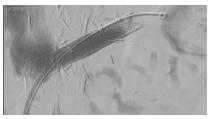
Outcomes of Left Renal Vein Stenting in Patients with Nutcracker Syndrome

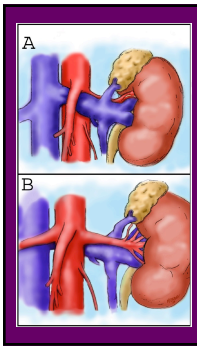


RABIH A. CHAER, MD, MSC
CO-DIRECTOR UPMC HVI
PROFESSOR AND CHIEF
UPMC DIVISION OF VASCULAR SURGERY

Disclosures

Nutcracker is the New COVID

Nutcracker Syndrome



- Debilitating flank pain
- Hematuria
- Pelvic Congestion / Varicocele
- Typical patient: Young thin female
- Intervention for Sx after all other diagnoses have been r/o
  - Reduce LRV hypertension
  - Reduce pelvic Reflux

Surgical Options

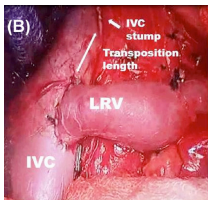
Left Renal Vein Transposition ± Vein Cuff or Patch

Left Gonadal Vein Transposition

SMA Transposition

Autotransplantation

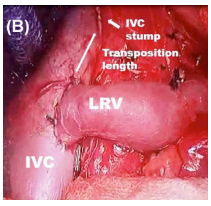
Laparoscopic Surgery



Surgical Options

Left Renal Vein Transposition ± Vein Cuff or Patch

- 90% Symptom Relief

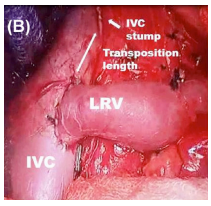


Velasquez CA, et al. J Vasc Surg Venous Lympat Disord 2018

Surgical Options

Left Renal Vein Transposition ± Vein Cuff or Patch

- 90% Symptom Relief
- Maximally Invasive
- Complications (rare):
  - RP hematoma requiring intervention
  - Lower Extremity DVT
  - Renal Vein Thrombosis
  - Paralytic Ileus
  - Delayed Mechanical Ileus

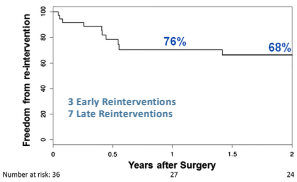


Velasquez CA, et al. J Vasc Surg Venous Lympat Disord 2018

Surgical Options

Left Renal Vein Transposition ± Vein Cuff or Patch

Erben Y, Gloviczki P et al. J Vasc Surg Venous Lympat Disord 2015



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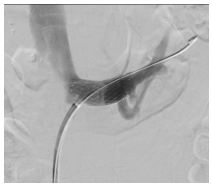
Endovascular Options

Left Renal Vein Stenting

- Appealing minimally invasive procedure
- Founded on the Iliac Vein Stenting Concept
- Extensive literature coming from Asia
  - Chen et al: 59/61 symptom relief no restenosis at 66m
  - Wang et al: 30/30 symptom relief no restenosis at 36m
- One French study with 5 patients
  - Only 2 symptom/intervention free at 14m
- Multiple "Successful" Case Reports



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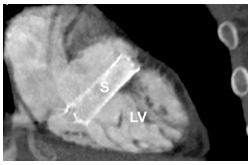
Endovascular Options

Left Renal Vein Stenting

- Long term restenosis?
- Migration (~7%)

Wu A et al.
J Vasc Surg Venous Lympat Disord 2015



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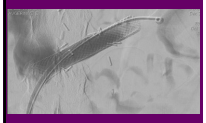
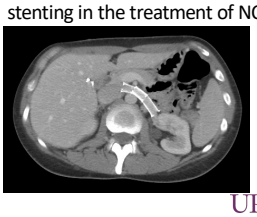


Purpose

"Assess outcomes of left renal vein stenting in the treatment of NCS"



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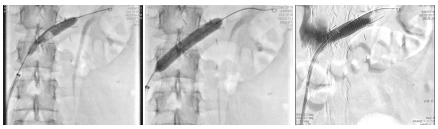
Methods

- Retrospective Chart Review 2010-2018
  - Perioperative adverse outcomes
  - Symptom relief – Complete or Partial
  - Stent patency – reinterventions



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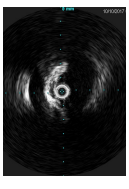
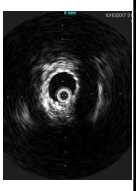
Technique

LRV Cannulation



IVUS to confirm diagnosis
Point stenosis
Measure LRV diameter

Primary Stenting: 14-16mm
Secondary Stenting: 10-14mm
Balloon Postdilatation



IVUS to assess result

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Results

- 18 patients (17 female, 38±17 y.o.)
  - 5 prior LRV transposition (failed within 7±5 months)
- Symptoms & Signs
  - 12 pelvic congestion
  - 15 flank pain
  - 10 hematuria
- Self Expanding Stents – Avg Diameter 12.8±1.6mm (10-16mm)
  - 8 Protegé Everflex
  - 6 Wallstents
  - 1 Zilver

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Results

- Hospital Stay: 1±1.3 days (9/18 same day discharge)
- Symptom Relief 13/18 (9 complete) - 72%
  - 3/5 with symptom persistence had a prior LRV transposition
  - 2 underwent autotransplantation
  - 1 was later diagnosed with endometriosis
  - 2 had persistent pain of unknown etiology

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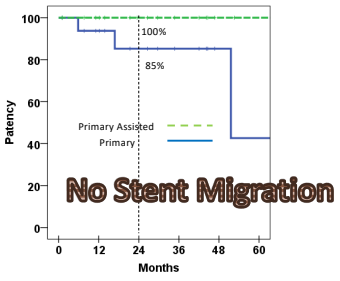
Stent Patency



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Conclusions

- LRV Stenting is safe with minimal morbidity
- Mid term LRV reinterventions do not differ from published historical surg controls
- LRV Stenting may be a reasonable alternative to LRV transposition
  - Appropriate expertise
  - Detailed discussion with patient
- LRV Stenting for failed transposition is treatment of choice
- Need for larger studies and long term follow up, outcomes with dedicated venous stents

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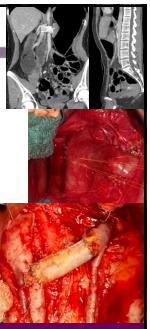
Word of Caution



- Migration is real
- Oversizing → Stent erosion and compression
- Oversized stent explantation may be needed for pain, PSA
- Currently no dedicated stents for LRV compression
- Outcomes of hybrid procedures need to be determined
  - Surgical prolene fixation of 12mm Self expanding stents
  - Transposition with stent/bovine pericardial patch conduit

chaerra@upmc.edu