

Review

Video endoscopic inguinal lymphadenectomy for lymph node metastasis from solid tumors



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Abstract

Aim: Inguinal lymphadenectomy (IL) is the standard treatment for inguinal lymph node (LN) metastases from genitourinary neoplasm and other cutaneous malignancies. Video endoscopic inguinal lymphadenectomy (VEIL) is emerging as a new modality for treating inguinal LN metastasis, with the aim of reducing post-operative complications. However, the safety and effectiveness of this new approach is still unclear.

Method: A systematic literature review was performed. Patient characteristics, selection criteria, intra-operative data, number of excised LNs and post-operative outcomes were extracted and described for each study.

Results: Ten series that encompassed data of 236 procedures performed in 168 patients were reviewed. The conversion to traditional IL rates ranged between 0 and 7.7%. Median/mean operation time varied between 60 and 245 min. Wound-related complications and lymphatic collection/seroma ranged between 0 and 13.3% and 4 and 38.4%, respectively. The median/mean number of excised inguinal LNs ranged between 7 and 16. Although only four studies reported a follow-up time longer than 2 years, local recurrence rate was up to 6.6%.

Conclusions: VEIL is safe and feasible for experienced surgeons with advanced laparoscopic skills and familiarity with groin anatomy. The post-operative morbidity appears lower compared to the open procedure, mainly for wound/skin related complications. The number of harvested LN and the regional recurrence rate is comparable to that of conventional groin dissection. Before VEIL technique can be considered suitable for routine clinical practice, comparable oncological outcomes and lower post-operative morbidity should be assessed in a randomized controlled trial.

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Introduction

Inguinal lymphadenectomy (IL), also known as superficial groin dissection, is the standard surgical option for loco-regional control and staging of several tumor histotypes originating from the pelvis, trunk and lower limbs, and is highly recommended for inguinal lymph node (LN) metastases from cutaneous malignancies, including melanoma and other genitourinary neoplasms, such as

vulvar and penile carcinomas.^{1–3} Although the steps in this surgical procedure have been debated for many years, generally IL involves the clearance of all the fatty areolar tissue contained within the superficial and deep inguinal LNs.^{4–6} In the classic description of IL, a longitudinal skin incision or a lazy S-shaped incision is employed, which extends 2–3 cm above and medially to the superior anterior iliac spine up to the medial thigh, at the apex of the femoral triangle formed by the convergence of the sartorius and adductor muscles. The skin flaps are created medially up to the pubic tubercle, the anterior margin of the gracilis and abductor muscles, and laterally up to the superior anterior iliac spine and sartorius muscle. The dissection continues deeply, through the incision of the fascia lata to

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the underlining muscles and femoral vessels. The saphenous vein is generally sectioned at the apex of the femoral triangle and at the saphenofemoral junction level.

IL is associated with a significant rate of post-operative complications and long-term morbidity. Up to 80% of patients had short-term morbidity after surgery, but the actual incidence is likely to be underestimated in many of the studies.^{7,8} The majority of early post-operative complications, are related to the wound and includes infection (possibly associated with cellulitis), dehiscence and seroma.⁸ Wound complications after IL frequently require antibiotic therapy, extensive wound care, and in some cases hospitalization, which can eventually compromise the prompt administration of adjuvant systemic and regional treatments. In the long-term, chronic leg lymphedema can occur in roughly 10–15% of patients resulting in significant limitation of every day activities leading to a negative effect on quality of life.⁹

Aiming at reducing post-operative morbidity, several variations of the IL technique have been proposed,¹⁰ including skin sparing techniques,¹¹ sartorius muscle transposition¹² and saphenous vein preservation.¹³ The benefits of these technical variants still remain uncertain, as no randomized trials have clearly reported a reduction in post-surgery morbidity.¹⁰ Despite the lack of high quality evidence supporting modifications of surgical technique, limiting the length of the surgical incision has the obvious potential of decreasing the risk of complications after IL, especially regarding the occurrence of wound infections and dehiscence. This represents the rationale for proposing a minimally invasive video-assisted approach for the thorough clearance of inguinal LNs (video endoscopic IL, VEIL).¹⁴ VEIL is usually performed via a three-port approach and has gained the favor of surgeons involved in treatment of groin lymph node metastasis from solid tumors, though early- and long-term results, including morbidity and oncological outcomes (e.g. number of excised LNs, regional failure rate and patient survival) are largely unknown.

In this study, we systematically reviewed the existing literature investigating VEIL to summarize the technical aspects of this new surgical approach and discuss its safety, complication profile and oncological outcomes.

Methods

Search strategy

A systematic review of the published literature on VEIL was undertaken in May 2013, performing an electronic search for relevant articles published on Medline, in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).¹⁵ The search was performed using the following terms in different combinations: “groin dissection”, “groin lymphadenectomy”, “inguinal dissection”, “inguinal lymphadenectomy”,

“videoscopic”, “endoscopic”, “video assisted”, “minimally invasive”. The literature search was restricted to studies published in English. No other limits were applied. Studies were considered when participant characteristics (patients with inguinal LN metastasis), interventions (videoscopic/endoscopic inguinal LN dissection), and outcomes (surgical and oncological) were investigated. Congress abstracts, editorials, comments, letters, review articles, single case reports, repeated studies (in which case the most recent or the one containing more procedures was eligible) or studies providing insufficient information were excluded. The reference lists of the selected studies were searched to identify further relevant studies.

Data collection process and data analysis

For each trial, the following data were extracted: author, journal, year of publication, study aim, patient characteristics (age, sex), body mass index (BMI), American Society of Anesthesiologists score (ASA), selection criteria for surgery, intra-operative details (technique, number of trocars, duration of the operation, rate and cause of conversion), excised LNs and post-operative outcomes (complications, return to theater, delayed complications and disease recurrence/survival).

Results

Study identification

The primary search identified 21 potentially relevant publications on the basis of information contained in the 36 identified abstracts (Fig. 1). Twelve studies were excluded after assessment of the full text version for the following reasons: some described an extraperitoneal laparoscopic assisted pelvic LNs dissection associated with an open IL^{16–19} or were a previous analysis of the same patient series^{20–25}; one study described a minimal access technique without endoscopic assistance²⁶; and one study referred to a case report.²⁷ Furthermore, one other study was identified after reviewing the reference lists of the selected studies and included in the final analysis.²⁸ Therefore, 10 publications were considered eligible.^{28–37} Three studies had a case control design (two considered an historical control cohort^{33,35} while one compared the video-assisted dissection with the traditional dissection performed in the other groin of the patients²⁹). No randomized clinical trials (RCT) were identified.

Study population

The selected studies encompassed 168 patients (69 men, 61 women and 38 not specified) who underwent 236 procedures (Table 1). In 76 patients (45.2%) VEIL was bilateral. Mean or median ages ranged from 51 to 63 years. The median BMI ranged between 24 and 30 kg/m². None of the

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