

## Original Research Article

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# Laparoscopic marsupialization of pelvic lymphoceles following radical prostatectomy

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## ABSTRACT

**Background:** In this study, we evaluated our laparoscopic marsupialization experiences in patients who had radical prostatectomy due to prostate cancer and had lymphocele after the surgery.

**Methods:** Between October 2011 and December 2013, radical prostatectomy and extended pelvic lymph node dissection were performed on 138 patients with prostate cancer diagnoses. Pelvic lymphocele was detected in 12 patients by ultrasonographic examination. Symptomatic patients to whom we applied drainage under ultrasonography and during whose follow-up lymphocele pouch was detected were hospitalized for laparoscopic marsupialization.

**Results:** The 5 prostatectomy patients had a mean age of  $67.9 \pm 15$  (52-72) years. The time needed for lymphocele development was, on average,  $63 \pm 12$  (51-79) days and the mean lymphocele size was  $8.6 \pm 1.2$  (8-9) cm. Surgery was performed in the supine position with a transperitoneal laparoscopic approach. The average operating time was  $80 \pm 20$  (60-100) minutes. Patients had no collection in their ultrasonographic control examinations performed after 2 and 6 weeks and they have been followed-up for an average time of 20 months without problems.

**Conclusions:** Although a limited number of patients were included in this study, the experience gained in urological laparoscopic operations indicates that laparoscopic marsupialization is an effective method that can be safely applied to treat lymphoceles requiring surgery.

**Keywords:** Laparoscopy, Lymphocele, Prostatectomy

## INTRODUCTION

Lymphocele is the collection of liquid caused by insufficient drainage of lymph fluid after surgical dissection of lymphatic vessels.<sup>1</sup> Lymphoceles following pelvic surgeries are well documented and have been reported in the literature to occur approximately 26% of the time.<sup>2</sup> Of these, 2.4% were symptomatic and surgery was performed on only 1.9%. The main cause of the development of pelvic lymphocele is radical prostatectomy with pelvic lymph node dissection and based on this, it is emphasized that it is not very easy to prevent.<sup>1,3</sup> Another cause of the pelvic lymphocele is

kidney transplant surgery.<sup>4</sup> Pelvic lymphoceles might require drainage to prevent possible clinical complications such as infection, pulmonary embolism and pressure on the neighboring organs.<sup>5</sup> The volume of fluid collection, localization, position, risk of infection, loculations and risk of relapse determine the treatment method.<sup>6,7</sup> Percutaneous aspiration with or without sclerotherapy, percutaneous drain insertion and open or laparoscopic drainage are among these methods.<sup>6-8</sup>

It has been indicated in the literature that the success rate for surgery is between 50 and 70% and peritoneal marsupialization is reported to have a success rate of

90%.<sup>9</sup> The common use of laparoscopy in urological operations and the wide range of operations generated the idea that pelvic lymphoceles might be treated with this technique and it is now being used at an increasing number of centers.<sup>8,10-12</sup> In this study, we present our experiences with laparoscopic marsupialization in patients who had radical prostatectomies due to prostate cancer and later developed lymphocele.

## METHODS

Between October 2011 and December 2014, radical prostatectomy and extended pelvic lymph node dissection were performed on 138 patients with prostate cancer diagnoses. The boundaries of lymph node dissection were external iliac artery above, obturator nerve below, iliac bifurcation proximally and up to the femoral ring distally. After several weeks from operation ultrasonographic examination was made to the symptomatic patients. Symptoms of the patients were lower abdominal pain, flank pain and swelling in legs. Pelvic lymphocele was detected in 12 patients by ultrasonographic examination and none of them was infected. First; aspiration was applied percutaneously to the lymphoceles until regression was observed with ultrasonography (US). Patients who showed clinical improvement and had no further problems were discharged. Five of these patients whose complaints recurred were re-examined with US. Symptomatic patients with relapsed lymphocele pouches were hospitalized after an abdominopelvic tomography (CT) examination with a plan of laparoscopic marsupialization (Figure 1).



**Figure 1: Computed tomography scan of a patient with a large lymphocele in the right pelvic region.**

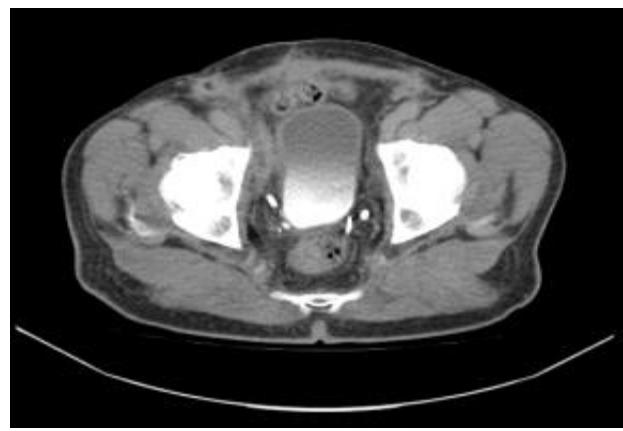
The patients were informed that the clinical and laboratory data would be used for scientific purposes and their written consent was obtained before the procedure.

## RESULTS

The 5 prostatectomy patients had a mean age of  $67.9 \pm 15$  (52-72) years. The surgical margins were intact in the

pathological reports. The mean dissected lymph node number and mean BMI was significantly higher than the total patients' average who underwent radical prostatectomy (respectively  $22.6 \pm 3.8$  and  $13.3 \pm 6.5$ ;  $27.5 \pm 3.6$  and  $26.9 \pm 3.2$ ). There were no metastatic lymph nodes in 5 patients who were symptomatic for lymphocele. The time needed for lymphocele development was, on average,  $63 \pm 12$  (51-79) days and the mean lymphocele size was  $8.6 \pm 1.2$  (8-9) cm. During the percutaneous aspiration that we applied at the first diagnosis, the fluid was aspirated until the pouch collapsed under US. However, after relapse, surgery was planned.

A single dose of intravenous cephalosporin was prophylactically applied before the surgery. After urinary catheter insertion for bladder drainage, the surgery was performed in the horizontal position with a transperitoneal approach. A Veress needle was inserted at the umbilicus, 15 mmHg pneumoperitoneum was created and a 5 mm port was placed for the camera. After screening the abdomen with a  $30^\circ$  lens, two 5-mm ports were inserted to right and left pararectal areas at the umbilical level and the surgery was performed with standard laparoscopic instruments. To ensure that the intestines moved caudally, the patient was placed in a  $10^\circ$  Trandelenburg position. Adhesions were opened, and the vas deferens which is an important sign for the iliac vessels, was found. We found the lymphocele pouch, a 6-cm peritoneal window was opened with harmonic scissors, and excision was completed. Afterwards, the liquid and membranes in the pouch were aspirated and the cavity was controlled with the laparoscope. Then, a drain was placed and the operation was completed.



**Figure 2: Control tomography of the patient after 4 week.**

The mean operation time was  $80 \pm 20$  (60-100) minutes. Patients without any postoperative complications were discharged on the second day after their drains were extracted. Patients had no collection in their US control examinations, performed 2 and 6 weeks later and they have been followed-up for an average time of 20 months without problems (Figure 2).

## DISCUSSION

Lymphoceles occur as a result of tissue trauma or surgery, subsequent to the leakage of lymph from afferent lymphatic channels. The incidence of collections can be minimized by meticulous surgical technique and attention to sealing the lymph vessels during node dissection.<sup>13</sup> The extension of LND, patient's BMI, number of dissected lymph nodes and surgical technique are the main risk factors for postsurgical lymphocele formation.<sup>4,14</sup> Lymphocele is a loculated lymphoid fluid collection and has no epithelial cover. Small lymphoceles that can be observed in the postoperative period are mostly asymptomatic and disappear spontaneously. However, symptomatic ones are usually large lymphocele pouches. After intraperitoneal surgeries, lymphocele rarely occurs because the peritoneal surface is absorptive, and fluid is absorbed by the peritoneal cavity. In addition to pressure on neighboring organs lymphocele that occurs due to lymphatic drainage defects can cause serious complications such as secondary infections or thromboembolism; for example, deep vein thrombosis and pulmonary embolism, depending on extraperitoneal pressure.<sup>5,11</sup>

Pelvic lymphocele is responsible for 50% of second surgeries after radical prostatectomy, and it can be diagnosed and treated if it is symptomatic and causes suspicion. Although several methods are defined, there is no precise algorithm in the literature.<sup>2,5</sup> While asymptomatic lymphoceles are followed-up with conservative treatment, symptomatic ones can be drained percutaneously with or without single or repeated sclerosant (tetracycline, ampicillin, ethanol, doxycycline or povidone-iodine) injections. If the lymphocele is non-loculated, sclerotherapy might be possible. However, for single drainage, there is a 25% possibility of relapse and a 50% risk of infection. In addition, there is no precise algorithm in the literature regarding when to apply single or repeated percutaneous aspiration.<sup>8,14</sup>

A success rate of 90% is reported for the treatment of lymphoceles with open or laparoscopic marsupialization. The leading disadvantages of open surgery are the requirement for general anesthesia, long duration of hospitalization and surgical trauma. Nevertheless, open surgery might be preferable for very small, deep and critically lateral lymphoceles. The increasing use of laparoscopy for urological operations in recent years generated the idea that lymphocele drainage can also be performed in a minimally invasive way.<sup>9,15</sup> In the laparoscopic approach, an ellipsoid window is opened on the lymphocele wall from lateral to medial, and the pouch is connected to the peritoneal space. A higher rate of success and shorter hospital stay than those of percutaneous drainage made laparoscopic marsupialization even more preferred. Laparoscopic methods can also be used when percutaneous methods are unsuccessful or when there is secondary infection in the lymphocele cavity. Laparoscopic methods are a better

alternative compared to methods such as open surgery or percutaneous drainage because they have advantages such as the usage of 5-mm port, umbilical port insertion, and in some methods, single- or two-port options, minimal scar formation, less pain and less morbidity.<sup>12,15,16</sup> In present study, in accord with the literature, 3.6% of patients who underwent radical prostatectomies had symptomatic recurrent lymphocele. In percutaneously drained and relapsed cases, lymphocele pouches were excised with 3-port laparoscopic marsupialization. Patients without any postoperative complications are still being followed-up without problems.

Although a limited number of patients participated in this study, our experience from the urological laparoscopic operations indicates that laparoscopic marsupialization is an effective method that can be safely applied to treat lymphoceles requiring surgery.

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