

# World Journal of *Clinical Cases*

*World J Clin Cases* 2023 November 16; 11(32): 7741-7939



## Contents

Thrice Monthly Volume 11 Number 32 November 16, 2023

## EDITORIAL

- 7741 Efficacy of probiotics supplementation in amelioration of celiac disease symptoms and enhancement of immune system

*Moawad MHE, Alkhawaldeh IM, Naswhan AJ*

## ORIGINAL ARTICLE

## Retrospective Cohort Study

- 7745 Effect of enhanced recovery after surgery with multidisciplinary collaboration on nursing outcomes after total knee arthroplasty

*Liu J, Zheng QQ, Wu YT*

## Retrospective Study

- 7753 Appropriate leucine-rich  $\alpha$ -2 glycoprotein cut-off value for Japanese patients with ulcerative colitis

*Yamazato M, Yanai S, Oizumi T, Eizuka M, Yamada S, Toya Y, Uesugi N, Sugai T, Matsumoto T*

- 7761 Association between depressive mood and body image and menopausal symptoms and sexual function in perimenopausal women

*Ling J, Wang YH*

- 7770 Clinical study of NFNC in the treatment of acute exacerbation chronic obstructive pulmonary disease patients with respiratory failure

*Chen X, Dai L, Ma JZ, Chu XX, Dai L, Liu JM, Guo SW, Ru XW, Zhuang XS*

- 7778 Mortal condition in an unusual localization, analysis of isolated tongue and tongue base abscesses

*Bal KK, Gür H, Demir I, Ismi O, Vayisoglu Y, Gorur K, Ozcan C, Unal M*

- 7785 Adult-onset hypophosphatemic osteomalacia as a cause of widespread musculoskeletal pain: A retrospective case series of single center experience

*Kim S, Kim SW, Lee BC, Kim DH, Sung DH*

## Prospective Study

- 7795 Efficacy and safety of laparoscopic *vs* open gastrectomy after neoadjuvant therapy for locally advanced gastric cancer

*Yu CD, Zhang K*

## Randomized Controlled Trial

- 7806 Effect of anesthesia induction with butorphanol on postoperative nausea and vomiting: A randomized controlled trial

*Xie F, Sun DF, Yang L, Sun ZL*

**Randomized Clinical Trial**

- 7814** Efficacy and safety of aspirin antiplatelet therapy within 48 h of symptom onset in patients with acute stroke  
*Zhang JQ, Pan ZB*

**META-ANALYSIS**

- 7822** Analysis of the effectiveness of cognitive rehabilitation for patients with chronic mental illness: A meta-analysis  
*Jang JS, Oh S, Kim G, Lee N, Song H, Park J, Lee Y, Kim M, Kwon M*

**SCIENTOMETRICS**

- 7833** Emerging trends and hotspots of Nuclear factor erythroid 2-related factor 2 in nervous system diseases  
*Chang XQ, Xu L, Zuo YX, Liu YG, Li J, Chi HT*

**CASE REPORT**

- 7852** Transcatheter embolization for hemorrhage from aberrant testicular artery after partial nephrectomy: A case report  
*Youn J, Choi MJ, Kim BM, Seo Y*
- 7858** Persistent left superior vena cava in right hemiarch replacement under deep hypothermic circulatory arrest: A case report  
*Mi ZY, He G, Gao HL, Li C*
- 7865** Type II Abernethy malformation with cystic fibrosis in a 12-year-old girl: A case report  
*Zhang LJ, Liu XY, Chen TF, Xu ZY, Yin HJ*
- 7872** Glucocorticoid reduction induced chorea in pediatric-onset systemic lupus erythematosus: A case report  
*Xu YQ, Wang M, Zhang Y*
- 7876** Primary pulmonary lymphoepithelioma-like carcinoma misdiagnosed as lung squamous cell carcinoma: A case report  
*Yin CJ, Wang GJ, Su XM, Li D*
- 7881** Median arcuate ligament syndrome complicated with gallbladder stones: A case report  
*Dang JQ, Wang QQ, Yang YL, Shang L, Bian QT, Xiang HJ*
- 7888** Uterine rupture due to adenomyosis in an adolescent: A case report and review of literature  
*Kim NI, Lee JS, Nam JH*
- 7895** Multiple therapies relieve long-term tardive dyskinesia in a patient with chronic schizophrenia: A case report  
*Ly L, Guo P, Feng M, Fang Y, Wang SK, Chen HX*
- 7900** Lung ultrasound for the early diagnosis of acute lung injury: A case report  
*Zheng X, Liu N*

- 7905** New treatment for gastric duplication cyst: Endoscopic ultrasonography-guided fine-needle aspiration combined with lauromacrogol sclerotherapy: A case report  
*Bu YW, Han RQ, Ma WQ, Wang GN, Er LM*
- 7911** Immunotherapy in SMARCB1 (INI-1)-deficient sinonasal carcinoma: Two case reports  
*Zhang L, Gao AX, He YL, Xu MJ, Lu HJ*
- 7920** Interstitial pneumonia combined with nocardia cyriacigeorgica infection: A case report  
*Qi DD, Zhuang Y, Chen Y, Guo JJ, Zhang Z, Gu Y*
- 7926** Intracranial infection accompanied sweet's syndrome in a patient with anti-interferon- $\gamma$  autoantibodies: A case report  
*Zheng JH, Wu D, Guo XY*

**LETTER TO THE EDITOR**

- 7935** Potential and limitations of ChatGPT and generative artificial intelligence in medical safety education  
*Wang X, Liu XQ*

**ABOUT COVER**

Editorial Board Member of *World Journal of Clinical Cases*, Guo-Xin Ni, MD, PhD, Chief Doctor, Professor, School of Sport Medicine and Rehabilitation, Beijing Sport University, Beijing 100084, China. guoxinni@bjmu.edu.cn

**AIMS AND SCOPE**

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

**INDEXING/ABSTRACTING**

The WJCC is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports® cites the 2022 impact factor (IF) for WJCC as 1.1; IF without journal self cites: 1.1; 5-year IF: 1.3; Journal Citation Indicator: 0.26; Ranking: 133 among 167 journals in medicine, general and internal; and Quartile category: Q4.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Production Editor: Hua-Ge Yin, Production Department Director: Xu Guo, Editorial Office Director: Jin-Lei Wang.

**NAME OF JOURNAL**

*World Journal of Clinical Cases*

**ISSN**

ISSN 2307-8960 (online)

**LAUNCH DATE**

April 16, 2013

**FREQUENCY**

Thrice Monthly

**EDITORS-IN-CHIEF**

Bao-Gan Peng, Salim Surani, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati

**EDITORIAL BOARD MEMBERS**

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

**PUBLICATION DATE**

November 16, 2023

**COPYRIGHT**

© 2023 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

<https://www.wjgnet.com/bpg/gerinfo/204>

**GUIDELINES FOR ETHICS DOCUMENTS**

<https://www.wjgnet.com/bpg/GerInfo/287>

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

<https://www.wjgnet.com/bpg/gerinfo/240>

**PUBLICATION ETHICS**

<https://www.wjgnet.com/bpg/GerInfo/288>

**PUBLICATION MISCONDUCT**

<https://www.wjgnet.com/bpg/gerinfo/208>

**ARTICLE PROCESSING CHARGE**

<https://www.wjgnet.com/bpg/gerinfo/242>

**STEPS FOR SUBMITTING MANUSCRIPTS**

<https://www.wjgnet.com/bpg/GerInfo/239>

**ONLINE SUBMISSION**

<https://www.f6publishing.com>



## Transcatheter embolization for hemorrhage from aberrant testicular artery after partial nephrectomy: A case report

Juyoun Youm, Min-Jeong Choi, Bong Man Kim, Yumi Seo

**Specialty type:** Radiology, nuclear medicine and medical imaging

**Provenance and peer review:** Unsolicited article; Externally peer reviewed.

**Peer-review model:** Single blind

**Peer-review report's scientific quality classification**

Grade A (Excellent): 0  
Grade B (Very good): 0  
Grade C (Good): C  
Grade D (Fair): 0  
Grade E (Poor): 0

**P-Reviewer:** Shuang W, China

**Received:** July 8, 2023

**Peer-review started:** July 8, 2023

**First decision:** August 24, 2023

**Revised:** September 6, 2023

**Accepted:** November 2, 2023

**Article in press:** November 2, 2023

**Published online:** November 16, 2023



Juyoun Youm, Min-Jeong Choi, Bong Man Kim, Department of Radiology, Dankook University Hospital, Cheonan 31116, South Korea

Yumi Seo, Department of Urology, Dankook University Hospital, Cheonan 31116, South Korea

**Corresponding author:** Min-Jeong Choi, MD, PhD, Associate Professor, Department of Radiology, Dankook University Hospital, 201 Manghyangro, Dongnam-gu, Cheonan 31116, South Korea. [babiyong@hanmail.net](mailto:babiyong@hanmail.net)

### Abstract

#### BACKGROUND

Arterial bleeding typically involves the renal artery following partial nephrectomy; in this study, we present a case of bleeding originating from the testicular artery that has not been reported in previous studies.

#### CASE SUMMARY

A 52-year-old man suffered hemorrhage from a perinephric branch of the aberrant left testicular artery after an open nephron-sparing surgery for renal cell carcinoma. Clinical signs of bleeding were manifested by the patient, such as fresh blood drainage from the catheter, decreased hemoglobin levels, and significant vital sign changes. Since computed tomography did not show evidence of active bleeding, transcatheter angiography was conducted to identify the bleeding site. Fluoroscopic spot images confirmed bleeding derived from a perinephric branch of the testicular artery originating from the segmental artery of the left renal artery. Using n-butyl-2-cyanoacrylate, successful transcatheter arterial embolization of the affected branch was performed. Immediately after the embolization procedure, the bleeding ceased, and the patient experienced complete recovery devoid of complications.

#### CONCLUSION

In patients with postoperative arterial hemorrhage after partial nephrectomy, the testicular artery can be a rare but notable source of bleeding. Accurate bleeding site localization *via* angiographic evaluation, followed by transcatheter arterial embolization, can be instrumental for safe, prompt, and effective hemostasis.

**Key Words:** Partial nephrectomy; Hemorrhage; Testicular artery; Angiography; Embolization; Case report

**Core Tip:** Arterial hemorrhage, one of the complications associated with post partial nephrectomy, primarily arises from an injury to the distal end of the renal artery located at the kidney's resection margin. Herein, we present a rare case of hemorrhage following partial nephrectomy that originated from a perinephric branch of the testicular artery, arising from the segmental artery of the renal artery. Despite the absence of active bleeding on computed tomography scan, preemptive angiographic evaluation based on a strong clinical suspicion of hemorrhage was performed. This afforded precise bleeding site identification, followed by successful transcatheter arterial embolization. It is noteworthy that arterial hemorrhage after partial nephrectomy can originate not only from the renal artery but also from the perinephric branches of nonrenal arteries, including the testicular artery.

**Citation:** Youm J, Choi MJ, Kim BM, Seo Y. Transcatheter embolization for hemorrhage from aberrant testicular artery after partial nephrectomy: A case report. *World J Clin Cases* 2023; 11(32): 7852-7857

**URL:** <https://www.wjgnet.com/2307-8960/full/v11/i32/7852.htm>

**DOI:** <https://dx.doi.org/10.12998/wjcc.v11.i32.7852>

## INTRODUCTION

Partial nephrectomy (PN), also known as nephron-sparing surgery, is preferred for surgical removal of renal tumor owing to its ability to preserve renal function[1-3]. However, the abundant renal tissue vascularity poses a potential risk of vascular complications associated with PN compared to radical nephrectomy[2,3]. Hemorrhage resulting from arterial injury following PN primarily occurs at the renal artery, located at the kidney's resection margin[1,2,4,5]. In the literature, no documented cases have been reported regarding hemorrhage secondary to testicular artery injury following PN. While this may be attributed to the rarity of bleeding as a result of testicular artery injury, it is also plausible that the potential for hemorrhage originating from the testicular artery has been overlooked or underestimated. In arterial bleeding, spontaneous hemostasis is difficult to anticipate, and it can hinder postoperative recovery due to massive blood loss. Thus, prompt intervention, including surgical or endovascular treatment, is crucial. Transcatheter arterial embolization has been established as a safe and efficacious treatment strategy for managing post-PN bleeding[1,2,4,5]. However, to attain immediate and effective embolization, accurate bleeding site localization *via* angiography is necessary.

In this report, we present a case of active bleeding from a perinephric branch of the aberrant testicular artery following PN, and the diagnosis was established through angiographic evaluation, which was successfully managed using transcatheter embolization.

## CASE PRESENTATION

### Chief complaints

A 52-year-old male patient was referred to the Department of Interventional Radiology for angiographic evaluation and endovascular management to control postoperative bleeding after open PN.

### History of present illness

He underwent nephron-sparing surgery as an indication for left renal cell carcinoma (T1b) (Figure 1). Immediately after surgery, a continuous discharge of fresh blood was noted in the Jackson-Pratt drain, with a total drainage volume of 600 mL within 24 h postoperatively.

### History of past illness

He had no underlying medical conditions or diseases that may indicate a coagulopathy.

### Personal and family history

His personal and family history was unremarkable.

### Physical examination

His hemodynamic status was relatively stable as follows: Systolic blood pressure of 115 mmHg, diastolic blood pressure of 63 mmHg, and heart rate of 99 beats per minute. However, compared to his preoperative status, a decrease in blood pressure and a significant increase in heart rate were observed (systolic blood pressure of 145 mmHg, diastolic blood pressure of 86 mmHg, and heart rate of 66 beats per minute). He did not manifest with gross hematuria; however, he experienced abdominal and flank pain and tenderness, which are considered typical following renal surgery.





DOI: 10.12998/wjcc.v11.i32.7852 Copyright ©The Author(s) 2023.

**Figure 1 Pre-operative computed tomography.** Pre-operative computed tomography images demonstrating a heterogeneously enhancing mass (arrows) located in the lower polar area of the left kidney, suggestive of renal cell carcinoma.



DOI: 10.12998/wjcc.v11.i32.7852 Copyright ©The Author(s) 2023.

**Figure 2 Post-operative computed tomography.** Post-operative computed tomography images obtained 1 d after partial nephrectomy revealing a small amount of fluid (arrows) in the inferior aspect of the left kidney, adjacent to the drainage tube (arrowhead), without evidence of contrast extravasation.

### Laboratory examinations

Laboratory examinations revealed a decline in the hemoglobin level from 13.4 g/dL to 11.4 g/dL, even after receiving transfusion of three units of packed red blood cells following surgery. Other laboratory findings were unremarkable.

### Imaging examinations

Minimal amount of fluid adjacent to the operative site of the left kidney was demonstrated in the abdominal contrast-enhanced computed tomography (CT); however, no signs of contrast extravasation or pseudoaneurysm indicative of active bleeding were observed (Figure 2). The patient was referred to the interventional unit for angiographic evaluation and endovascular treatment due to clinical suspicion of active bleeding despite the absence of radiologic evidence.

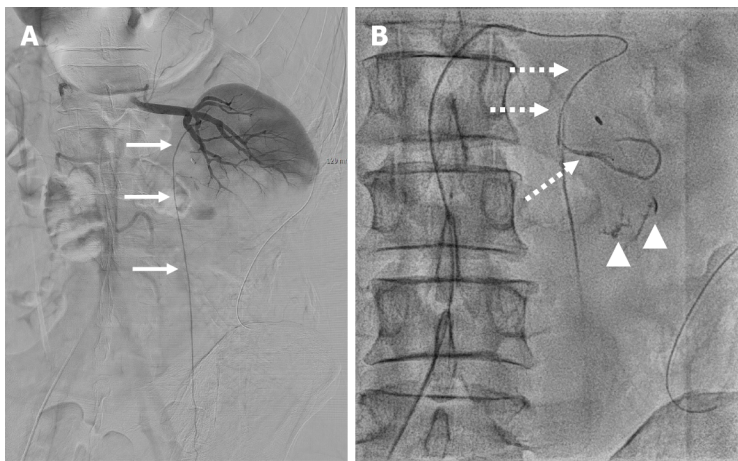
Selective digital subtraction angiography (DSA) was conducted for the left renal artery using a cobra catheter (Cook Medical Inc., Bloomington, IN, United States). Angiographic opacification of left renal artery did not show any positive findings indicative of ongoing bleeding (Figure 3A). After catheterization of the left testicular artery (Figure 3A), which originated from the segmental artery of the left renal artery in the renal hilar shadow, contrast medium was injected using a microcatheter (Progreat; Terumo, Tokyo, Japan) with a coaxial technique. Subsequently, extravasation of the contrast medium was noted on the fluoroscopic spot images (Figure 3B).

---

## FINAL DIAGNOSIS

Hemorrhage from a perinephric branch of an aberrant testicular artery originating from the renal artery following open PN.





DOI: 10.12998/wjcc.v11.i32.7852 Copyright ©The Author(s) 2023.

**Figure 3 Transcatheter angiography.** A: Digital subtraction angiography of the left renal artery demonstrating no evidence of active bleeding and revealing the left testicular artery (arrows) arising from the middle segmental artery of the renal artery; B: Fluoroscopic spot image obtained following super-selective catheterization (dashed arrows) of the suspected branch arising from the testicular artery, revealing contrast extravasation (arrowheads).

## TREATMENT

Transcatheter embolization was conducted for the culprit branch using a mixture of n-butyl-2-cyanoacrylate (NBCA) (Histoacryl, B. Braun, Melsungen, Germany) diluted 1:3 in iodized oil (Lipiodol, Guerbet, Paris, France). The NBCA and iodized oil mixture was carefully injected into the bleeding site to achieve hemostasis while avoiding nontarget embolization of the testicular artery and renal artery. Subsequent fluoroscopy demonstrated a cast formation of the embolic material in the bleeding site (Figure 4).

## OUTCOME AND FOLLOW-UP

Immediately after transcatheter embolization, bleeding from the Jackson-Pratt drain ceased, with no further decline in the hemoglobin levels. During the 6-mo clinical follow-up, the patient attained full recovery without any complications, such as renal or gonad dysfunction, indicating the absence of nontarget embolization.

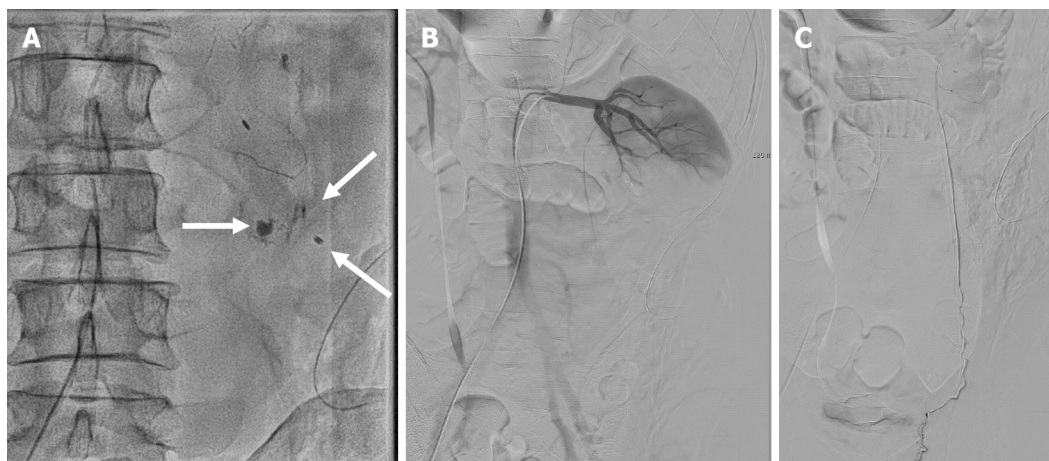
## DISCUSSION

For early stage renal cell carcinoma, PN has become the gold standard treatment, specifically T1a and some T1b cases[3]. While hemorrhage following PN is rare, it can potentially be fatal and is typically associated with renal bleeding. Unilateral open PN is performed *via* several steps, including a flank incision, kidney dissection inside the Gerota's fascia, clamping of the renal arteries and veins, renal lesion resection, and renorrhaphy[3]. Renal tumor resection conveys a potential bleeding risk due to the abundant vascular tissue in the kidneys[2].

A retrospective study analyzing 1187 patients undergoing PN, approximately 3% of patients required embolization due to bleeding-related complications, all of which were related to renal bleeding[5]. Prior studies on endovascular treatment of post-PN bleeding have primarily highlighted on renal bleeding[1,2,4,5]. However, hemorrhage may also occur from the perinephric space or nearby retroperitoneum[3], particularly during the preresection stage of the PN. In our case, the perinephric fat presented with denser characteristics and a stronger attachment to the renal capsule than usual. This probably led to arterial injury supplying the perinephric fat tissue during kidney dissection from the perinephric fat inside the Gerota's fascia.

The clinical features of post-PN bleeding include hematuria secondary to renal hemorrhage, flank pain, or renal dysfunction due to bleeding in the perirenal compartment, bleeding from suction drains, or decreased hemoglobin level [1]. In our case, since it was nonrenal bleeding, hematuria was not present. However, continuous drainage of fresh blood through the drainage tube, along with persistent hemoglobin decline despite transfusion, strongly raised clinical suspicion of active bleeding.

Radiologically, active bleeding is demonstrated through contrast medium extravasation, pseudoaneurysm, and arteriovenous fistula. In our case, CT and initial DSA findings did not provide evidence of active bleeding. This could be attributed to continuous drainage of blood through the drainage tube inserted during surgery. Finally, the bleeding site was identified on fluoroscopy by superselectively accessing each suspected vessel *via* a microcatheter and injecting a contrast agent.



DOI: 10.12998/wjcc.v11.i32.7852 Copyright ©The Author(s) 2023.

**Figure 4 Post-embolization images.** A: Fluoroscopic spot image obtained after transcatheter embolization, demonstrating cast formation (arrows) of n-butyl-2-cyanoacrylate and iodized oil mixture at the bleeding site; B and C: Post-embolization digital subtraction angiography illustrating preserved distal flow of the renal artery (B) and testicular artery (C).

A systemic approach to differential diagnosis is crucial in evaluating post-PN patients with suspected hemorrhage. Distinguishing between different potential sources of bleeding, such as renal artery bleeding, perirenal compartment bleeding, or other vascular abnormalities, is essential. Initial imaging examinations, including contrast-enhanced CT and selective DSA, may not always provide evidence of active bleeding. Therefore, to accurately guide diagnosis and intervention decisions, combining clinical symptoms, laboratory findings, and angiographic evaluation is crucial.

Compared to surgery, transcatheter embolization is less invasive but involves a crucial procedural step that needs to be employed. In contrast to the surgical approach, which allows direct visualization and control of the bleeding site, an endovascular approach requires an initial and essential step of identifying the parent artery of the bleeding vessel to achieve immediate and effective hemostasis.

To date, no cases of post-PN bleeding originating from the testicular artery branches have been reported, indicating that this possibility has been overlooked rather than deemed unlikely. The testicular artery leads to numerous branches that supply blood to the perinephric fat and ureter as it descends toward the pelvis and inguinal ring[6].

Our case report not only underscores the importance of accurate localization and timely intervention but also has significant implications for clinical practice. The possibility of testicular artery-related hemorrhage in post-PN patients should be considered by interventional radiologists and urologists when traditional sources of bleeding have been ruled out. Early recognition of such cases can lead to more targeted angiographic evaluations and timely transcatheter embolization, decreasing the risk of massive blood loss and expediting patient recovery.

The origin of the testicular artery from the renal artery is another noteworthy aspect of our case. The testicular artery usually originates directly from the lateral side of the abdominal aorta at the L2-L3 Level, just below the renal arteries' ostium[6,7]. Nallikuzhy *et al*[6] reported the anomalous origin of the testicular artery by conducting a meta-analysis of variations in the testicular vasculature. In their study, a total of 2,396 testicular arteries were analyzed, and they found that 4.55% of cases (56 out of 1229) on the right side and 4.97% of cases (58 out of 1167) on the left side had the testicular artery originating from the renal artery or its associated arteries, such as an accessory renal artery. In this present case, the left testicular artery originated from the middle segmental artery of the left renal artery in the renal hilar portion.

NBCA is a permanent liquid embolic material that undergoes rapid polymerization upon contact with blood[8,9]. One particular advantage of NBCA is that it is not affected by the patient's coagulation state[9]. In cases where it is challenging to advance the microcatheter adequately due to a tortuous vessel course or small-vessel diameters, embolization can be performed by adjusting the NBCA and iodized oil mixing ratio[9]. However, the use of this embolic material requires proficiency in its application by the operators. In our case, caution was exercised to prevent reflux into the peripheral portion of the renal artery and the testicular artery, ensuring that the embolic material was accurately and appropriately injected into the bleeding site.

## CONCLUSION

This case elucidates that post-PN hemorrhage can be attributed to a perinephric branch originating from the testicular artery. Angiographic exploration plays a crucial role in the accurate identification of the bleeding site, allowing for a safe, prompt, and effective hemostasis through transcatheter arterial embolization.

## FOOTNOTES

**Co-first authors:** Juyoun Youm and Min-Jeong Choi.

**Author contributions:** Youm J and Choi MJ contributed equally to this work; Youm J, Choi MJ, and Seo Y contributed to manuscript writing and editing, and data collection; Choi MJ contributed to conceptualization and supervision; all authors have read and approved the final manuscript.

**Informed consent statement:** Informed written consent was obtained from the patient for publication of this report and any accompanying images.

**Conflict-of-interest statement:** All the authors have no conflicts of interest to declare.

**CARE Checklist (2016) statement:** The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

**Country/Territory of origin:** South Korea

**ORCID number:** Juyoun Youm 0009-0003-3213-648X; Min-Jeong Choi 0000-0001-8941-3482; Bong Man Kim 0000-0003-3720-9361; Yumi Seo 0000-0001-8027-7170.

**S-Editor:** Yan JP

**L-Editor:** A

**P-Editor:** Yan JP

## REFERENCES

- 1 **Baumann C**, Westphalen K, Fuchs H, Oesterwitz H, Hierholzer J. Interventional management of renal bleeding after partial nephrectomy. *Cardiovasc Intervent Radiol* 2007; **30**: 828-832 [PMID: 17508241 DOI: 10.1007/s00270-007-9033-6]
- 2 **Jeon CH**, Seong NJ, Yoon CJ, Byun SS, Lee SE. Clinical results of renal artery embolization to control postoperative hemorrhage after partial nephrectomy. *Acta Radiol Open* 2016; **5**: 2058460116655833 [PMID: 27570638 DOI: 10.1177/2058460116655833]
- 3 **Anastasiadis E**, O'Brien T, Fernando A. Open partial nephrectomy in renal cell cancer - Essential or obsolete? *Int J Surg* 2016; **36**: 541-547 [PMID: 27174506 DOI: 10.1016/j.ijssu.2016.05.031]
- 4 **Gieraerts C**, Vanhoutte E, Laenen A, Bonne L, De Wever L, Joniau S, Oyen R, Maleux G. Safety and efficacy of embolotherapy for severe hemorrhage after partial nephrectomy. *Acta Radiol* 2020; **61**: 1701-1707 [PMID: 32102548 DOI: 10.1177/0284185120907253]
- 5 **Shin J**, Han K, Kwon JH, Kim GM, Kim D, Han SC, Kim HJ, Won JY, Kim MD, Lee DY. Clinical Results of Transarterial Embolization to Control Postoperative Vascular Complications after Partial Nephrectomy. *J Urol* 2019; **201**: 702-708 [PMID: 30395840 DOI: 10.1016/j.juro.2018.10.022]
- 6 **Nallikuzhy TJ**, Rajasekhar SSSN, Malik S, Tamgire DW, Johnson P, Aravindhan K. Variations of the testicular artery and vein: A meta-analysis with proposed classification. *Clin Anat* 2018; **31**: 854-869 [PMID: 29737575 DOI: 10.1002/ca.23204]
- 7 **Mostafa T**, Labib I, El-Khayat Y, El-Rahman El-Shahat A, Gadallah A. Human testicular arterial supply: gross anatomy, corrosion cast, and radiologic study. *Fertil Steril* 2008; **90**: 2226-2230 [PMID: 18555239 DOI: 10.1016/j.fertnstert.2007.10.013]
- 8 **Madhusudhan KS**, Venkatesh HA, Gamanagatti S, Garg P, Srivastava DN. Interventional Radiology in the Management of Visceral Artery Pseudoaneurysms: A Review of Techniques and Embolic Materials. *Korean J Radiol* 2016; **17**: 351-363 [PMID: 27134524 DOI: 10.3348/kjr.2016.17.3.351]
- 9 **Yoo DH**, Jae HJ, Kim HC, Chung JW, Park JH. Transcatheter arterial embolization of intramuscular active hemorrhage with N-butyl cyanoacrylate. *Cardiovasc Intervent Radiol* 2012; **35**: 292-298 [PMID: 21541812 DOI: 10.1007/s00270-011-0162-6]



Published by **Baishideng Publishing Group Inc**  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

**Telephone:** +1-925-3991568

**E-mail:** [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)

**Help Desk:** <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

