

Unexpected hemorrhage of a rare vessel, a pubic branch of the external iliac artery, after laparoscopic radical prostatectomy: Case report

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Abstract

Rationale: Postoperative hemorrhage is a rare complication after laparoscopic radical prostatectomy (LRP), with no case reports of bleeding from the external iliac artery in the literature.

Patient concerns: A 73-year-old man diagnosed with clinical stage 2c prostate cancer underwent LRP successfully with only approximately 200 mL of intraoperative blood loss. However, his blood pressure dropped from 135/74 to 80/49 mmHg and his hemoglobin decreased by 66 g/L compared with the preoperative level within 5 hours.

Diagnoses: Active hemorrhage from a pubic branch of the external iliac artery was found by digital subtraction angiography (DSA).

Interventions: The patient was treated with superselective intraarterial embolization.

Outcomes: The bleeding stopped and the patient recovered uneventfully with no further hemorrhage or other complications.

Lessons: Although postoperative hemorrhage after LRP is exceptionally rare, it can occur not only in the internal iliac artery but also in the external iliac artery. In addition, contracted pelvis cases should be addressed with more caution by the laparoscope holder in case external iliac artery is injured.

Abbreviations: DSA = digital subtraction angiography, LRP = laparoscopic radical prostatectomy.

Keywords: bleeding, embolization, external iliac artery, hemorrhage, laparoscopic radical prostatectomy

1. Introduction

Postoperative arterial hemorrhage following prostatectomy is a rare complication, with an estimated occurrence rate of 5%.^[1] Because laparoscopic radical prostatectomy (LRP) has the advantages of less bleeding, minimal injury, minimal postoperative pain, and better recovery, it has emerged as a primary technique for prostatectomy in recent years.^[2–6] Most reported arterial hemorrhages after prostatectomy originate from the branches of the internal iliac artery because the blood supply to pelvic organs mainly arises from this artery. Endovascular embolization has replaced surgical exploration as a better method for controlling hemorrhage, which could reduce bleeding mortality.

We report the first case of a patient who experienced postoperative bleeding from a branch of the external iliac artery, the pubic branch, as diagnosed by digital subtraction angiography (DSA), and who was treated with embolization.

2. Ethic statement

The report mainly involves process of emergency treatment; therefore, ethical approval was not needed. Written informed consent was obtained from the patient.

3. Case presentation

A 73-year-old man with bilateral lobe invasion and a specific antigen concentration of 35.2 ng/mL underwent LRP for clinical stage T2c, Gleason score 4+3 prostate cancer. He was undergoing complete androgen blockade therapy. The patient had a history of diabetes and hypertension for more than 10 years. No significant abnormalities were observed in the preoperative laboratory results, and a blood test showed a hemoglobin concentration of 147 g/L and a hematocrit level of 97.2% (normal 82%–97%). Surgery was successfully performed in 2 hours, and blood pressure remained stable throughout. The estimated blood loss was only 200 mL. During the surgery, the laparoscopic lens touched the symphysis pubis several times due to a contracted pelvis, which contributed to a small amount of bleeding, but the hemorrhage resolved quickly. At the end of the operation, we confirmed the absence of any obvious bleeding. In the immediate postoperative period, the patient recovered uneventfully and was safely transferred to the general care ward.

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After 2 hours, unexpectedly, the patient felt dizzy and a sense of pressure in the chest, and his blood pressure dropped from 135/74 to 90/55 mmHg. Approximately 100 mL of dull red drainage was noted, the pulse rate was 80 beats per minute, and the urine output was 100 mL per hour. A blood test revealed a hemoglobin concentration of 102 g/L and a hematocrit level of 30.4%. We accelerated the speed of normal saline infusion. The patient's blood pressure increased to 114/65 mmHg, and he reported no unusual discomfort. Three hours later, a repeat blood test showed a decreased hemoglobin concentration of 81 g/L and a hematocrit level of 24.3% (one additional examination indicated similar test results). Moreover, the patient complained of nausea, vomiting, and distension of the lower abdomen, 320 mL of red drainage was noted, his pulse rate increased to 100 beats per minute, and his blood pressure decreased to 80/49 mmHg. Acute hemorrhage was considered, and 4 units of blood were immediately transfused. We decided to perform emergency DSA and prepared for surgical exploration simultaneously in case of failed embolization.

DSA demonstrated active bleeding from a branch of the iliac artery with an unclear origin. We selected the internal iliac artery to investigate; however, surprisingly, no explicit hemorrhage was discovered. To identify the probable affected artery, we chose the external iliac artery, and unexpected bleeding from the pubic branch of the external iliac artery was found (Fig. 1). Therefore, superselective embolization of the bleeding vessel was performed using microcoils and Gelfoam, leading to satisfactory angiographic results (Fig. 2).

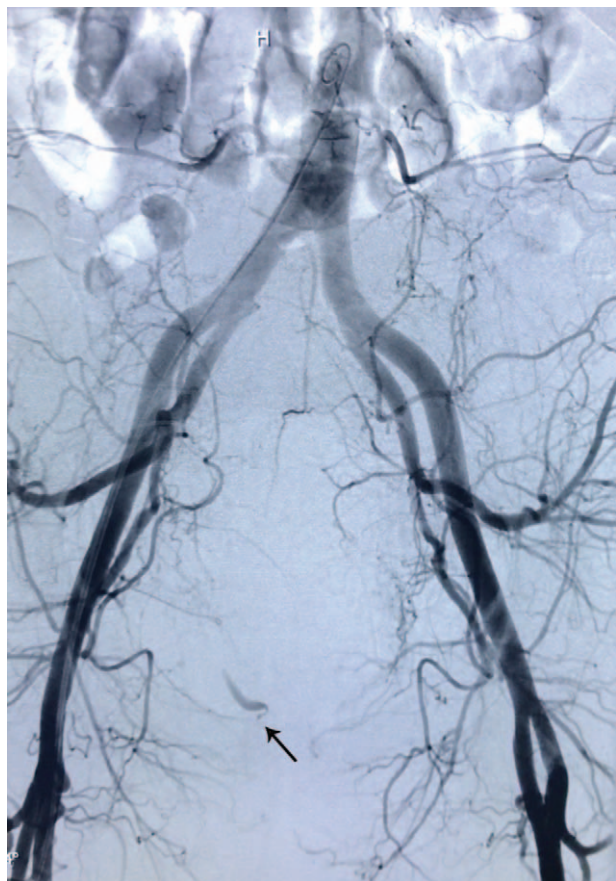


Figure 1. Preembolization, arrow points to the bleeding in the pubic branch of the external iliac artery.

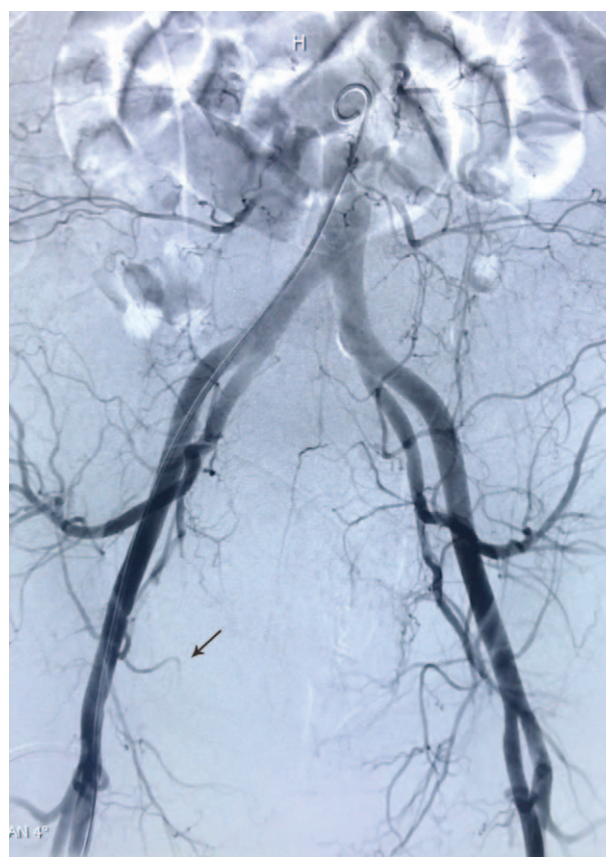


Figure 2. Postembolization, arrow indicates no obvious hemorrhage.

The patient's blood pressure fluctuated around 130/80 mmHg, and his heart rate remained at 70 beats per minute for the remainder of his hospitalization without additional blood transfusions. A repeat blood test revealed a hemoglobin concentration of 95 g/L and a hematocrit level of 28% on the 5th postoperative day. The patient experienced a smooth postoperative recovery with no further hemorrhage or other complications.

4. Discussion

Postoperative hemorrhage is a rare but severe complication in LRP.^[1,7] Bleeding generally originates from injured venous vessels in the prostatectomy area, which is always self-limiting due to tissue compression in the pelvic space. However, it is not easy for slightly larger arteries to stop bleeding automatically. In most cases, severe hemorrhage after LRP is life-threatening without timely treatment. Open surgical exploration is potentially effective for an acute uncontrollable hemorrhage, but it is associated with increased mortality. Interventional angiography and embolization is a suitable approach and has been proven to be a safe and reliable treatment for postoperative hemorrhage following radical prostatectomy.^[8–14] Moreover, it may be advantageous in terms of urinary incontinence.

The blood supply to the prostate and bladder mainly comes from the internal iliac artery. Most cases of postoperative hemorrhage involve branches of the internal iliac artery. External iliac artery bleeding is so rare that only one case of intraoperative hemorrhage resulting from an injury to a branch of the external iliac artery along the internal oblique muscle during robot-assisted laparoscopic prostatectomy has been reported. The pubic branch

was thought to be transected during insertion of the laparoscope port at the beginning of surgery.^[15] In this case, the repeated friction of the laparoscopic lens against the arcus pubis to achieve a clear field of view in the case of pelvic contraction may lead to bleeding, which could be easily overlooked in the ordinary course of events. Additionally, the condition of the patient's blood vessel was poor because of a 10-year history of diabetes and hypertension, resulting in an increased risk of hemorrhage. The bleeding came from a branch of the external iliac artery, which has not been previously reported according to the current literature. The findings reported here might provide a caution for the laparoscope holder about the necessity of exercising care during operative procedures in LRP, and we suggest embolization in similar situations.

In conclusion, the pubic branch of the external iliac artery appears to be a rare source of postoperative bleeding after LRP. We should emphasize the importance of the external iliac artery in addition to the internal iliac artery in LRP. Moreover, we conclude that contracted pelvis cases should be addressed with more caution by the laparoscope holder and suggest management with angiography and early embolization in cases of postoperative hemorrhage.

References

- [1] Hedican SP, Walsh PC. Postoperative bleeding following radical retropubic prostatectomy. *J Urol* 1994;152:1181-3.
- [2] Toohar R, Swindle P, Woo H, et al. Laparoscopic radical prostatectomy for localized prostate cancer: a systematic review of comparative studies. *J Urol* 2006;175:2011-7.
- [3] Ferronha F, Barros F, Santos VV, et al. Is there any evidence of superiority between retropubic, laparoscopic or robot-assisted radical prostatectomy? *Int Braz J Urol* 2011;37:146-58. discussion 59-60.
- [4] Akand M, Celik O, Avci E, et al. Open, laparoscopic and robot-assisted laparoscopic radical prostatectomy: comparative analysis of operative and pathologic outcomes for three techniques with a single surgeon's experience. *Eur Rev Med Pharmacol Sci* 2015;19:525-31.
- [5] Moran PS, O'Neill M, Teljeur C, et al. Robot-assisted radical prostatectomy compared with open and laparoscopic approaches: a systematic review and meta-analysis. *Int J Urol* 2013;20:312-21.
- [6] Greco F, Wagner S, Hoda MR, et al. Laparoscopic vs open retropubic intrafascial nerve-sparing radical prostatectomy: surgical and functional outcomes in 300 patients. *BJU Int* 2010;106:543-7.
- [7] Kaufman JD, Lepor H. Reoperation versus observation in men with major bleeding after radical retropubic prostatectomy. *Urology* 2005;66:561-5.
- [8] Beaujeux R, Saussine C, al-Fakir A, et al. Superselective endo-vascular treatment of renal vascular lesions. *J Urol* 1995;153:14-7.
- [9] Nabi G, Sheikh N, Greene D, et al. Therapeutic transcatheter arterial embolization in the management of intractable haemorrhage from pelvic urological malignancies: preliminary experience and long-term follow-up. *BJU Int* 2003;92:245-7.
- [10] Jeong CW, Park YH, Ku JH, et al. Minimally invasive management of postoperative bleeding after radical prostatectomy: transarterial embolization. *J Endourol* 2010;24:1529-33.
- [11] Cheng S, Xu L, Li G, et al. Superselective internal iliac arterial embolization for severe hemorrhage following radical prostatectomy. *Oncol Lett* 2012;4:521-3.
- [12] Hiroshige T, Matsuo M, Ueda K, et al. Transarterial embolization for pelvic hematoma following laparoscopic radical prostatectomy: a case report and review of the literature. *Oncol Lett* 2015;10:1889-92.
- [13] Park YH, Lee JH, Kim HH. Severe bleeding after laparoscopic radical prostatectomy: successful management with transarterial embolization. *J Endourol* 2008;22:2687-9.
- [14] Ibarra R, Magee C, Ferral H, et al. Post-prostatectomy bleeding managed by endovascular embolization. *J Urol* 2003;169:276-7.
- [15] Nakano S, Nakahira J, Sawai T, et al. Unexpected hemorrhage during robot-assisted laparoscopic prostatectomy: a case report. *J Med Case Rep* 2016;10:240.