

Management of pelvic lymphoceles following robot-assisted laparoscopic radical prostatectomy

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Abstract

Pelvic lymphocele is a potential complication of radical prostatectomy. Although lymphoceles often regress spontaneously, many may progress, precipitate clinical symptoms, and ultimately require intervention. To date, the best treatment of pelvic lymphoceles has not yet been fully defined. However, laparoscopic marsupialization is a definitive and efficacious surgical alternative to percutaneous drainage. It is effective, results in minimal patient morbidity, and allows for rapid recovery. We report our experience with management of clinically symptomatic pelvic lymphoceles following robotic-assisted prostatectomy using laparoscopic marsupialization.

Key Words: Da Vinci, lymphadenectomy, lymphocele, prostate cancer, robotic

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INTRODUCTION

The performance of pelvic lymph node dissection (PLND) at the time of robotic-assisted laparoscopic radical prostatectomy (RALP) for prostatic carcinoma is increasing in the United States.^[1] PLND provides staging information that may help to more accurately define the extent of the disease and aid in treatment planning.^[2] However, this potential benefit must be weighed against the potential additional morbidity such as pelvic lymphocele. Pelvic lymphocele is a well-recognized complication following PLND for prostatic carcinoma.^[1,3] The prevalence of symptomatic lymphocele following open radical prostatectomy with PLND varies between 3% and 14% depending on the extent of lymph node dissection and the operating surgeon.^[4]

Pelvic lymphocele can present with lower urinary tract symptoms (LUTS), lower abdominal pain and deep vein thrombosis. Persistence of the lymphocele can lead to significant complications including infection and nerve injury and generate substantial treatment costs.^[4] The best standard of care treatment of pelvic lymphoceles are yet to be fully defined. However, treatment options are usually reserved for clinically symptomatic lymphoceles and include percutaneous drainage and open or laparoscopic marsupialization. We reviewed our experience in the management of clinically symptomatic pelvic lymphoceles and analyzed patient outcomes.

CASE REPORT

Over a 3-year period, a single surgeon (CJK) performed 158 RALP and PLND at our institution. Indications for robotic PLND included high and intermediate risk group patients with Gleason score ≥ 8 , PSA ≥ 10 ng/mL or higher D'Amico risk group.^[5] In this cohort, pelvic lymphocele formation was detected in 10 patients (6%). Among those 10 patients, six patients (4%) developed asymptomatic lymphocele which regressed spontaneously. However, only four patients (3%) developed clinically symptomatic lymphocele requiring

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intervention. We herein comment on the clinical management of these four symptomatic pelvic lymphoceles which required surgical and/or radiological intervention.

A 62-year-old man presented with a prostate-specific antigen (PSA) level of 4.2 ng/mL. Transrectal ultrasound-guided biopsy (TRUS) of prostate was performed. Histology revealed intraductal prostatic carcinoma. Subsequently this patient underwent RALP with bilateral nerve sparing (BNS) and bilateral PLND. Pathological examination of the prostate specimen showed a small focus of intraductal carcinoma with negative lymph nodes involvement (I8) and negative surgical margins. Three months later, patient developed significant frequency and urgency with low voiding volumes. Cystoscopy revealed apparent external impressions on the bladder. Subsequently, contrast CT scan of abdomen and pelvis revealed the presence of bilateral pelvic lymphoceles (10 × 6 cm) which compressed the urinary bladder bilaterally (hour-glass appearance) [Figure 1]. Laparoscopic marsupialization of the bilateral pelvic lymphoceles was successfully performed [Figure 2]. Six months later, follow-up contrast CT scan of abdomen and pelvis was performed and showed complete resolution of the pelvic lymphoceles [Figure 3]. On last clinic visit, patient remains clinically very well and his PSA level was 0.01 ng/mL.

In the remaining patients, a CT-guided percutaneous drainage was performed to drain the pelvic lymphoceles secondary to PLND. Drainage tubes were placed successfully in all patients. Complete resolution of the pelvic lymphoceles was ensured in all patients. Patients' clinical conditions improved and drainage tubes were removed respectively. After 4-6 weeks following drainage, follow-up CT of abdomen and pelvis was also performed in all patients to ensure complete resolution of the pelvic lymphoceles. On last clinic visit, patients remain clinically very well and their respective PSA levels were 0.01 ng/mL.

DISCUSSION

Pelvic lymphoceles occur as a result of tissue trauma or pelvic surgery, which causes leakage of lymph from afferent lymphatic channels. The incidence of collections can be minimized by meticulous surgical technique and attention to ligate or seal the lymph vessels during node dissection. Numerous open and laparoscopic PLND series have shown as high as 30% incidence of asymptomatic pelvic lymphoceles after PLND staging for prostate carcinoma, but only a few lymphoceles became clinically evident and required treatment.^[6-9] *Pepper et al.* showed that eight patients (3.5%) developed clinically symptomatic lymphocele following open PLND and radical prostatectomy. Half of the lymphoceles, however, did require treatment, with ultrasonographically guided percutaneous drainage being the most common.^[10]



Figure 1: Contrast CT abdomen and pelvis shows the urinary bladder is compressed bilaterally by two thin-walled fluid collections within the pelvis (hour-glass appearance of the bladder) (marked with arrows)

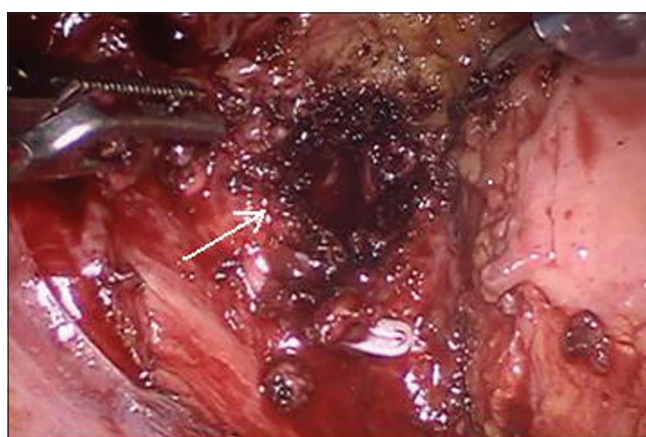


Figure 2: Intraoperative image of the laparoscopic marsupialization of pelvic lymphocele (marked with arrow)

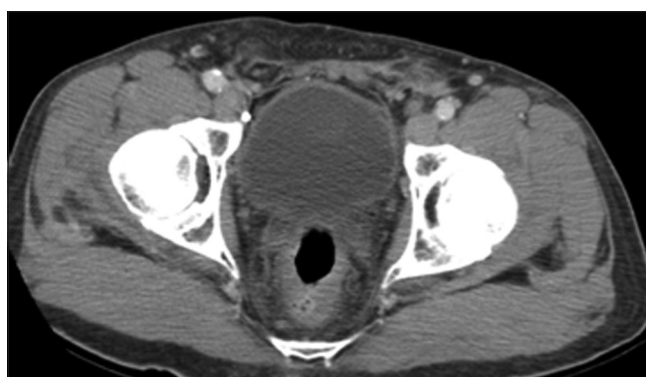


Figure 3: Contrast CT abdomen and pelvis shows complete resolution of the pelvic lymphoceles and complete re-expanding of the urinary bladder after successful laparoscopic marsupialization

A careful review of literature revealed a paucity of studies concerning the presentation and management of pelvic lymphocele secondary to RALP and PLND. In a recent robotic study of 99 robotic PLND, *Feicke et al.* reported symptomatic lymphoceles in five patients (5%) in which only two patients (2%) needed to be drained percutaneously.^[11] In another robotic series, *Yee et al.* reported no lymphocele formation

in a cohort of 32 men who underwent robotic PLND. Yee's study demonstrated that robotic PLND during RALP is technically feasible with improved pathological staging.^[12] In another study, Zorn *et al.* demonstrated the feasibility and low morbidity of robotic PLND during RALP, compared to an open PLND. Two hundred and ninety-six patients were included. Lymphocele formation was found in six patients (2%) who were managed with percutaneous drainage and subsequently resolved. Zorn's study recommended the use of robotic PLND given its promising therapeutic benefit to patients.^[1] In a comparative study, the incidence of lymphocele formation were similar between the robotic and open PLND groups (3%).^[13]

In addition, Capitanio *et al.* conducted a study on 501 patients who underwent open radical prostatectomy and PLND and found that the factors predictive for lymphocele formation were age and number of lymph nodes removed. Additionally, Capitanio *et al.* concluded that the external iliac lymphadenectomy resulted in a higher risk of lymphoceles compared with obturator lymph node dissection.^[14] More recently, Orvieto *et al.* analysed 76 patients who underwent robotic PLND during RALP for \geq T2c prostate cancer. All patients were followed up with pelvic CT 6-12 weeks after the procedure. In Orvieto's cohort, 39 patients (51%) developed pelvic lymphoceles; however, six out of 39 patients (15.4%) had clinically symptomatic lymphoceles. Adding to this, only one patient (1.3%) required CT guided percutaneous drainage. This study concluded that the risk of pelvic lymphocele formation linearly increased with the presence of more extensive prostate cancer disease, as well as more nodal involvements. However, the benefit of robotic PLND during RALP should be indeed weighed against the elevated risk of pelvic lymphocele formation and its potential complications.^[15]

Therapeutic options for pelvic lymphocele often depend on factors such as clinical status of patient, size, position, infection risk, loculations and the recurrence of the collections. Symptomatic pelvic lymphoceles can be managed initially by percutaneous drainage or aspiration with or without instillation of sclerosing agents such as Tetracycline. However, lymphocele recurrence rates after percutaneous drainage are high.^[16,17] Symptomatic, sterile pelvic lymphoceles appear to be ideally suited for drainage by laparoscopic techniques.^[18-21] In our case series, one patient underwent successful laparoscopic marsupialization of bilateral pelvic lymphoceles without complications and the patient was discharged one day later. Whereas, the remaining of patients had percutaneous drainage tube placement to drain the pelvic lymphoceles. This case series details the presentation and management of pelvic lymphocele secondary to RALP and robotic PLND and highlights that laparoscopic marsupialization of uninfected symptomatic

lymphocele is effective, usually immediately definitive, results in minimal patient morbidity, and allows for a more rapid recovery. In conclusion, urologists should be aware of the presentation and management of pelvic lymphoceles as well as considering the appropriate therapeutic modalities for patients. In this case series, we highlighted management of clinically symptomatic pelvic lymphoceles with particular emphasis on their treatment modalities. Owing to the minimal postoperative morbidity, rapid convalescence and low recurrence rate, we believe that the laparoscopic marsupialization should be considered an effective treatment for symptomatic, uninfected pelvic lymphoceles.

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