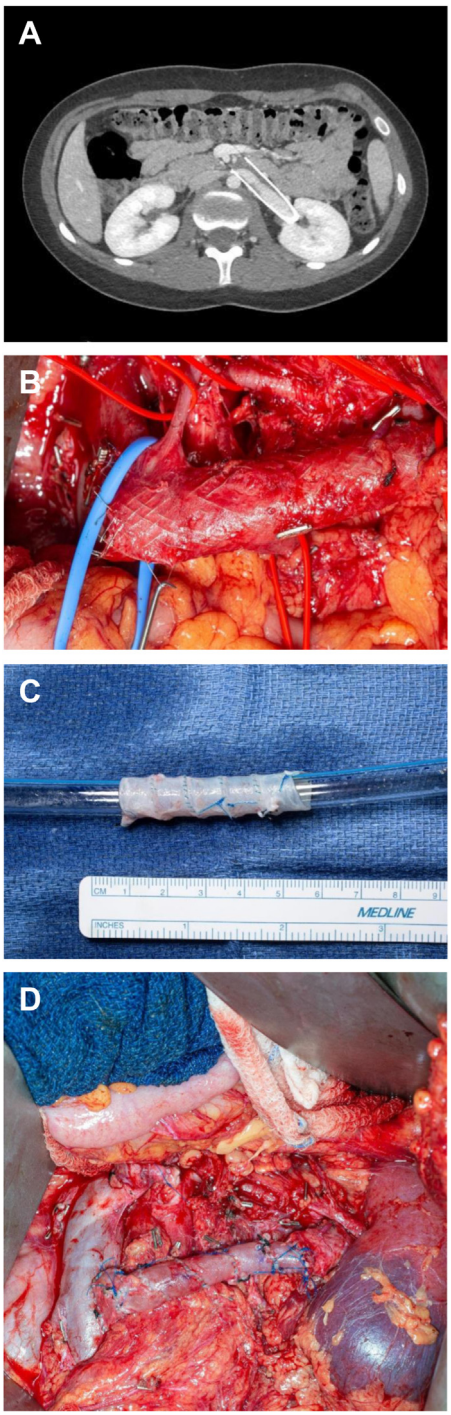
Spiral saphenous vein graft for left renal vein reconstruction after endovascular failure in the treatment of nutcracker syndrome

Armin Tabiei, Sebastian Cifuentes, MD, *and* Randall R. DeMartino, MD, *Rochester, MN*

Nutcracker syndrome (NS) is caused by compression of the left renal vein (LRV) between the aorta and superior mesenteric artery. Symptoms can include hematuria, flank pain, and chronic fatigue.[1] A 15-year-old girl presented for consultation for definitive management of NS. Two years previously, she had started experiencing fatigue, headaches, nausea, and flank pain. The evaluation revealed NS, and she had undergone endovascular LRV stenting at another institution, with complete symptom resolution. However, 3 months later, the symptoms had recurred, and she had required two reinterventions, performed at another institution, including venography and balloon angioplasty due to stent thrombosis. Subsequently, she had presented for an initial consultation for persistent symptoms at our institution. Her initial workup included saphenous vein mapping and computed tomography venography (*A*), which had revealed stent protrusion and critical stenosis. Given the stent orientation, recurring thrombosis, and persistent symptoms, she was offered stent explantation and LRV reconstruction. Intraoperatively, the stent was noted to have protruded through the anterior wall of the vein into the duodenum, which required meticulous dissection (*B*). During dissection, an accessory renal artery could not be reconstructed and, therefore, was oversewn on the aorta. The stent was extracted by removal of each stainless steel wire without the need for clamping and to preserve as much of the LRV as possible.[2] The LRV was excised, and the left great saphenous vein was spiraled over a 28F chest tube to create a new LRV to transpose more caudally onto the inferior vena cava (*C*). The graft was sewn end-to-end to the LRV stump and end-to-side to the inferior vena cava with an additional saphenous patch and cuff (Cover/*D*).



The patient reported symptomatic relief postoperatively during her in-hospital stay. The patient was discharged on postoperative day 6 with a prescription for warfarin as anticoagulation therapy. The 1-year follow-up duplex ultrasound demonstrated a widely patent reconstruction, and the patient had no symptoms. Anticoagulation therapy was discontinued, and aspirin was prescribed.

Stent failure presents a challenging clinical scenario. LRV transposition can be considered a safe and effective option for patients with NS and persistent symptoms.[3] LRV reconstruction using a spiral great saphenous

From the Division of Vascular and Endovascular Surgery, Mayo Clinic.

Author conflict of interest: none.

E-mail: tabiei.arminali@mayo.edu.

The editors and reviewers of this article have no relevant financial relationships to disclose per the Journal policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

J Vasc Surg Cases Innov Tech 2023;9:1-2

2468-4287

https://doi.org/10.1016/j.jvscit.2022.101085

vein graft remains an acceptable option for abdominal vein reconstruction and resulted in technical and clinical success in our patient. The patient and her parents provided written informed consent for her case details and imaging studies.

REFERENCES

1. Erben Y, Gloviczki P, Kalra M, Bjarnason H, Reed NR, Duncan AA, et al. Treatment of nutcracker syndrome with open and endovascular interventions. J Vasc Surg Venous Lymphat Disord 2015;3:389-96.
2. Rathore A, Gloviczki P, Bjarnason H. Open surgical removal of iliac vein Wallstents with excision of pseudointima obstructing the contralateral iliac vein. J Vasc Surg Venous Lymphat Disord 2016;4:525-9.
3. Reed NR, Kalra M, Bower TC, Vrtiska TJ, Ricotta JJ II, Gloviczki P. Left renal vein transposition for nutcracker syndrome. J Vasc Surg 2009;49:386-94.

Submitted Oct 28, 2022; accepted Nov 28, 2022.