A multicenter prospective randomized study will be helpful to clarify how this procedure could replace the standard laparotomic approach to inguinal lymphadenectomy in the vulvar cancer treatment and staging.

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1. Introduction

Vulvar cancer accounts for approximately 3–5% of all gynecological malignancies and the majority of cases are squamous cell carcinoma.^{1,2} Surgery is the cornerstone in the treatment of this cancer and prognosis is mostly linked to the presence of inguinal lymph node metastasis.^{3,4}

The current management of vulvar cancer depends on the extension of disease, and includes primary tumor resection with safety margin as well as inguino-femoral lymph node staging.⁵

In 2003 Bishoff et al. were first to report an endoscopic groin dissection in two cadavers and one patient,⁶ and many other studies later described a leg videoendoscopic technique (VEIL-Leg) in the treatment of cancers such the penile carcinoma or the melanoma.^{7–9}

Cui et al. described in 2013 the first endoscopic via hypogastric subcutaneous approach (VEIL-H) in vulvar cancer,¹⁰ with a technique substantially different from the leg procedure.

The aim of the present paper was exactly to report the case of the first videoendoscopic inguinal lymphadenectomy performed by our group in Italy on November 2013 in a woman with a squamous cell vulvar carcinoma.

2. Presentation of case

A 74 years old female referred to our Institution complaining of vulvar mass associated with bleeding and swelling from external genitals, vaginal burning sensation and dysuria for 5 months.

On recovery at our department blood exams revealed mild anemia but were negative for other abnormalities.

The patient was extremely in pain at gynecological examination and she was submitted to vulvar–vaginal examination under narcosis, which reported a right major labium lesion of 5 cm with an irregular and ulcerated surface, easily bleeding on palpation, involving anteriorly the clitoral region. Moreover, on the left major

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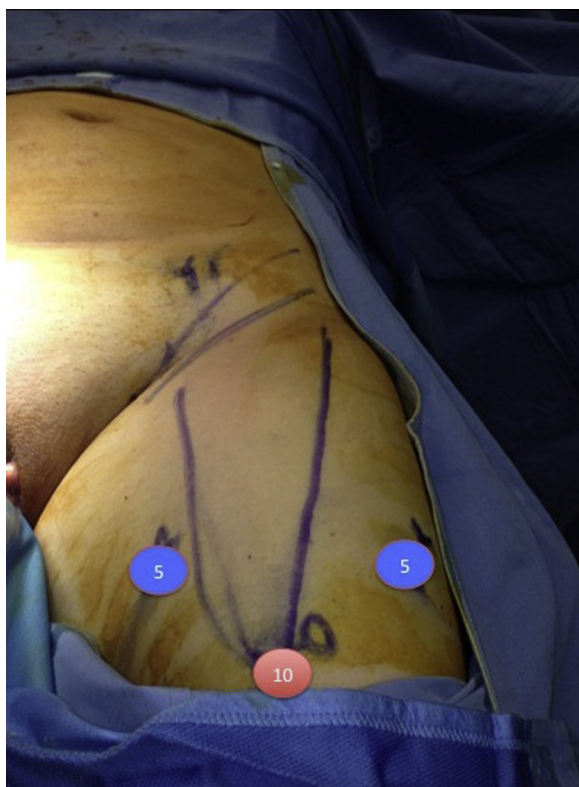


Fig. 1.

labium we observed an initial area of suspected metaplasia as for “kisses tumor”.

Multiple biopsies of the lesion and nearer tissues were performed with histological finding of a poorly differentiated squamous cell invasive carcinoma of the vulva ulcerating the surface epithelium, located on the right major labium.

The abdomen–pelvic computed tomography (CT) revealed an enlarged area in the right vulvovaginal wall and right inguinal enlarged lymph nodes measuring 2 cm in the largest diameter.

These findings, along with the microscopical features of the tumor, were supportive for an important extension of the disease (FIGO stage III).

After adequate counseling a surgical strategy was suggested. We proposed a radical vulvectomy with a standard right inguino-femoral lymphadenectomy and a contralateral simultaneous VEIL-Leg procedure. The novel nature of this procedure was discussed in detail with the patient and it was also specifically explained that, due to its novelty, some of the risks may not be clearly anticipated. A specific informed consent was signed by patient, after our local ethics committee approval.

In the surgery room, she was positioned in a split-leg table with the boundaries of the femoral triangle mapped out (Fig. 1). This marking was necessary for correct trocar placement as well as to aid in determining the extent of dissection.

The surgical procedure started with an excision of the vulvar lesion with an *en bloc* removal of a segment measuring 4.5 cm in length plus adjacent vulvar skin and with a right groin dissection.

The procedure was followed by an inguinal 15-French fully fluted drain placement.

For the left VEIL-Leg procedure, we proceeded modifying the previously described approach by Delman et al.⁸

The assistant stood on the outside of the operative limb and the surgeon in between the patient’s leg.

We practiced the first 15-mm incision about 2 cm distal to the apex of the femoral triangle. With a scalpel we incised the skin

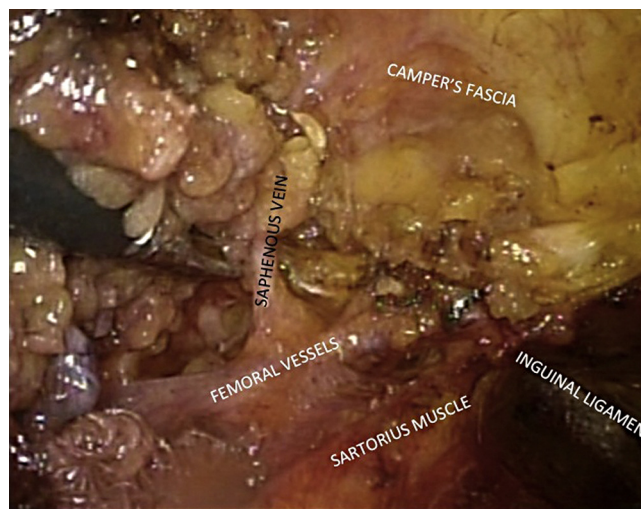


Fig. 2.

and Camper’s fascia to the Scarpa’s fascia. We, then, proceeded with a finger development of a 4–5 cm space on either side of our initial incision. Once enough space was created, we placed a 12-mm balloon port trocar in the original incision with a 10-mm 30° laparoscope. Patient pressure was set a 12 mmHg and no end-tidal transient CO₂ increase was observed. Two short bladeless trocars were then placed, about 5 cm from the port. In particular, a medial 5-mm and a lateral 10-mm trocars were placed almost 3 cm outside of the medial and lateral boundaries of the femoral triangle, respectively (Fig. 1).

Before additional dissections, we proceeded with the anterior working space development, raising the flaps as for an open procedure, between the fibrofatty packet containing the lymph nodes and the subcutaneous fat.

We then delimited the medial and lateral boundaries which were, respectively, the adductor longus and the sartorius muscle, by identifying the fascia of the respective muscles and transilluminating the established skin markings.

A medial and lateral blunt dissection was started using a rolled endoscopic sponger and was continued superiorly and inferiorly to define the posterior boundaries of the node packet. Small perforating vessels and lymph vessels are controlled with clips.

The saphenous vein along with the femoral vein and artery were visualized and spared, after a careful and accurate dissection (Fig. 2).

An exposure of the saphenofemoral junction was practiced, as previously described by Ames,¹¹ continuing inferomedial dissection around the femoral vein to obtain a complete deep inguinal nodes resection. The packet was placed into a laparoscopic specimen retrieval bag and withdrawn from the apical port.

No intraoperative complications occurred.

Finally, we placed a 15-French fully fluted drain through the medial port site and we closed the skin.

The bilateral drain outputs were <50 ml in the subsequent 24 h for site and were then removed on the VII day after surgery. The patient was discharged on the V day after surgery, without any complications during hospitalization.

Operative times were 40 min for the standard right groin lymphadenectomy and 120 min for the left VEIL-Leg.

Postoperatively, after 1 and 3 months follow-up, no genital edema, lymphocele or lymphedema were observed on both the groin sides.

Characteristically, the only complication was a minimal wound infection on the right groin, observed at 1 month follow up, treated

and resolved with local and oral antibiotic therapy. The 3 month follow up was regular.

3. Discussion

Inguinal lymphnode metastases are expected in 25–30% of vulvar cancer patients and, consequently, the majority of patients could be overtreated by radical groin lymphadenectomy.^{2,4,5}

However, some results indicated that a full inguinofemoral lymphadenectomy should be still considered the gold standard for clinically negative patients in whom sentinel node biopsy is not indicated.^{5–12}

The 5-year survival rate in patients with negative inguinal lymph nodes is 96% compared to 80% in patients with one or two positive nodes and 12% in patients with greater than two positive nodes.¹³ In the light of these results, the FIGO staging system was changed from a clinical system to a surgical staging system that requires surgical exploration of the groin nodes.^{14,15}

A crucial point of this surgery is that the inguinofemoral lymphadenectomy leads to significant morbidity and to procedure-related complications, including lymphedema, lymphocele, wound infection and breakdown, hematoma, cellulitis, and hernia formation.^{1,12,16}

In order to reduce these post-operative morbidities, the first report of an endoscopic groin dissection in two cadavers and one patient was proposed by Bishoff et al. in 2003,⁶ and many other studies later described this laparoscopic technique in the treatment of cancers such the penile carcinoma or the melanoma.^{7–9}

In 2013, Cui et al. reported a specific endoscopic via hypogastric subcutaneous approach (VEIL-H) in vulvar cancer,¹⁰ with a technique substantially different from the leg videoendoscopic inguinal lymphadenectomy procedure reported in our paper.

Based on our knowledge, our case is therefore the first study in literature using a VEIL-Leg approach on the specific treatment of vulvar cancer.

Several important considerations might be drawn from our study.

Firstly, the surgery was performed by two experienced surgeons, specifically specialized on gynecologic oncology and laparoscopy. An increase in the surgical practice of this procedure could lead to a further reduction of our endoscopic times, probably making the VEIL-Leg faster than the standard approach.

Secondly, in our left VEIL-Leg we decided to spare, after a careful and accurate dissection, the saphenous vein.

In a moderately sized randomized prospective study¹⁷ comparing lymphadenectomy with or without saphenous vein sparing in vulvar cancer, preservation of the saphenous vein could preserve surgical outcomes with a decrease in the occurrence of chronic lower limb lymphedema, chronic lower extremity pain, chronic cellulitis and sensory abnormalities. In addition, other studies confirmed that saphenous sparing could decrease the risk of postoperative morbidity without jeopardizing outcomes.^{18–20}

Moreover, our surgical follow-up was characterized by the absence of common post-operative complications^{1,12,16} on both the standard right or videoendoscopic left groin sides.

The only morbidity was a minimal wound infection observed at 1 month follow up on the right groin, treated and resolved with antibiotic therapy, confirming how surgical incision could be considered one of the first cause of complications after inguinal lymphadenectomy.

4. Conclusion

Our minimally invasive VEIL-Leg approach, performed for the first time in literature in a woman with vulvar cancer, could reduce the presence of a high risk factor represented by surgical incision.

A multicenter prospective randomized study will be, finally, helpful to clarify how this procedure could replace the standard laparotomic approach to inguinal lymphadenectomy in the vulvar cancer treatment and staging.

Conflict of interest

None.

Funding

None.

Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions

Angelica Naldini and Cristiano Rossitto designed the study, insisted the surgery idea and performed it for the study. Andrea Morciano contributed not only towards writing the case report, but also collected the data with the help of Giovanni Panico and Giuseppe Campagna. Giovanni Scambia made a substantial contribution towards designing the surgery, besides helping Pierluigi Papparella and Cristiano Rossitto in revising the article extensively.

Key learning point

- The first leg video endoscopic inguinal lymphadenectomy in vulvar cancer.

References

- Hacker NF. Vulvar cancer. In: Berek JS, Hacker NF, editors. *Berek & Hacker's gynecologic oncology*. 5th ed. Philadelphia: Williams & Wilkins; 2010. p. 576–92.
- De Hullu JA, van der Zee AG. Surgery and radiotherapy in vulvar cancer. *Crit Rev Oncol Hematol* 2006;**60**:38–58.
- Homesley HD, Bundy BN, Sedlis A, Yordan E, Berek JS, Jahshan A, et al. Assessment of current International Federation of Gynecology and Obstetrics staging of vulvar carcinoma relative to prognostic factors for survival (A Gynecologic Oncology Group Study). *Am J Obstet Gynecol* 1991;**164**:997–1004.
- Baiocchi G, Silva Cestari FM, Rocha RM, Lavorato-Rocha A, Maia BM, Cestari LA, et al. Prognostic value of the number and laterality of metastatic inguinal lymph nodes in vulvar cancer: revisiting the FIGO staging system. *Eur J Surg Oncol* 2013;**39**:780–5.
- Woelber L, Kock L, Gieseck F, Petersen C, Trillsch F, Choschick M, et al. Clinical management of primary vulvar cancer. *Eur J Cancer* 2011;**47**:2315–21.
- Bishoff JT, Basler JW, Teichman JM. Endoscopic subcutaneous modified inguinal lymph node dissection (ESMIL) for squamous cell carcinoma of the penis 301A. *J Urol* 2003;**169**:78.
- Master V, Ogan K, Kooby D, Hsiao W, Delman K. Leg endoscopic groin lymphadenectomy (LEG Procedure): step-by-step approach to a straightforward technique. *Eur Urol* 2009:821–8.
- Delman KA, Kooby DA, Ogan K, Hsiao W, Master V. Feasibility of a novel approach to inguinal lymphadenectomy: minimally invasive groin dissection for melanoma. *Ann Surg Oncol* 2010;**17**:731–7.
- Master VA, Jafri MS, Moses KA, Ogan K, Kooby DA, Delman KA. Minimally invasive inguinal lymphadenectomy via endoscopic groin dissection: comprehensive assessment of immediate and long-term complications. *J Urol* 2012;**188**:1176–80.
- Cui ZY, Wang YF, Chen GW, Wang Y, Zhu HL, Zhu Y, et al. Application of video endoscopic inguinal lymphadenectomy in radical vulvectomy for carcinoma. *Zhonghua Yi Xue Za Zhi* 2013;**93**:1653–6.
- Johnson DE, Ames FC. *Groin dissection*. Chicago: Year Book Medical Publishers; 1985.
- Stehman FB, Bundy BN, Dvoretzky PM, Creasman WT. Early stage I carcinoma of the vulva treated with ipsilateral superficial lymphadenectomy and modified radical hemivulvectomy: a prospective study of the Gynecologic Oncology Group. *Obstet Gynecol* 1992;**79**:490–7.

13. Hacker NF, Berek JS, Lagasse LD, Leuchter RS, Moore JG. Management of regional lymph nodes and their prognostic influence in vulvar cancer. *Obstet Gynecol* 1983;**61**(April):408–12.
14. Hinten F, van den Einden LC, Hendriks JC, van der Zee AG, Bulten J, Massuger LF, et al. Risk factors for short- and long-term complications after groin surgery in vulvar cancer. *Br J Cancer* 2011;**105**:1279–87.
15. Oonk MHM, van de Nieuwenhof HP, van der Zee AGJ, de Hullu JA. Update on the sentinel lymph node procedure in vulvar cancer. *Expert Rev Anticancer Ther* 2010;**10**(January):61–9.
16. Gaarenstroom KN, Kenter GG, Trimbos JB, Agous I, Amant F, Peters AA, et al. Postoperative complications after vulvectomy and inguinofemoral lymphadenectomy using separate groin incisions. *Int J Gynecol Cancer* 2003;**13**:522–7.
17. Zhang X, Sheng X, Niu J, Li H, Li D, Tang L, et al. Sparing of saphenous vein during inguinal lymphadenectomy for vulval malignancies. *Gynecol Oncol* 2007;**105**:722–6.
18. Walker KF, Day H, Abu J, Nunns D, Williamson K, Duncan T. Do surgical techniques used in groin lymphadenectomy for vulval cancer affect morbidity rates? *Int J Gynecol Cancer* 2011;**21**(November):1495–9.
19. Zhang SH, Sood AK, Sorosky JI, Anderson B, Buller RE. Preservation of the saphenous vein during inguinal lymphadenectomy decreases morbidity in patients with carcinoma of the vulva. *Cancer* 2000;**89**:1520–5.
20. Kehoe S, Luesley D, Chan KK. A pilot study on early post-operative morbidity and technique of inguinal node dissection in vulval carcinoma. *Eur J Gynaecol Oncol* 1998;**19**:374–6.

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