

World Journal of *Clinical Cases*

World J Clin Cases 2019 August 26; 7(16): 2134-2412



**REVIEW**

- 2134** Role of infrapatellar fat pad in pathological process of knee osteoarthritis: Future applications in treatment
Jiang LF, Fang JH, Wu LD

MINIREVIEWS

- 2143** Application of Newcastle disease virus in the treatment of colorectal cancer
Song H, Zhong LP, He J, Huang Y, Zhao YX

ORIGINAL ARTICLE**Basic Study**

- 2155** Reduced microRNA-451 expression in eutopic endometrium contributes to the pathogenesis of endometriosis
Gao S, Liu S, Gao ZM, Deng P, Wang DB

Case Control Study

- 2165** Application of self-care based on full-course individualized health education in patients with chronic heart failure and its influencing factors
Sun J, Zhang ZW, Ma YX, Liu W, Wang CY

Retrospective Study

- 2176** Predicting surgical site infections using a novel nomogram in patients with hepatocellular carcinoma undergoing hepatectomy
Tang TY, Zong Y, Shen YN, Guo CX, Zhang XZ, Zou XW, Yao WY, Liang TB, Bai XL
- 2189** Serological investigation of IgG and IgE antibodies against food antigens in patients with inflammatory bowel disease
Wang HY, Li Y, Li JJ, Jiao CH, Zhao XJ, Li XT, Lu MJ, Mao XQ, Zhang HJ
- 2204** Incidence of infectious complications is associated with a high mortality in patients with hepatitis B virus-related acute-on-chronic liver failure
Wang C, Ma DQ, Luo S, Wang CM, Ding DP, Tian YY, Ao KJ, Zhang YH, Chen Y, Meng ZJ

Clinical Trials Study

- 2217** R/S ratio in lead II, and the prognostic significance of red cell distribution width in acute coronary syndrome
Coşkun A, Eren SH

- 2227** Comparative analysis of APACHE-II and P-POSSUM scoring systems in predicting postoperative mortality in patients undergoing emergency laparotomy
Nag DS, Dembla A, Mahanty PR, Kant S, Chatterjee A, Samaddar DP, Chugh P

Observational Study

- 2238** TAZ and myostatin involved in muscle atrophy of congenital neurogenic clubfoot
Sun JX, Yang ZY, Xie LM, Wang B, Bai N, Cai AL

Prospective Study

- 2247** Effects of dual sofosbuvir/daclatasvir therapy on, chronic hepatitis C infected, survivors of childhood malignancy
El-Shabrawi MH, Sherief LM, Yakoot M, Kamal NM, Almalky MA, AbdElgawad MM, Mahfouz AA, Helmy S, Kamal EM, Attia D, El-Khayat HR

Randomized Controlled Trial

- 2256** Hypoallergenicity of a thickened hydrolyzed formula in children with cow's milk allergy
Rossetti D, Cucchiara S, Morace A, Leter B, Oliva S

SYSTEMATIC REVIEWS

- 2269** Surveillance and diagnosis of hepatocellular carcinoma: A systematic review
Pascual S, Miralles C, Bernabé JM, Irurzun J, Planells M

META-ANALYSIS

- 2287** Neuraxial adjuvants for prevention of perioperative shivering during cesarean section: A network meta-analysis following the PRISMA guidelines
Zhang YW, Zhang J, Hu JQ, Wen CL, Dai SY, Yang DF, Li LF, Wu QB

CASE REPORT

- 2302** Primary malignant melanoma of the biliary tract: A case report and literature review
Cameselle-García S, Pérez JLF, Areses MC, Castro JD, Mosquera-Reboredo J, García-Mata J
- 2309** Successful treatment of tubulointerstitial nephritis in immunoglobulin G4-related disease with rituximab: A case report
Eroglu E, Sipahioglu MH, Senel S, Ertas SK, Savas S, Ozturk F, Kocyigit I, Tokgoz B, Oymak O
- 2316** Effectiveness of vedolizumab treatment in two different anti-tumor necrosis factor alpha refractory pouchitis: A case report
Cakir OO
- 2322** Clinical outcomes and safety of high-resolution manometry guided superficial partial circular muscle myotomy in per-oral endoscopic myotomy for Jackhammer esophagus: Two cases report
Choi YI, Kim KO, Park DK, Chung JW, Kim YJ, Kwon KA

- 2330** Cardiac arrhythmias and cardiac arrest related to mushroom poisoning: A case report
Li S, Ma QB, Tian C, Ge HX, Liang Y, Guo ZG, Zhang CD, Yao B, Geng JN, Riley F
- 2336** Role of abdominal drainage in bariatric surgery: Report of six cases
Liu Y, Li MY, Zhang ZT
- 2341** A patient misdiagnosed with central serous chorioretinopathy: A case report
Wang TY, Wan ZQ, Peng Q
- 2346** Large carotid body tumor successfully resected in hybrid operating theatre: A case report
Li MQ, Zhao Y, Sun HY, Yang XY
- 2352** A huge pancreatic lipoma mimicking a well-differentiated liposarcoma: A case report and systematic literature review
Xiao RY, Yao X, Wang WL
- 2360** Ulcerative colitis complicated with colonic necrosis, septic shock and venous thromboembolism: A case report
Zhu MY, Sun LQ
- 2367** Acute pancreatitis connected with hypercalcemia crisis in hyperparathyroidism: A case report
Ma YB, Hu J, Duan YF
- 2374** Treatment of invasive fungal disease: A case report
Xiao XF, Wu JX, Xu YC
- 2384** Hepatocellular carcinoma successfully treated with ALPPS and apatinib: A case report
Liu L, Li NF, Zhang Q, Lin L
- 2393** Pseudothrombus deposition accompanied with minimal change nephrotic syndrome and chronic kidney disease in a patient with Waldenström's macroglobulinemia: A case report
Mwamunyi MJ, Zhu HY, Zhang C, Yuan YP, Yao LJ
- 2401** *Ex vivo* revascularization of renal artery aneurysms in a patient with solitary kidney: A case report
Chen XY, Zhao JC, Huang B, Yuan D, Yang Y
- 2406** Malignant syphilis accompanied with neurosyphilis in a malnourished patient: A case report
Ge G, Li DM, Qiu Y, Fu HJ, Zhang XY, Shi DM

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Manabu Watanabe, MD, PhD, Full Professor, Division of Gastroenterology and Hepatology, Department of Internal Medicine, Toho University Medical Center, Ohashi Hosipital, Tokyo 153-8515, Japan

AIMS AND SCOPE

World Journal of Clinical Cases (*World J Clin Cases*, *WJCC*, online ISSN 2307-8960, DOI: 10.12998) is a peer-reviewed open access academic journal that aims to guide clinical practice and improve diagnostic and therapeutic skills of clinicians.

The primary task of *WJCC* is to rapidly publish high-quality Case Report, Clinical Management, Editorial, Field of Vision, Frontier, Medical Ethics, Original Articles, Meta-Analysis, Minireviews, and Review, in the fields of allergy, anesthesiology, cardiac medicine, clinical genetics, clinical neurology, critical care, dentistry, dermatology, emergency medicine, endocrinology, family medicine, gastroenterology and hepatology, *etc.*

INDEXING/ABSTRACTING

The *WJCC* is now indexed in PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2019 Edition of Journal Citation Reports cites the 2018 impact factor for *WJCC* as 1.153 (5-year impact factor: N/A), ranking *WJCC* as 99 among 160 journals in Medicine, General and Internal (quartile in category Q3).

RESPONSIBLE EDITORS FOR THIS ISSUE

Responsible Electronic Editor: *Ji-Hong Liu*

Proofing Production Department Director: *Yun-Xiaojuan Wu*

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Semimonthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Sandro Vento

EDITORIAL BOARD MEMBERS

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

EDITORIAL OFFICE

Jin-Lei Wang, Director

PUBLICATION DATE

August 26, 2019

COPYRIGHT

© 2019 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 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>

Ex vivo revascularization of renal artery aneurysms in a patient with solitary kidney: A case report

Xi-Yang Chen, Ji-Chun Zhao, Bin Huang, Ding Yuan, Yi Yang

ORCID number: Xi-Yang Chen (0000-0002-4108-1869); Ji-Chun Zhao (0000-0003-0266-038X); Bin Huang (0000-0003-4767-0629); Ding Yuan (0000-0002-3208-8014); Yi Yang (0000-0003-4287-194X).

Author contributions: Chen XY reviewed the literature, contributed to manuscript drafting, and acted as first assistant in the surgical procedure; Zhao JC was the patient's vascular surgeon and reviewed the literature; Huang B contributed to manuscript drafting and the surgical procedure; Yuan D and Yang Y were responsible for revision of the manuscript and interpreted the imaging findings; all authors gave final approval for the manuscript version to be submitted.

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

Conflict-of-interest statement: The authors declare that they have no conflict of interest.

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 which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0)

Xi-Yang Chen, Ji-Chun Zhao, Bin Huang, Ding Yuan, Yi Yang, Department of Vascular Surgery, West China Hospital of Sichuan University, Chengdu 610041, Sichuan Province, China

Corresponding author: Ji-Chun Zhao, MD, PhD, Professor, Department of Vascular Surgery, West China Hospital of Sichuan University, No. 37 Guoxuexiang, Chengdu 610041, Sichuan Province, China. xgwzjc@126.com

Telephone: +86-28-85423008

Fax: +86-28-85423008

Abstract

BACKGROUND

Multiple renal artery aneurysms (RAAs) involving multiple branches in a solitary kidney are rare and present a major challenge to surgeons. *Ex vivo* or *in situ* repair combined with renal artery revascularization is the classical procedure for these complicated cases, which are not suitable for endovascular repair. The choice of bypass graft remains controversial because of the risk of aneurysmal degeneration for autologous graft.

CASE SUMMARY

A 39-year-old female patient presented with left lumbar pain for more than 3 mo. Computed tomography angiography showed congenital absence of the right kidney and three left RAAs involving multiple distal branches. This patient met the criteria for surgical repair due to symptoms of threatened rupture. According to the anatomy and location of multiple RAAs, *ex vivo* revascularization with saphenous vein graft (SVG) was performed. At the 3-year follow-up, computed tomography angiography demonstrated the aneurysmal degeneration of the Y-shaped SVG. The patient remained asymptomatic and follow-up ultrasound showed no continuous growth of SVG aneurysm.

CONCLUSION

SVG aneurysm in RAA revascularization causes us to reflect on the choice of graft, especially for solitary kidney patients.

Key words: Renal artery aneurysm; Bypass; *Ex vivo* repair; Aneurysmal degeneration; Case report

©The Author(s) 2019. Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: This rare case of complicated left renal artery aneurysms (RAAs) with absence

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: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: February 15, 2019

Peer-review started: February 15, 2019

First decision: May 31, 2019

Revised: June 25, 2019

Accepted: July 27, 2019

Article in press: July 27, 2019

Published online: August 26, 2019

P-Reviewer: Yan SL, Ueda H

S-Editor: Wang JL

L-Editor: Filipodia

E-Editor: Liu JH



of right kidney presented a major challenge for the surgeon. From a technical aspect, most RAAs are treated by endovascular procedures, and such complicated surgical repair could give surgeons more confidence with complex renal artery revascularization. Although saphenous vein graft is considered the first choice for auto-renal bypass graft, the risk of restenosis and aneurysmal degeneration remains unresolved. For the RAAs without evidence of inflammation, prosthetic graft may be the alternative choice for patients.

Citation: Chen XY, Zhao JC, Huang B, Yuan D, Yang Y. *Ex vivo* revascularization of renal artery aneurysms in a patient with solitary kidney: A case report. *World J Clin Cases* 2019; 7(16): 2401-2405

URL: <https://www.wjnet.com/2307-8960/full/v7/i16/2401.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v7.i16.2401>

INTRODUCTION

Renal artery aneurysm (RAA) is uncommon with an estimated incidence around 0.1% in the general population. Although the incidence is low, once ruptured, the mortality can reach 80%. Isolated RAA is dominant, and multiple RAAs are seldom reported^[1,2]. Treatment of RAA includes surgical repair with revascularization of the RA by *ex vivo* or *in situ* repair with or without cold preservation. As the development of percutaneous techniques, endovascular repair with coils and stents has increasingly been used^[3-5]. This case of triple left RAAs with absence of the right kidney and involvement of multiple branches is extremely rare, and it was a major challenge for the vascular surgeon. We here report the details of the procedure and long-term follow-up results.

CASE PRESENTATION

Chief complaints

A 39-year-old female patient presented to the clinic of our hospital complaining of left lumbar pain for > 3 mo.

History of present illness

The patient's symptoms started 3 mo ago with left lumbar pain, which had worsened in the previous 2 wk.

History of past illness

The patient had no previous medical history.

Personal and family history

The patient had no personal and family history.

Physical examination upon admission

After admission to our department, the patient's temperature was 36.7 °C, heart rate 73 beats/min, respiratory rate 16 breaths/min, blood pressure 130/70 mmHg, and oxygen saturation in room air 98%. Physical examination revealed percussion tenderness over the left kidney region. No abdominal or rebound tenderness was detected.

Laboratory examinations

Blood analysis revealed normal white blood cell counts, neutrophils, hematocrit, and platelet count. Prothrombin and partial thromboplastin times were normal. Serum C-reactive protein, erythrocyte sedimentation rate, and other immunological tests were all negative. Creatine was 69 μmol/L (normal range 44-133 μmol/L), and estimated glomerular filtration rate was slightly decreased at 80 mL/min/1.73 m² (normal range > 90 mL/min/1.73 m²). Electrocardiogram and chest X-ray were also normal.

Imaging examinations

Renography demonstrated that renal index was 38.06% (normal range > 45%). Computed tomography angiography (CTA) showed congenital absence of the right

kidney and three left RAAs. The first two aneurysms were located on the twisted main trunk of the left RA with a size of 3 cm and 4 cm, respectively, with a branch originating from the second aneurysm. Another distal small aneurysm of 1.8 cm was located on the distal bifurcation involving two branches (Figure 1A).

FINAL DIAGNOSIS

The final diagnosis of the present case was threatened rupture of left triple RAAs and congenital absence of right kidney.

TREATMENT

Left triple RAAs resection and *ex vivo* revascularization with saphenous vein graft (SVG) were performed. Surgical exposure was achieved with a wide left subcostal incision *via* a transperitoneal approach. As multiple distal branches were involved in the aneurysms, *ex vivo* repair was considered. Full mobilization and dissection of the left kidney, RAAs, and proximal and distal branches of the RA were performed. The renal pedicle and ureter were mobilized to the pelvic brim. After systemic heparinization (unfractionated heparin 0.5 mg/kg), the main left RA and vein were divided. The left kidney was then placed in ice slush with cold perfusion (4 °C Ringer's solution). After resection of the distal aneurysm, two residual distal branches were conjoined as a patch, and distal anastomosis was performed end-to-end between the patch and a reversed SVG (Figure 2A). Another branch originating from the second aneurysm was anastomosed end-to-side to the lateral wall of the SVG (Figure 2B). After branch reconstruction, the left kidney was put back into the orthotopic renal fossa. The proximal SVG was anastomosed end-to-end to the proximal main RA, and the renal vein was anastomosed with the original orifice of the inferior vena cava. Intraoperative renal ultrasound identified patency of the anastomosis and distal branches. Whole blocking time for renal vessels was 80 min.

OUTCOME AND FOLLOW-UP

The patient had an uneventful postoperative clinical course and was discharged from hospital 5 d after the operation. Three-year follow-up CTA demonstrated aneurysmal degeneration of the SVG (with a maximum graft diameter of 2.2 cm), and all distal branches were clearly visible (Figure 1B). We carried out further ultrasound follow-up every 6 mo that revealed no continuous growth of SVG aneurysm, and the patient remained asymptomatic. Update renography showed that the renal index of the left kidney increased to 72.06%.

DISCUSSION

Multiple RAAs involving multiple branches in a solitary kidney are rare and present a major challenge to surgeons. Open surgical repair has been the predominant method for treatment of these lesions; however, currently, endovascular techniques have offered less invasive treatment options in selected cases^[4-6].

Currently accepted indications for RAA intervention include size > 2 cm; women within childbearing age; symptoms such as pain, hematuria, and medically refractory hypertension, including that associated with functionally important RA stenosis, thromboembolism, dissection, and rupture^[5]. Several approaches are adopted for revascularization of RAA including *in situ* or *ex vivo* surgical repair and endovascular therapy.

It is reported truncal aneurysms can be treated by covered stent and intrarenal aneurysms by coil embolization. However, with RAAs involving multiple distal branches, current endovascular techniques do not warrant complete exclusion without renal infarction^[7-10]. In the present case, endovascular repair was designed as isolation of the first two RAAs with covered stents, and the last small aneurysm was left behind as the size did not reach the indication for intervention. However, as a branch originated from the second aneurysm, isolation of the first two aneurysms could have blocked the blood flow of this branch, which may have caused partial infarction of the left kidney. Although the diameter of the third RAA involving distal branches did not reach the indication for intervention, we could not leave the risk of future aneurysm development as the patient was young, and it would be much more

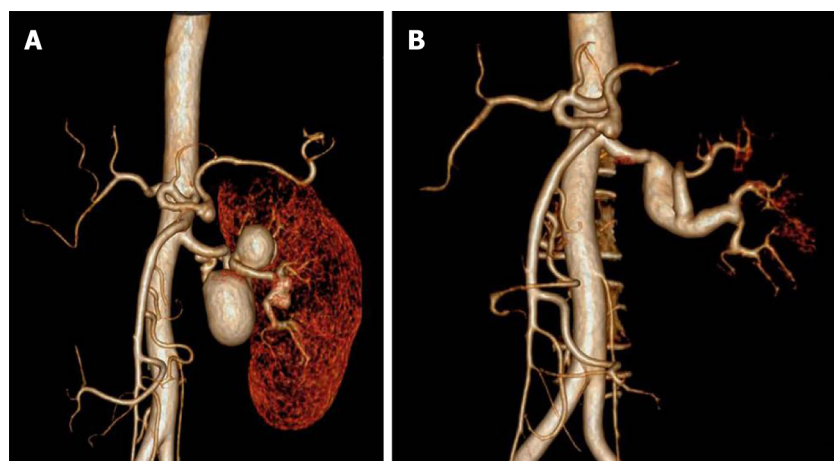


Figure 1 Computed tomography angiography. A: Preoperative computed tomography angiography. Triple complicated multiple renal artery aneurysms with a maximum size of 4 cm, distal renal artery bifurcation, and branches were involved; B: Three-year follow-up computed tomography angiography. The saphenous vein graft was patent with aneurysmal degeneration.

difficult to deal with the third RAA. The preliminary results of the endovascular treatment are not very informative. For the above reasons, surgical repair was performed on this patient.

It is reported that *ex vivo* repair ensures good protection of the renal parenchyma. In contrast, *ex vivo* surgical repair of RAA has the advantage of facilitating reconstruction of distal branches, especially those with multiple branches involved^[10,11]. Several studies have already reported a satisfactory result of *ex vivo* surgical repair with low morbidity and patency rates of 82%–99%^[12,13]. To date, there is no report of randomized controlled trial comparing *ex vivo* and *in situ* repair of RAAs. Considering the reconstruction of multiple distal branches, and *in situ* surgical repair is more challenging, *ex vivo* repair was performed for this patient.

For the choice of bypass graft, the saphenous vein is the most common conduit for revascularization. Most current studies have preferred to use SVG with good durability and patency. Follow-up patency (mean, 33 mo; range, 1–118 mo) was determined for 64 (91%) RA reconstructions. Product-limit estimate of primary patency at 48 mo was 96%^[13,14]. Although the aneurysmal degeneration of SVG is widely reported in coronary artery disease, it is less frequently reported in the RAAs with revascularization by SVG, especially in noninflammatory RA disease. Besides SVG, branched and unbranched internal iliac artery autografts have been used as bypass grafts for the RA, and no aneurysmal degeneration of the internal iliac artery graft has been reported. To prevent risk of SVG aneurysmal degeneration, a tubular SVG supported by external Dacron mesh was adopted, presented to be a suitable graft material for renal reconstruction in pediatric population. With an average follow-up of 4.3 years, no SVG aneurysm was detected^[15]. For RAAs without evidence of inflammation, considering the risk of aneurysmal degeneration of SVG, prosthetic grafts may be an alternative, as no aneurysmal degeneration was present in our patient with a solitary kidney, although more stable long-term results are needed.

Three-year follow-up CTA revealed aneurysmal degeneration of the SVG, with a maximum diameter of 2.1 cm. Because there was no growth of the aneurysm during follow-up under ultrasound surveillance, we chose to continue observing the size change.

CONCLUSION

This rare case of complicated RAAs with absence of the right kidney presented a major challenge to the surgeon. Successful results give us more confidence for *ex vivo* surgical repair of complicated RAA. Aneurysmal degeneration of SVG in RAA revascularization causes us to reflect on the choice of graft, especially for solitary kidney patients who need more stable long-term results.

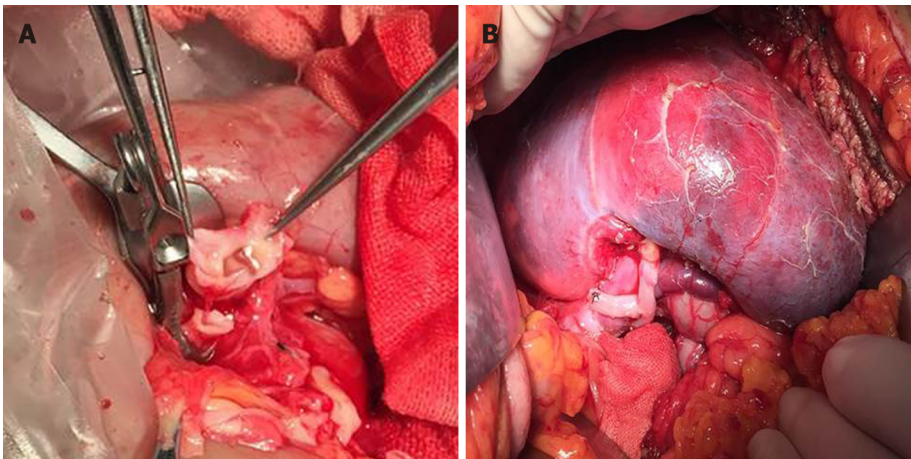


Figure 2 Surgical images. A: Two residual distal branches were conjoined, creating a common patch; the distal anastomosis was performed end-to-end between the common patch and a reversed saphenous vein graft; B: Another branch originating from the second aneurysm was anastomosed end-to-side to the lateral wall of the saphenous vein graft.

REFERENCES

- 1 **Gandini R**, Morosetti D, Chiochi M, Chiaravallotti A, Citraro D, Loreni G, DA Ros V, Salvatori E, Simonetti G. Long-term follow-up of endovascular treatment of renal artery aneurysms with covered stent deployment. *J Cardiovasc Surg (Torino)* 2016; **57**: 625-633 [PMID: [25475915](#)]
- 2 **Buck DB**, Curran T, McCallum JC, Darling J, Mamtani R, van Herwaarden JA, Moll FL, Schermerhorn ML. Management and outcomes of isolated renal artery aneurysms in the endovascular era. *J Vasc Surg* 2016; **63**: 77-81 [PMID: [26386509](#) DOI: [10.1016/j.jvs.2015.07.094](#)]
- 3 **Sousa J**, Mansilha A. Endovascular Treatment of Symptomatic Renal Artery Aneurysm with Hostile Anatomy. *Eur J Vasc Endovasc Surg* 2017; **53**: 843 [PMID: [28319000](#) DOI: [10.1016/j.ejvs.2017.02.018](#)]
- 4 **Orion KC**, Abularrage CJ. Renal artery aneurysms: movement toward endovascular repair. *Semin Vasc Surg* 2013; **26**: 226-232 [PMID: [25220331](#) DOI: [10.1053/j.semvascsurg.2014.06.007](#)]
- 5 **González J**, Esteban M, Andrés G, Linares E, Martínez-Salamanca JJ. Renal artery aneurysms. *Curr Urol Rep* 2014; **15**: 376 [PMID: [24363127](#) DOI: [10.1007/s11934-013-0376-z](#)]
- 6 **Morita K**, Seki T, Iwami D, Sasaki H, Fukuzawa N, Nonomura K. Long-term outcome of single institutional experience with conservative and surgical management for renal artery aneurysm. *Transplant Proc* 2012; **44**: 1795-1799 [PMID: [22841276](#) DOI: [10.1016/j.transproceed.2012.05.037](#)]
- 7 **Pride YB**, Nguyen MC, Garcia LA. Management of a renal artery aneurysm with coil embolization. *J Invasive Cardiol* 2008; **20**: 470-472 [PMID: [18762677](#)]
- 8 **Nassiri N**, Huntress LA. Stent-Assisted Coil Embolization of a Symptomatic Renal Artery Aneurysm at a Bifurcation Point. *Ann Vasc Surg* 2017; **42**: 299.e11-299.e14 [PMID: [28279720](#) DOI: [10.1016/j.avsg.2016.10.042](#)]
- 9 **Rodriguez-Rapale VA**, Martinez-Trabal JL. Hilar Renal Artery Aneurysm Repair Using Coil Embolization and Covered Stent. *Vasc Endovascular Surg* 2019; **53**: 82-85 [PMID: [30180784](#) DOI: [10.1177/1538574418798113](#)]
- 10 **Wetstein PJ**, Clark ME, Cafasso DE, Golarz SR, Ayubi FS, Kellicut DC. Surgical Repair of Abdominal Aortic and Renal Artery Aneurysms in Takayasu's Arteritis. *Hawaii J Med Public Health* 2016; **75**: 4-7 [PMID: [26870600](#)]
- 11 **Tsilimparis N**, Reeves JG, Dayama A, DPerez SD, Debus ES, Ricotta JJ 2nd. Endovascular vs open repair of renal artery aneurysms: outcomes of repair and long-term renal function. *J Am Coll Surg* 2013; **217**: 263-269 [PMID: [23769185](#) DOI: [10.1016/j.jamcollsurg.2013.03.021](#)]
- 12 **Duprey A**, Chavent B, Meyer-Bisch V, Varin T, Albertini JN, Favre JP, Barral X, Ricco JB. Editor's Choice - Ex vivo Renal Artery Repair with Kidney Autotransplantation for Renal Artery Branch Aneurysms: Long-term Results of Sixty-seven Procedures. *Eur J Vasc Endovasc Surg* 2016; **51**: 872-879 [PMID: [27036374](#) DOI: [10.1016/j.ejvs.2016.02.017](#)]
- 13 **Klausner JQ**, Lawrence PF, Harlander-Locke MP, Coleman DM, Stanley JC, Fujimura N; Vascular Low-Frequency Disease Consortium. The contemporary management of renal artery aneurysms. *J Vasc Surg* 2015; **61**: 978-984 [PMID: [25537277](#) DOI: [10.1016/j.jvs.2014.10.107](#)]
- 14 **Duran M**, Hausmann DF, Grabitz K, Schelzig H, Simon F, Sagban TA. Reconstruction for renal artery aneurysms using the tailoring technique. *J Vasc Surg* 2017; **65**: 438-443 [PMID: [27687328](#) DOI: [10.1016/j.jvs.2016.07.113](#)]
- 15 **Berkowitz HD**, O'Neill JA. Renovascular hypertension in children. Surgical repair with special reference to the use of reinforced vein grafts. *J Vasc Surg* 1989; **9**: 46-55 [PMID: [2911142](#) DOI: [10.1016/0741-5214\(89\)90218-8](#)]



Published By Baishideng Publishing Group Inc
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-2238242
Fax: +1-925-2238243
E-mail: bpgoffice@wjgnet.com
Help Desk: <https://www.f6publishing.com/helpdesk>
<https://www.wjgnet.com>

