





RENO-CAVO BIOLOGICAL BYPASS WITH TUBULIZED BOVINE PATCH FOR NUTCRACKER SYNDROME

ABSTRACT

Nutcracker syndrome (NCS) is the set of symptoms resulting from compression of the left renal vein. A 19-year-old female patient with abdominal pain is approached. In the physical examination, we found pain in the left flank and left iliac fossa with abdominal palpation. Computed tomography and renal Doppler were performed and showed direct NCS signs. A reno-cavo bypass was performed with a tubulized bovine pericardium patch. NCS is a rare and underdiagnosed entity, and more follow-up data are needed to evaluate reno-cavo bypass in reducing symptoms and long-term complications.

Key words: Pericardium; Bioprosthesis; Porcine Xenograft; Nutcracker syndrome; Venous bypass.

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INTRODUCTION

Nutcracker syndrome (NCS) is the set of symptoms resulting from the compression of the left renal vein (LRV) with subsequent venous hypertension. The most commonly reported symptoms have been abdominal pain in the left flank, associated with microscopic and macroscopic hematuria. Due to the lack of evidence, there is no consensus on the optimal management of SCN. This lack of consensus can be attributed to several factors, including the rarity of SCN, lack of uniformity in patient symptomatology with an uncertain diagnosis, differing opinions on the optimal surgical approach, lack of consensus data on the durability and longevity of these different approaches, and the participation of many specialists in the care of these patients ⁽¹⁾.

CLINICAL CASE

A 19-year-old female with no relevant personal history presented intense and intermittent abdominal pain in the left flank, radiating to the ipsilateral iliac fossa, resistant to analgesic treatment. Initially treated as nephritic colic, obstructive pathology of the urinary tract was ruled out after CT-urogram. For approximately one year, she was followed-up by the urology service with the diagnosis of recurrent urinary tract infection. Microhematuria was found in systematic urine tests with subsequent progression to macroscopic hematuria. The patient persisted without improvement of symptoms, despite analgesic treatment escalation. On physical examination,

we found a non-distended abdomen with pain on palpation in the flank and left iliac fossa, with positive ipsilateral fist percussion. There was no evidence of alterations at the level of the genitalia related to pelvic congestion. CT scan and renal doppler were performed with direct signs of NCS ⁽⁷⁾.

TREATMENT

Conservative management of SCN was chosen, with follow-up in outpatient consultations. This treatment was not effective, and the patient persisted with severe symptoms. The case was assessed in a multidisciplinary clinical discussion, where conservative treatment was ruled out due to poor evolution.

Open surgical intervention was performed, and a reno-cavo bypass with tubulized pericardium was executed (*Figures 1 and 2*). During the dissection, left ovarian and suprarenal veins could be seen without dilation, confirming the absence of alternative drainage of the renal vein, leaving the compressed segment in the aortomesenteric clamp as the only outflow route.

The patient was admitted to the ICU without needing ventilatory support or vasoactive drugs and on an absolute diet and total parenteral nutrition. After 24 hours, the patient was discharged from the ICU with admission to hospitalization. Analgesia was started with reasonable pain control. Ten days after the surgical procedure, and considering the improvement of the symptoms, medical discharge and subsequent control in outpatient clinics were indicated.

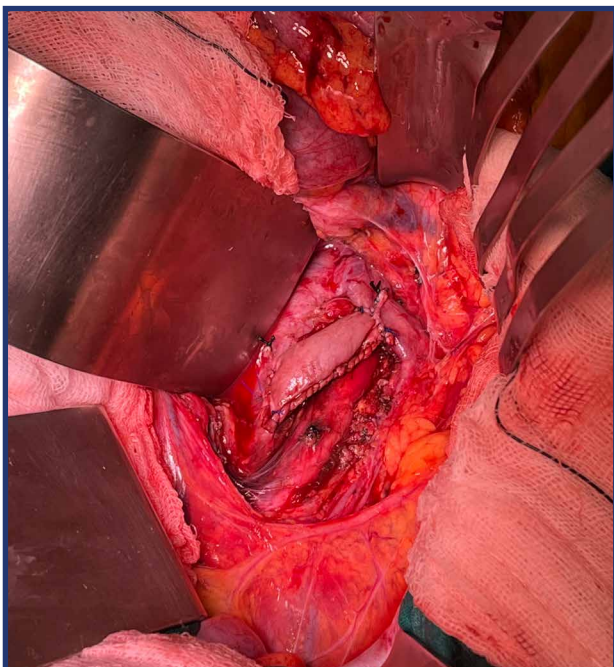


FIGURE 1. Reno-cavo bypass finished.

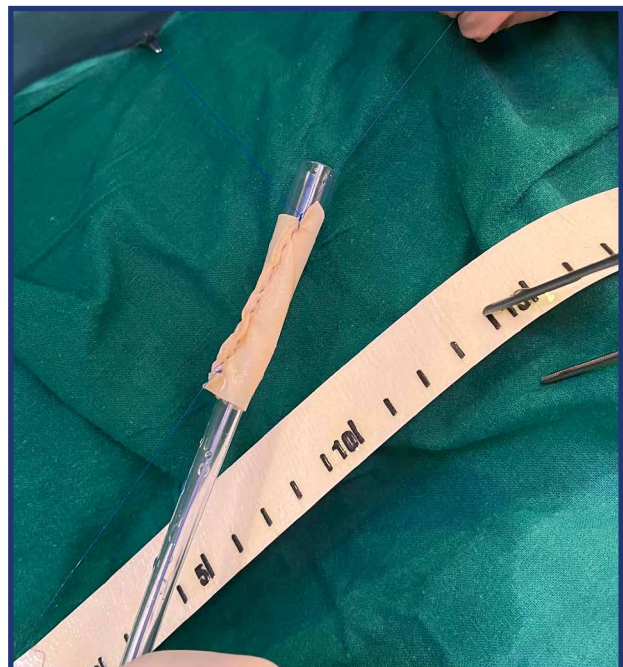


FIGURE 2. Tubulized bovine patch.

DISCUSSION

The compression of the IRV between the aorta and the superior mesenteric artery (SMA) was first described in 1950 by El Sadr and Mina ⁽²⁾, while Dr. Schepper described the nutcracker syndrome in 1972 ⁽³⁾.

The exact prevalence of SCN is unknown; it can be present at any time from childhood to adulthood, with a relatively high prevalence in young and middle-aged adults ⁽⁴⁾. However, one study demonstrated an incidental 10.4% of SCN on abdominal computed tomography (CT) scans, with no difference in prevalence by gender ⁽⁵⁾.

There is a lack of agreement regarding the exact moment and type of treatment that should be used to treat these patients, as well as the choice of the optimal surgical technique ⁽⁶⁾. In patients under 18, conservative treatment is recommended for weight gain and pain control ⁽⁸⁾. In this clinical case, due to the age of the patient at the time of diagnosis (17 years), conservative management was indicated. Still, surgical treatment was decided as a result of the increased symptoms related to pain and hematuria ⁽⁹⁾. We discussed the endovascular approach with stent technique, which could lead to severe complications, such as stent migration into the inferior vena cava or right ventricle ⁽¹⁰⁻¹²⁾. In these terms, the patient's age when making the surgical decision (19 years) must also be considered since it is not close to the average age (26 years) shown in the studies that expose the endovascular treatment.

The most frequently reported procedure is a transposition of the IRV ⁽¹³⁾; however, in this clinical case, a reno-cavo bypass was performed, with a tubulized bovine pericardium graft, with an improvement of the symptoms in the medium term. Due to the age of the patient, and the aesthetic considerations of a new incision, it was decided to omit the use of the saphenous vein as a therapeutic option for this case since it has been shown that the bovine pericardium offers similar results.

CONCLUSIONS

SCN is a rare and underdiagnosed entity that deserves more attention. In this case, IRV bypass with

tubulized bovine pericardial bypass has given good short- and medium-term results. However, more follow-up data are needed to evaluate this technique in reducing symptoms and long-term complications.

Declarations

The authors declare no conflict of interest.

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