



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.03  
TPI 2018; 7(12): 368-369  
© 2018 TPI  
www.thepharmajournal.com  
Received: 07-10-2018  
Accepted: 10-11-2018

## II Kobza

The Department of Hospital  
Surgery, Danylo Halytsky Lviv  
National Medical University,  
Lviv, Ukraine

## IR Nesterenko

Public Institution "City  
Polyclinic" №2, Ivano-  
Frankivsk, Ukraine

## VL Nesterenko

The Department of General  
Surgery, Ivano-Frankivsk  
National Medical University,  
Ivano-Frankivsk, Ukraine

## Left renal vein reimplantation with the application of testicular ileac anastomosis in a patient with the nutcracker syndrome: Clinical case

II Kobza, IR Nesterenko and VL Nesterenko

### Abstract

The clinical picture of "the nutcracker syndrome" is represented by hematuria, pain in the left lumbar region and left sided varicocele in men and pudendal varicosity in women. These symptoms occur due to the development of phlebohypertension in the left renal vein as a result of abnormal compression of the latter between the aorta and the superior mesenteric artery. The presented clinical case demonstrates the effectiveness of the left renal vein transposition with the application of testicular ileac anastomosis as a pathogenetically substantiated method of treatment.

**Keywords:** The nutcracker syndrome, left sided varicocele, hematuria, left renal vein transposition

### 1. Introduction

"The nutcracker syndrome" is a rare phenomenon occurring in case of the left renal vein compression between the aorta and the superior mesenteric artery leading to the development of phlebohypertension in the left renal vein [4, 9]. Normally, superior mesenteric artery arises from aorta at right angle, is directed ventrally within 4-5 mm, and then falls caudally. This anatomical feature prevents the compression of the left renal vein by the superior mesenteric artery. However, the angle of superior mesenteric artery origin is acute and usually constitutes 38°-56° in case of "the nutcracker syndrome" [3]. The first description of this abnormality was made by anatomist Grant in 1937 [8]. Clinically, this nosology was described by the doctors A.R. El-Sadr, E. Mina [7]. In 1971 the Belgian physician De Schepper compared aorta and superior mesenteric artery with the nutcracker's hands compressing the left renal vein [6].

Clinical manifestations of "the nutcracker syndrome" are caused by phlebohypertension in the left renal vein leading to the failure of valve apparatus of the left gonadal vein and the development of a compensatory bypass renocaval path with backflow of the venous renal blood in the gonadal vein to the pampiniform plexus causing the left sided varicocele. The clinical picture is also supplemented by the occurrence of hematuria (macro or micro), anemia, proteinuria, discomfort and pain in the left lumbar region and in the left inguinal region.

"The nutcracker syndrome" is diagnosed on the basis of the clinical data and color Doppler ultrasonography, varicocele hemodynamic type is also determined according to Coolsaet [6]. The left renal vein transposition is indicated to the patients.

A 19-year-old patient complaining of the pain in the left lumbar region and left inguinal area, hematuria, left-sided varicocele, scrotal edema on the left was hospitalized in the Department of Vascular Surgery of the Lviv Regional Clinical Hospital. He considered himself ill for about 5 years. The patient underwent color Doppler ultrasonography of the renal veins, the left gonadal vein and the veins of spermatic cord on the left. The right renal vein was without pathological features, the left renal vein was 13 mm in a diameter in the distal area, peak blood flow velocity in it was 11 cm/sec, its diameter decreased to 4 mm in the aorta mesenteric segment, peak blood flow velocity in this segment increased to 156 cm/sec. The left gonadal vein flowed into the left renal vein; its diameter was 6 mm. The signs of abnormal blood reflux in it were +3. The left kidney was dilated with plethorical venous vessels. Spermatic cord veins were enlarged to 8.3 mm on the left with abnormal blood reflux in them +4 during the Valsalva manoeuvre, the expansion extended to the lower pole of the testicle. The following diagnose was made: The nutcracker syndrome. Left sided varicocele (renospermatic type according to Coolsaet).

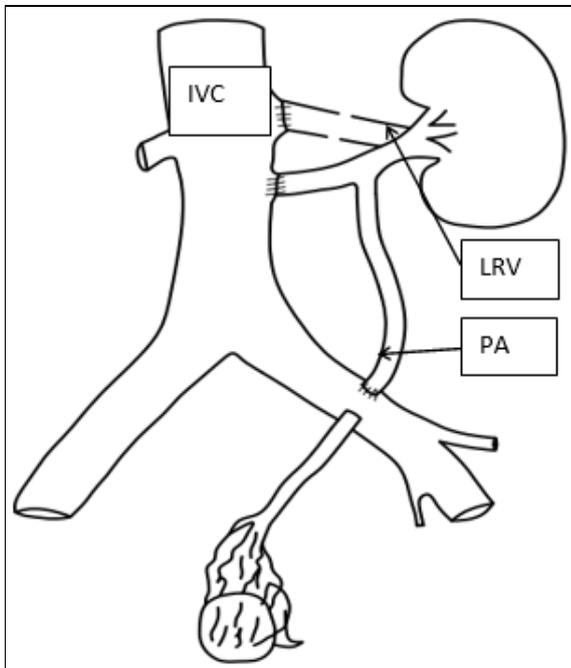
The patient underwent the left renal vein transposition and the application of proximal testicular ileac anastomosis through the median laparotomy access with prolongation of the access to the left iliac region.

### Correspondence

#### II Kobza

The Department of Hospital  
Surgery, Danylo Halytsky Lviv  
National Medical University,  
Lviv, Ukraine

The postoperative period lasted without complications, complete regression of clinical symptomatology was observed. The patient received antibiotics, low molecular weight anticoagulants and analgesics. The patient was discharged on the 8<sup>th</sup> day after the surgery with recommendations to take rivaroxaban during 2 months. The reconstruction site stenosis was not detected in 3, 12, 36 months, the disease recurrence was not observed.



IVC – inferior vena cava  
LRV – left renal vein  
PA – proximal testicular ileac anastomosis

**Fig 1:** The scheme of the left renal vein transposition and the application of proximal testicular ileac anastomosis to the patient with “the nutcracker syndrome” in case of varicocele by renospermatic reflux type.

## Discussion

“The nutcracker syndrome” is rarely diagnosed due to the lack of symptom specificity, diagnostic algorithms and insufficient awareness of doctors on this pathology. Particular attention should be paid to the patients with left sided varicocele combined with hematuria. Thus, according to Sahalevych A.I., 87.3% of patients with left-sided varicocele are diagnosed with the pathology of renocaval segment (one of the variants of “the nutcracker syndrome”) [2]. In clinical practice, varicocele is classified into III types according to Coolsaet depending on hemodynamic disorders. Type I is renospermatic or renotesticular, type II is ileospermatic or ileotesticular, type III is mixed [6]. Type I usually occurs in case of aorta mesenteric compression, sometimes it is combined with phlebohypertension in the system of iliac vein. Varicocele of hemodynamic type II is caused by venous hypertension in the system of iliac veins. The mixed type is characterized by a combination of the two above mentioned types of reflux, namely renospermatic and ileospermatic. Pathogenetically substantiated surgical treatment of “the nutcracker syndrome” is the transposition of the left renal vein providing an opportunity to eliminate hypertension in the left renal vein [10]. It is performed isolatedly or in combination with the application of proximal or distal ileotesticular anastomoses according to Lopatkin [1] depending on the reflux type by Coolsaet [6].

Transposition of the left renal vein was first performed in 1982 by Stewart. It consisted in the detachment of the left renal vein from inferior vena cava, suturing of inferior vena cava defect and reanastomosis below the superior mesenteric artery. The advantages of the left renal vein transposition included a short period of renal ischemia, the disadvantages comprised the risk of the left renal vein thrombosis, bleeding, intestinal distention.

Despite the attempts to diversify the surgical correction of this pathology (the superior mesenteric artery transposition, laparoscopic extravascular stenting, endovascular stenting, etc.), the best results in the remote postoperative period are demonstrated by the left renal vein transposition [11].

## Conclusions

“The nutcracker syndrome” is a pathology that is rarely diagnosed and requires increased attention from urologists and vascular surgeons. The patients with left sided varicocele combined with hematuria require special attention. It is important to determine the hemodynamic type of reflux according to Coolsaet, since the choice of surgical approach depends on it. Left renal vein transposition with the application of testicular ileac anastomosis demonstrates positive clinical results.

## References

1. Lopatkin NA, Morozov AK, Zhitnikova LN. Stenoz pochechnoi veny. Moscow, 1984, 144.
2. Sahalevych AI. Patohenetychnye obgruntuvannia metodiv khirurgichnoho likuvannia livostoronniogo varykotselje. Thesis, 2002.
3. Spiridonov AA, Strakhov SN, Pryadko SI. Khirurgicheskaya korrektsiya regionarnoi venoznoi pochechnoi gipertenzii (plastika levei pochechnoi veny i testikulo-ileokalnye anastomozy). *Angiologiya i sosud. khirurg.* 1996; 3:11-25.
4. Chuang CK, Chu SH, Lai PC. The nutcracker syndrome managed by autotransplantation. *J Urol.* 1997; 157(5):1833-1834.
5. Coolsaet BL. Ureteric pathology in relation to right and left gonadal veins. *Urology.* 1978; 12(1):40-49.
6. De Schepper A. Nutcracker phenomenon of the renal vein causing left renal vein pathology. *J Belg Rad.* 1972; 55:507-511.
7. El-Sadr AR, Mina A. Anatomical and surgical aspects in the operative management of varicoceles. *Urol Cut Rev.* 1950; 54:257-262.
8. Grant JCB. *Method of Anatomy.* Baltimore, MD: Williams and Wilkins, 1937, 158.
9. Grimm LJ, Engstrom BI, Nelson RC, Kim CY. Incidental detection of nutcracker phenomenon on multidetector CT in an asymptomatic population: Prevalence and associated findings. *J Comput. Assist. Tomogr.* 2013; 37:415-418.
10. Hohenfellner M, D’Elia G, Hampel C *et al.* Transposition of the left renal vein for treatment of the nutcracker phenomenon: long-term follow-up. *Urology.* 2002; 59:354-357.
11. Kurklinsky AK, Rooke TW. Nutcracker phenomenon and nutcracker syndrome. *Mayo Clin. Proc.* 2010; 85:552-559.