Management of pelvic lymphoceles following robot-assisted laparoscopic radical prostatectomy

Omer A. Raheem¹, Wassim M. Bazzi¹, J. Kellogg Parsons¹², Christopher J. Kane¹²
Department of Surgery, ¹Division of Urology, University of California, San Diego Medical Center, San Diego, ²Veterans Affairs San Diego Medical Center, La Jolla, CA, USA

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

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.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...
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 (18) 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. 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. 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, Feick et al. reported symptomatic lymphoceles in five patients (5%) in which only two patients (2%) needed to be drained percutaneously. 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. 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. In a comparative study, the incidence of lymphocele formation were similar between the robotic and open PLND groups (3%).

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. More recently, Orvieto et al. analysed 76 patients who underwent robotic PLND during RALP for ≥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.

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. Symptomatic, sterile pelvic lymphoceles appear to be ideally suited for drainage by laparoscopic techniques. 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.

REFERENCES

1. Zorn KC, Katz MH, Bernstein A, Shikanov SA, Brendler CB, Zagaja GP, et al. Pelvic lymphadenectomy during robot-assisted radical prostatectomy: Assessing nodal yield, perioperative outcomes, and complications. Urology 2009;74:296-302.

2. Messing EM, Manola J, Sarosdy M, Wilding G, Crawford ED, Trump D. Immediate hormonal therapy compared with observation after radical prostatectomy and pelvic lymphadenectomy in men with node-positive prostate cancer. N Engl J Med 1999;341:1781-8.

3. Tremp M, Sulser T, Seiffert HH. Delayed infection of a pelvic lymphocele following robotic radical prostatectomy and pelvic lymphadenectomy: Two cases. Urol Int 2009;83:479-81.

4. Musch M, Klevecka V, Roggenbuck U, Kroepfl D. Complications of pelvic lymphadenectomy in 1,380 patients undergoing radical retropubic prostatectomy between 1993 and 2006. J Urol 2008;179:923-9.

5. Ung JO, Richie JP, Chen MH, Renshaw AA, D’Amico AV. Evolution of the presentation and pathologic and biochemical outcomes after radical prostatectomy for patients with clinically localized prostate cancer diagnosed during the PSA era. Urology 2002;60:458-63.

6. Spring DB, Schroeder D, Babu S, Agee R, Gooding GA. Ultrasonographic evaluation of lymphocele formation after staging lymphadenectomy for prostate carcinoma. Radiology 1981;141:479-83.

7. Freid RM, Siegel D, Smith AD, Weiss GH. Lymphoceles after laparoscopic pelvic node dissection. Urology 1998;51:131-4.

8. Solberg A, Angelsen A, Bergan U, Haugen OA, Viset T, Klepp O. Frequency of lymphoceles after open and laparoscopic pelvic lymph node dissection in patients with prostate cancer. Scand J Urol Nephrol 2003;37:218-21.

9. Naselli A, Andreatta R, Intrioni C, Fontana V, Puppo P. Predictors of symptomatic lymphocele after lymph node excision and radical prostatectomy. Urology 2009;75:630-5.

10. Pepper RJ, Pati J, Kaisary AV. The incidence and treatment of lymphoceles after radical retropubic prostatectomy. BJU Int 2005;95:772-5.

11. Feicke A, Baumgartner M, Talimii S, Schmid DM, Seiffert HH, Muntener M, et al. Robotic-assisted laparoscopic extended pelvic lymph node dissection for prostate cancer: Surgical technique and experience with the first 99 cases. Eur Urol 2009;55:876-83.

12. Yee DS, Katz DJ, Godoy G, Nogueira L, Chong KT, Kaag M, et al. Extended pelvic lymph node dissection in robotic-assisted radical prostatectomy: Surgical technique and initial experience. Urology 2010;75:1199-204.

13. Polcari AJ, Hugen CM, Sivarajan G, Woods ME, Paner GP, Flanigan RC, et al. Comparison of open and robot-assisted pelvic lymphadenectomy for prostate cancer. J Endourol 2009;23:1313-7.

14. Capitanio U, Pellucchi F, Gallina A, Briganti A, Suardi N, Salonia A, et al. How can we predict lymphorrhoea and clinically significant lymphoceles after radical prostatectomy and pelvic lymphadenectomy? Clinical implications. BJU Int 2011;107:1095-101.

15. Orvieto MA, Coelho RF, Chauhan S, Palmer KJ, Rocco B, Patel VR. Incidence of lymphoceles after robot-assisted pelvic lymph node dissection. BJU Int 2011;107:1100-1109.

Urology Annals | May - Aug 2012 | Vol 4 | Issue 2
16. Gilliland JD, Spies JB, Brown SB, Yrizarry JM, Greenwood LH. Lymphoceles: Percutaneous treatment with povidone-iodine sclerosis. Radiology 1989;171:227-9.
17. Kim JK, Jeong YY, Kim YH, Kim YC, Kang HK, Choi HS. Postoperative pelvic lymphocele: Treatment with simple percutaneous catheter drainage. Radiology 1999;212:390-4.
18. Fallick ML, Long JP. Laparoscopic marsupialisation of lymphocele after laparoscopic lymph node dissection. J Endourol 1996;10:533-413.
19. Thurlow JP, Gelpi J, Schwaitzberg SD, Rohrer RJ. Laparoscopic fenestration and internal drainage of lymphoceles after renal transplantation. Surg Laparosc Endosc 1996;6:290-5.
20. Gruessner RW, Fasola C, Benedetti E, Foshager MC, Gruessner AC, Matas AJ, et al. Laparoscopic drainage of lymphoceles after kidney transplantation. Indications and limitations. Surgery 1995;117:288-95.
21. Stolzenburg JU, Wasserscheid J, Rabenalt R, Do M, Schwalenberg T, McNeili A, et al. Reduction in incidence of lymphocele following extraperitoneal radical prostatectomy and pelvic lymph node dissection by bilateral peritoneal fenestration. World J Urol 2008;26:581-6.

How to cite this article: Raheem OA, Bazzi WM, Parsons JK, Kane CJ. Management of pelvic lymphoceles following robot-assisted laparoscopic radical prostatectomy. Urol Ann 2012;4:111-4.

Source of Support: Nil, Conflict of Interest: None.