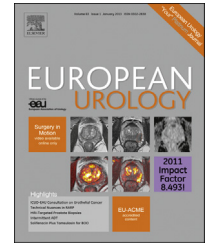


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Postchemotherapy Laparoscopic Retroperitoneal Lymph Node Dissection for Low-volume, Stage II, Nonseminomatous Germ Cell Tumor: First 100 Patients

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Abstract

Background: Retroperitoneal lymph node dissection (RPLND) is indicated after chemotherapy in case of radiologic incomplete remission or teratomatous elements in orchidectomy specimens. Open RPLND is associated with considerable morbidity, but technical difficulty of postchemotherapy laparoscopic RPLND (L-RPLND) can be significant; therefore, literature concerning pc L-RPLND is sparse.

Objective: To evaluate feasibility and long-term oncologic outcome of postchemotherapy L-RPLND for clinical stage II disease at a single institution.

Design, setting, and participants: Records of patients with nonseminomatous germ cell tumor who underwent postchemotherapy L-RPLND between 1993 and 2010 were retrospectively reviewed. Unilateral template resection was used until a bilateral nerve-sparing approach was introduced in 2004. Follow-up investigations were performed at 3-mo intervals for the first 3 yr, every 6 mo for the next 2 yr, and annually thereafter.

Outcome measurements and statistical analysis: This was a descriptive analysis.

Results and limitations: The study cohort comprised 100 patients with stage II retroperitoneal disease (stage IIC: $n = 16$; IIB: $n = 68$; IIA with persisting tumor marker: $n = 16$). Mean diameter of retroperitoneal masses before and after chemotherapy was 3.5 cm and 1.4 cm, respectively. Unilateral and bilateral templates were resected in 71 and 29 patients, respectively. Surgery was successfully completed in all but one patient, whose procedure was converted to open surgery due to bleeding. Mean operation time for unilateral and bilateral resection was 241 and 343 min, respectively. Mean blood loss was 84 ml. Postoperative complications were a large lymphocele in one patient and chylous ascites in another. Mean postoperative hospital stay was 3.9 d. L-RPLND specimens showed teratoma in 38 patients and active tumor in 2 patients. During a mean follow-up of 74 mo, one patient recurred. No recurrence was observed inside the applied surgical field. No patient died of tumor progression. After bilateral nerve-sparing postchemotherapy L-RPLND, 95.2% of patients reported antegrade ejaculation.

Conclusions: Postchemotherapy L-RPLND performed by experienced hands is feasible and associated with low morbidity and high oncologic efficacy.

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1. Introduction

Open retroperitoneal lymph node dissection (RPLND) is still frequently performed and represents a widely accepted diagnostic and therapeutic option in patients with non-seminomatous germ cell tumor (NSGCT). There is no doubt that RPLND is indicated after primary chemotherapy if remission is incomplete or teratomatous elements are detected in the orchiectomy specimen [1]. Open RPLND is associated with considerable morbidity, particularly in terms of hospital stay and time to full recovery. Additionally, it requires a large incision that is cosmetically unfavorable in these mostly young patients. To overcome this, the laparoscopic approach to RPLND (L-RPLND) has evolved since 1992. It has repeatedly been criticized, however, for a small template in stage II patients and an unproven oncologic efficacy because, initially, all clinical stage I patients who were found to be lymph node positive at RPLND received additional chemotherapy. To overcome the potential drawback associated with templates, laparoscopic bilateral procedures have been developed, some of them including prospective identification and sparing of the sympathetic nerves [2,3].

On the other hand, technical difficulty of L-RPLND after chemotherapy can be significant; therefore, literature concerning postchemotherapy L-RPLND is very limited [4–9].

In the present retrospective study, we provide our single-institution experience of postchemotherapy L-RPLND with respect to surgical technique, and we evaluate the feasibility and, most importantly, the long-term oncologic outcome of this approach.

2. Materials and methods

2.1. Patients

After obtaining approval of the local ethical committee (study number UN3413), medical records of patients undergoing postchemotherapy RPLND due to a NSGCT at a single institution between March 1993 and December 2010 were retrospectively reviewed. Patients with bulky disease (large tumors encasing vena cava, aorta, or renal vessels) after chemotherapy were not approached laparoscopically at our department. As it is usually necessary to secure the vessels in these cases and to do minor or major vascular reconstruction during surgery, we believe these cases are not a good indication for laparoscopy. Patients who had undergone open RPLND and patients without chemotherapy before RPLND were excluded. In all patients, staging was performed according to the criteria recommended by the Workshop for Staging and Treatment of Testicular Cancer (Lugano 1979), including computed tomography (CT) of the thorax, abdomen, and pelvis, as well as determination of α -fetoprotein (AFP), beta human chorionic gonadotropin (β hCG), and lactate dehydrogenase (LDH). Another CT scan was performed 3 wk after cisplatin-based chemotherapy to assess patient response to the treatment. Whether or not the CT scan indicated complete or incomplete remission, patients treated by chemotherapy at our institution ($n = 93$) underwent L-RPLND 6 wk after chemotherapy to assess for residual active tumor or mature teratoma. An additional seven patients were transferred to our department for surgery because of persistent retroperitoneal mass after chemotherapy. To be included in the study, patients had to have normal tumor markers after first-line cisplatin-based chemotherapy.

Patient selection was not based on risk factors for histologic findings or body habitus. A 2-wk, preoperative, low-fat diet was continued for 3 wk after surgery because of reduced chylous ascites observed after implementation of this diet during the development of L-RPLND at our department [10]. Bowel preparation included a clear liquid diet and oral laxatives 1 d prior to surgery. Oral fluid intake started on the first day after surgery. Follow-up investigations were performed at 3-mo intervals over the first 3 yr, then every 6 mo until the end of the fifth year, and are planned to be done annually thereafter. Each follow-up includes a physical examination; complete blood count; blood chemistry with AFP, β hCG, and LDH levels; and imaging studies (ie, CT scan every third visit or chest radiography in combination with abdominal ultrasound). Admittedly, this scheme comprises short intervals and a frequent number of CT scans in patients with negative L-RPLND histology. Being increasingly aware of the potential risk of CT-related radiation, we changed our policy according to the current European Association of Urology guidelines at the beginning of 2012. Rate of antegrade ejaculation was interrogated by a urologist and an additional mailed questionnaire.

The surgical technique was performed as previously published for unilateral [10] and bilateral [3] templates; the unilateral template was used until the bilateral nerve-sparing approach was introduced in June 2004. Since that date, the unilateral approach has not been used. Hemostasis was obtained by clipping or sealing (LigaSure V; Covidien, Boulder, CO, USA). Statistical analysis was performed using descriptive analysis.

3. Results

Exactly 100 patients (mean age: 29.6 yr; range: 11.4–52.0 yr) with stage II retroperitoneal disease and who fulfilled the inclusion criteria were identified and included in this series. Of these, 16 had clinical stage IIC disease, 68 had stage IIB, and 16 had stage IIA (in combination with persisting elevated or rising tumor marker levels for stage IIA) at initial staging. Orchiectomy specimens yielded teratomatous elements in 36 patients. There was no patient selection concerning body habitus.

Prior to chemotherapy, the mean AFP level was 342 ng/ml (range: 1–10 000 ng/ml; median: 21 ng/ml), the mean β hCG level was 360 mU/ml (range: 0–11 890 mU/ml; median: 19 mU/ml), and the mean LDH level was 289 U/l (range: 127–850 U/l; median: 228 U/l). After cisplatin-based chemotherapy and before RPLND, all tumor marker levels were within normal limits.

The measurements of retroperitoneal masses before and after chemotherapy are listed in Table 1. L-RPLND was performed approximately 4–6 wk after chemotherapy. Two patients had a history of prior retroperitoneal surgery.

A unilateral template was resected in 71 patients (right side: 34; left side: 37), a bilateral template was resected in 29 patients; prospective identification and sparing of contralateral (depending on tumor location) sympathetic nerves was performed in 26 of these patients. Laparoscopic surgery was successfully completed in all but one patient, in whom conversion to open surgery was necessary due to bleeding from the posterior surface of the vena cava. This also was the only major intraoperative complication. No minor intraoperative complication occurred except eventual bleedings from lumbar vessels or vena cava that could all be managed laparoscopically by using bipolar forceps or endoscopic stapler devices (Fig. 1).

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