CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE
CONTROVERSIES & UPDATES IN VASCULAR SURGERY
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Nutcracker syndrome maybe over-diagnosed (and over-treated) in the majority of patients – description and mechanism of "pseudo-nutcracker" syndrome.

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The Whiteley Clinic

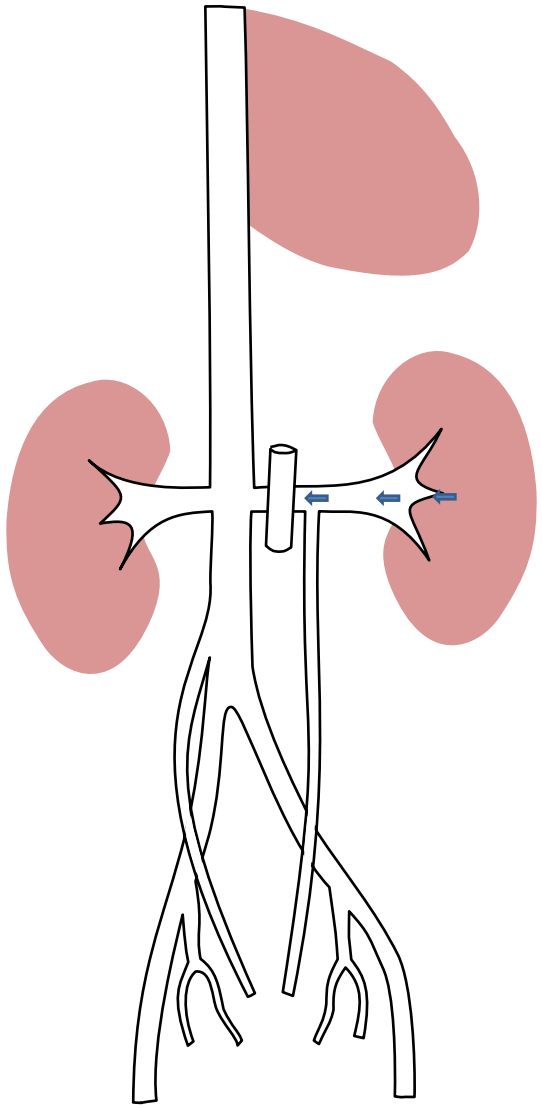
Disclosure

Speaker name:

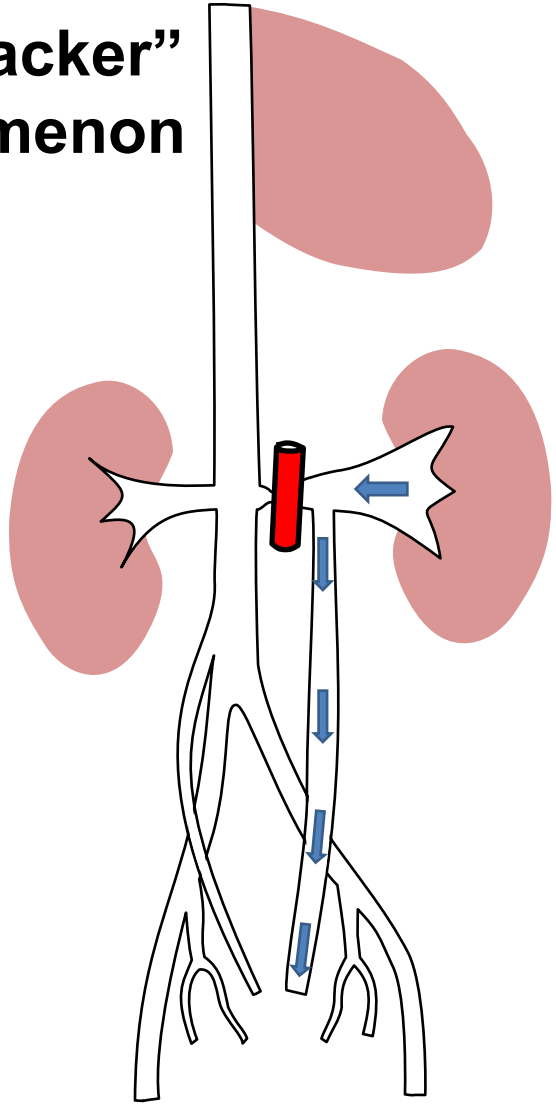
.....Mark Whiteley.....

- [x] I have the following potential conflicts of interest to report:
- [x] Consulting
- [ ] Employment in industry
- [ ] Shareholder in a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)
- [ ] I do not have any potential conflict of interest

Normal

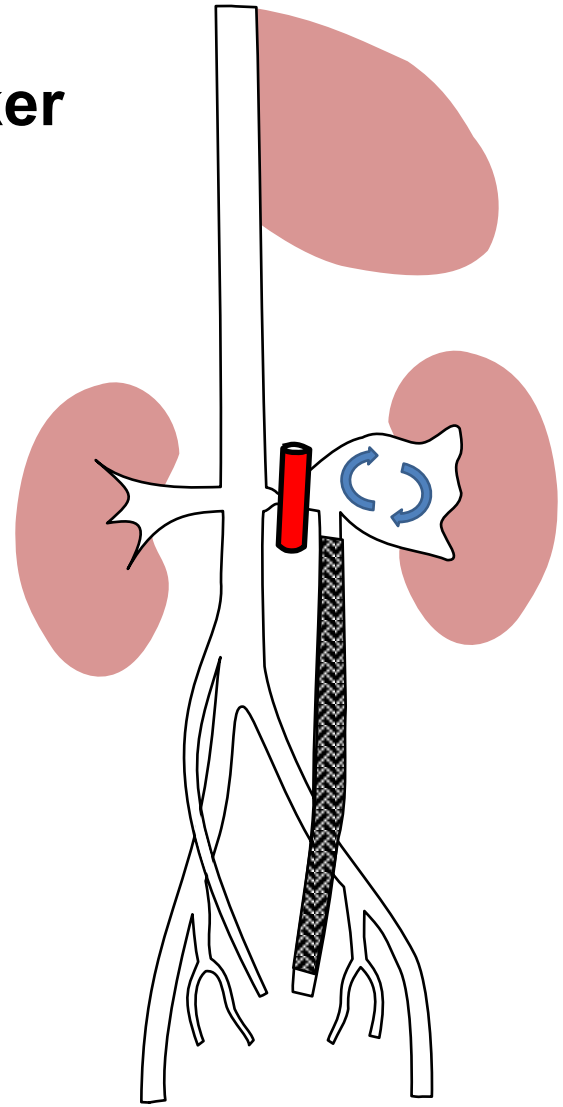


"Nutcracker" phenomenon



"Nutcracker" phenomenon
+
Symptoms and Signs
=
Nutcracker Syndrome

- **Concern about Nutcracker after PVE**



Investigations for Pelvic Vein Reflux

- Venography / MRI / MRV / CT
  - Size of veins > 8mm
  - Poor functional information
  - Only see veins with contrast flow in them
  - Usually lying flat
    - (No reflux when Flat!)

"OK, Mrs. Dunn. We'll slide you in there, scan your brain, and see if we can find out why you've been having these spells of claustrophobia."

Investigations for Pelvic Vein Reflux

- Ovarian vein diameter v reflux

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Eur J Vasc Endovasc Surg (2014) ■, 1–5

Ovarian Vein Diameter Cannot Be Used as an Indicator of Ovarian Venous Reflux

S.J. Dos Santos [a,b], J.M. Holdstock [a], C.C. Harrison [a], A.J. Lopez [c], M.S. Whiteley [a,b,*]

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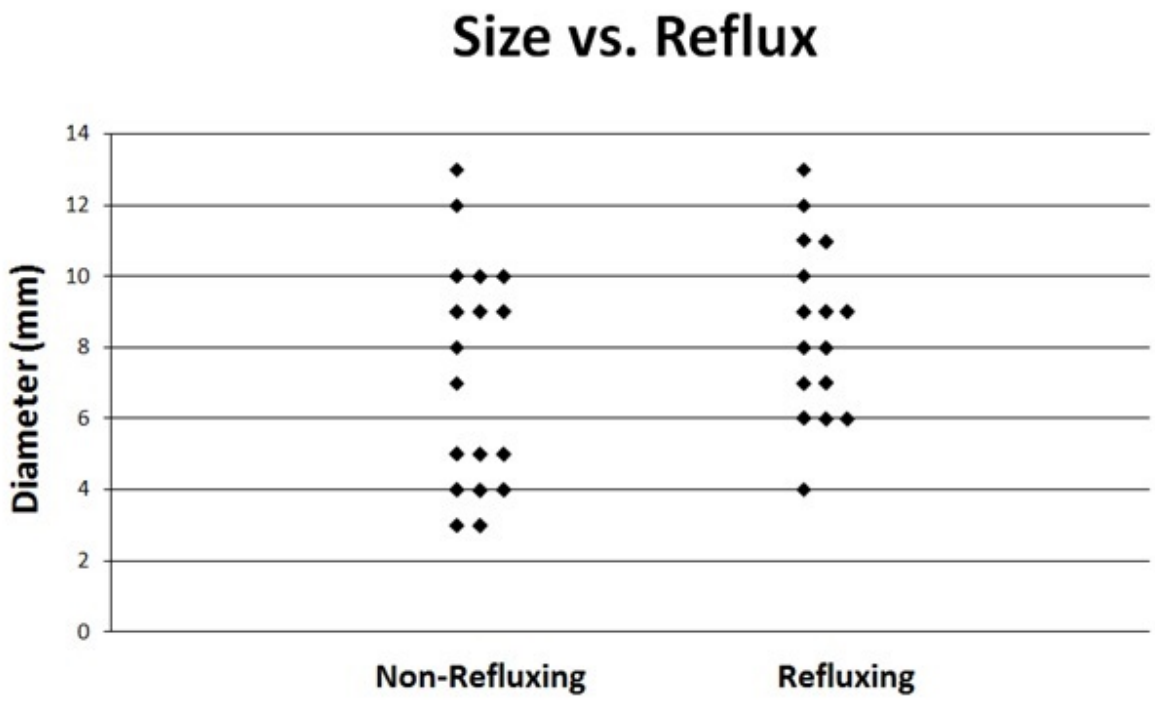

Investigations for Pelvic Vein Reflux

- Ovarian vein diameter v reflux

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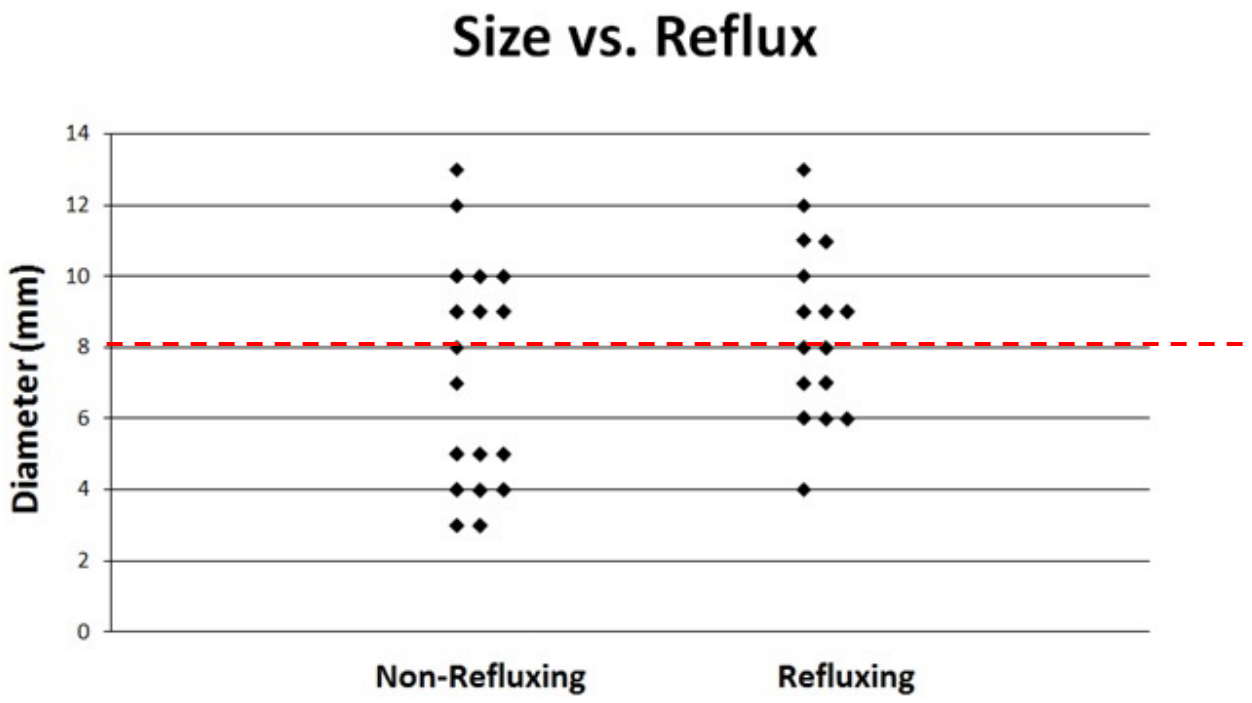

Investigations for Pelvic Vein Reflux

- Transabdominal Duplex Ultrasound
  - Reflux can be seen
  - In slim patients can see truncal veins
  - But cannot see:
    - communication with vulval vein
    - peri-uretheral veins
    - exit points of pelvis

From the American Venous Forum
2013 AVF Best Paper Award

Journal of Vascular Surgery
Venous and Lymphatic Disorders™

The role of duplex ultrasound in the workup of pelvic congestion syndrome

Rafael D. Malgor, MD, Demetri Adrahtas, MD, Georgios Spentzouris, MD, Antonios P. Gasparis, MD, Apostolos K. Tassiopoulos, MD, and Nicos Labropoulos, RVT, DIC, PhD, *Stony Brook, NY*

JOURNAL OF THE ROYAL SOCIETY OF MEDICINE Volume 88 November 1995

Iso-osmotic bowel preparation improves the accuracy of iliac artery colour flow duplex examination

M S Whiteley FRCS FRCSEd A D Fox FRCS BSc R A Harris RVT BSc M Horrocks MS FRCS

J R Soc Med 1995;**88**:657P–660P PAPER AWARDED NORMAN TANNER MEDAL BY SECTION OF SURGERY, 1 FEBRUARY 1995

Keywords: *ultrasound; Doppler; duplex; iliac artery; bowel preparation*

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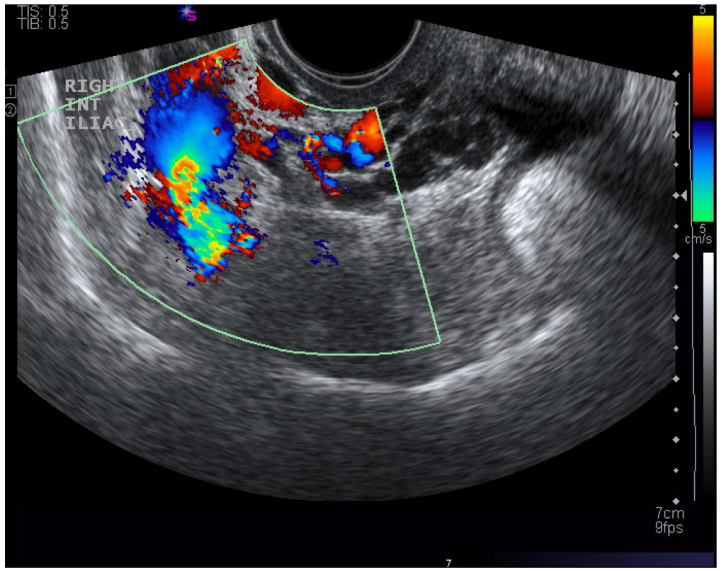
Background

- Since 2000:
  - Trans Vaginal Duplex Ultrasound (TVDUS)
  - & Trans Labial Duplex Ultrasound (TLDUS) since 2000
- Diagnosis of reflux:
  - Distal Left and Right Ovarian veins (LOV, ROV)
  - Left and Right internal iliac (LIIV, RIIV)
    - anterior/posterior divisions, pudendal, obturator, pelvic, vaginal wall, peri-urethral, peri-anal and labial varices



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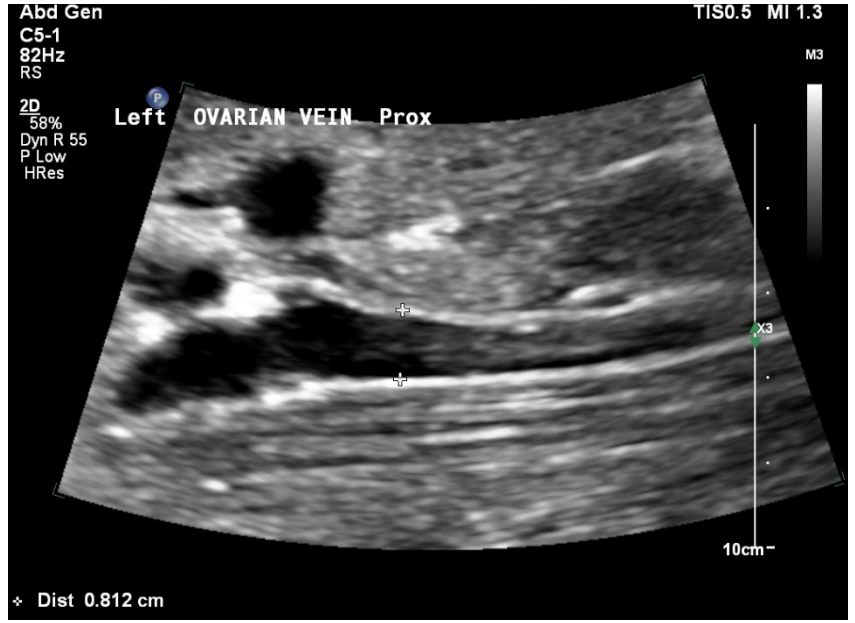
Transvaginal duplex ultrasonography appears to be the gold standard investigation for the haemodynamic evaluation of pelvic venous reflux in the ovarian and internal iliac veins in women

MS Whiteley[1,2], SJ Dos Santos[1,2], CC Harrison[1], JM Holdstock[1] and AJ Lopez[3]

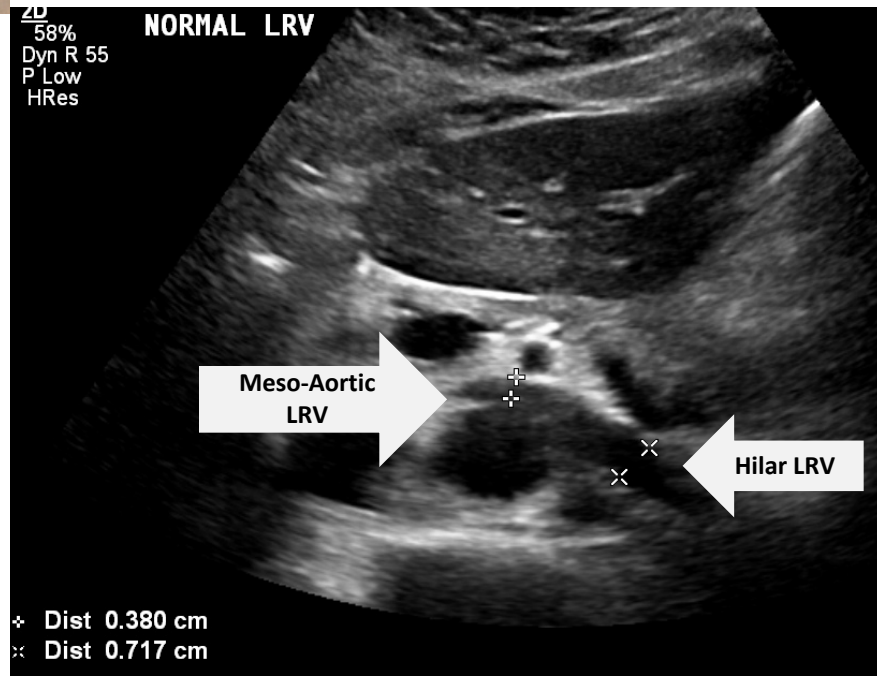
Background

- **Trans Abdominal Duplex Ultrasound (TADUS) 2016**
  - Proximal extent of reflux in OVs
  - Evaluate IVC, Common & External Iliac veins (CIV & EIV)
  - Vein calibre, anatomy and collaterals
  - LRV and identify/exclude Nutcracker
  - EIV Identify/exclude May Thurner and non thrombotic iliac vein lesion (NIVL)



[2]A standardized ultrasound approach to pelvic congestion syndrome. Nicos Labropoulos, Patrick T Jasinski, Demetri Adrahtas, Antonios P Gasparis, Mark Meissner.

Erect position - 80^0



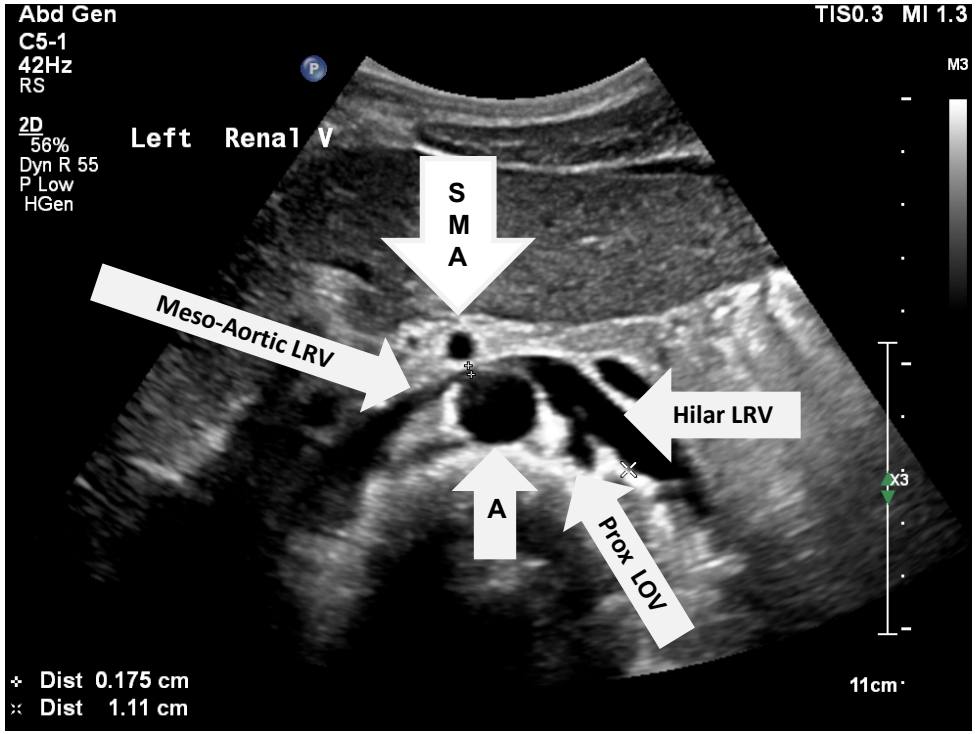
Patients

- **39 female patients (age 26-68, mean 45) underwent PVE between September 2016 and August 2017**
- **3 Groups**
- **1 exclusion**
  - 1/39 excluded due to failed cannulation of tortuous LOV at first PVE attempt

Methods

- Diameters LRV recorded
- Ratios hilar: mesoaortic LRV
  - at diagnosis
  - after PVE

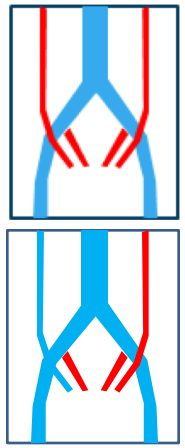
- hilar : mesoaortic diameter ratio of > 5 raised suspicion of Nutcracker Phenomena[4].



– [4] Nutcracker syndrome: diagnosis with Doppler US, SH Kim, SW Cho, HD Kim, JW Chung, JH Park, MC Han Radiology. 1996 Jan;198(1):93-7.

Patients

- **Group 1: 14/38 patients**
- All exhibited proximal and distal LOV reflux prior to PVE
  - 5/14 demonstrated reflux in both IIV and both OV
  - 9/14 demonstrated reflux in LOV and both IIV



- **Presentation:**
  - 2 PCS but no leg VV
  - 8 leg VV and PCS
  - 4 leg VV NO PCS (but communication of reflux)

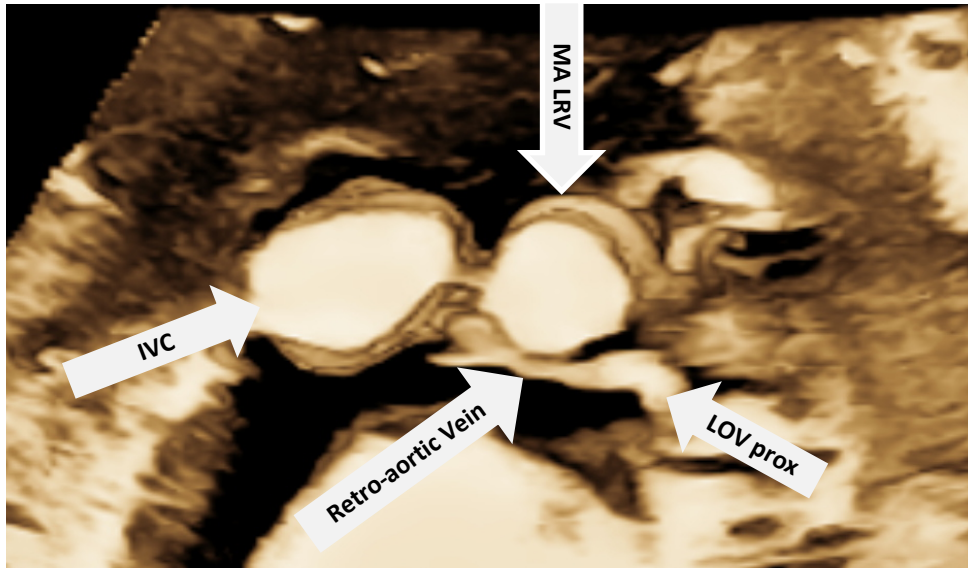
Patients

- **Group 2: 19/38 patients**
- 11 = No reflux in LOV
  - 7 bilateral IIV
  - 3 single IIV
  - 1 RIIV & ROV
- 8 = Reflux only distal LOV
  - 5 bil IIV & distal LOV
  - 3 bil IIV & distal LOV/ROV

- **Presentation:**
  - 2 PCS but no leg VV
  - 4 leg VV and PCS
  - 13 leg VV NO PCS (but communication of reflux)

Patients

- **Group 3: 5/38 Patients**
- All total LOV reflux
  - 2 both meso-aortic & retro-aortic LRV
  - 1 bifid LOV
  - 1 collaterals onto splenic vein
  - 1 with previously diagnosed May-Thurner with stent



Results

Groups 1 & 3

(19 Patients ALL with proximal and distal LOV reflux)

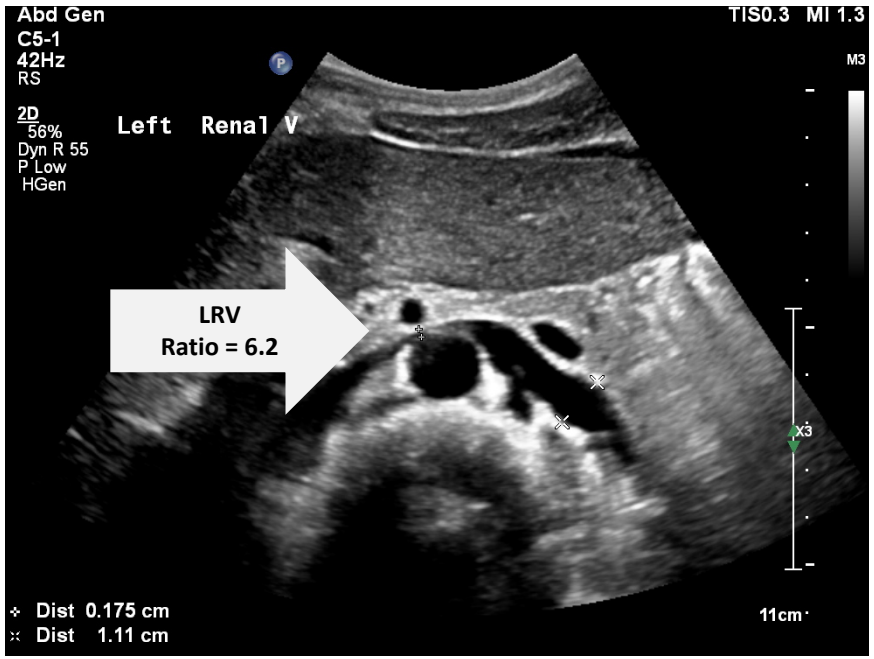
Hilar to Mesoaortic LRV Ratios

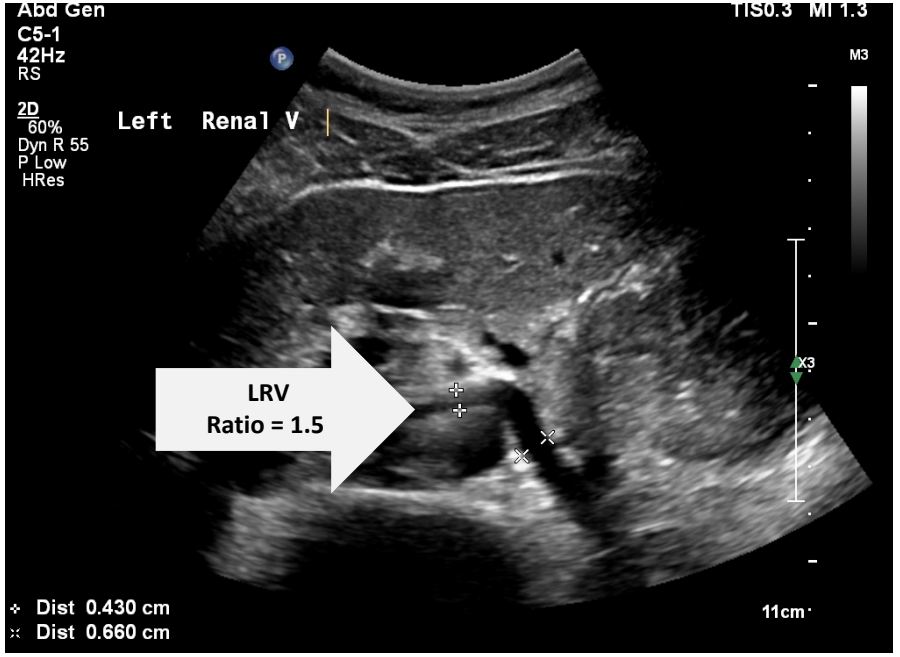
Pre PVE	6.6	6.7	4.4	4.2	3.5	3.0	2.5	8.5	2.3	6.2	8.4	5.0	3.8	10	4.1	3.5	4.9	5.0	7.0
Post PVE	3.5	0.5	1.7	2.3	2.4	1.8	1.0	1.7	2.1	2.9	3.3	1.7	1.9	3.0	3.4	1.8	3.8	2.8	2.3

Mean Ratio Pre PVE	Mean Ratio Post PVE
= 5.2	= 2.3

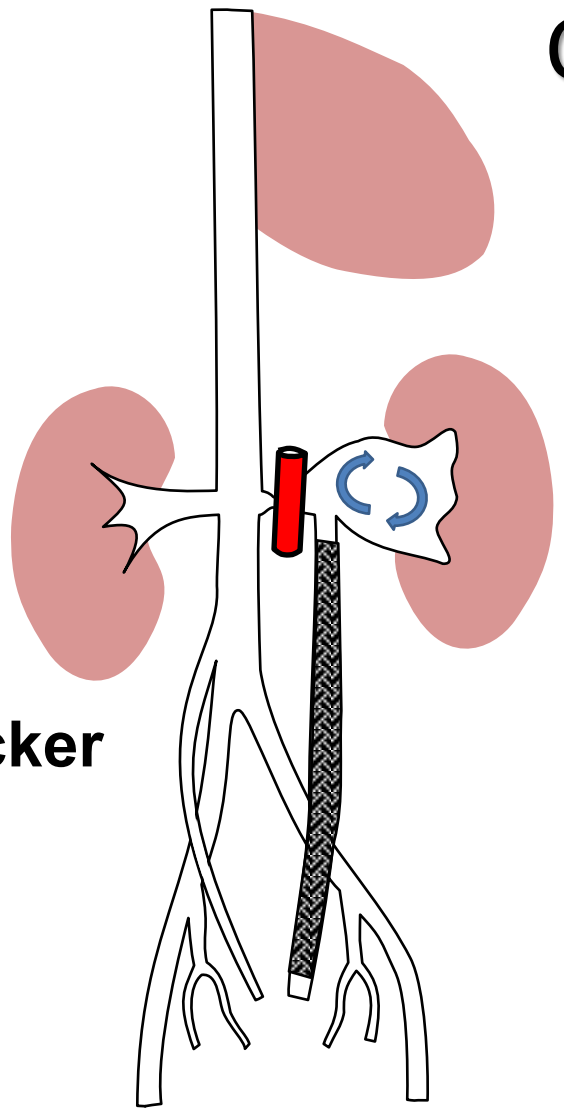
Conclusion 1 – Preferential Drainage

- This effect is relieved following PVE of the LOV

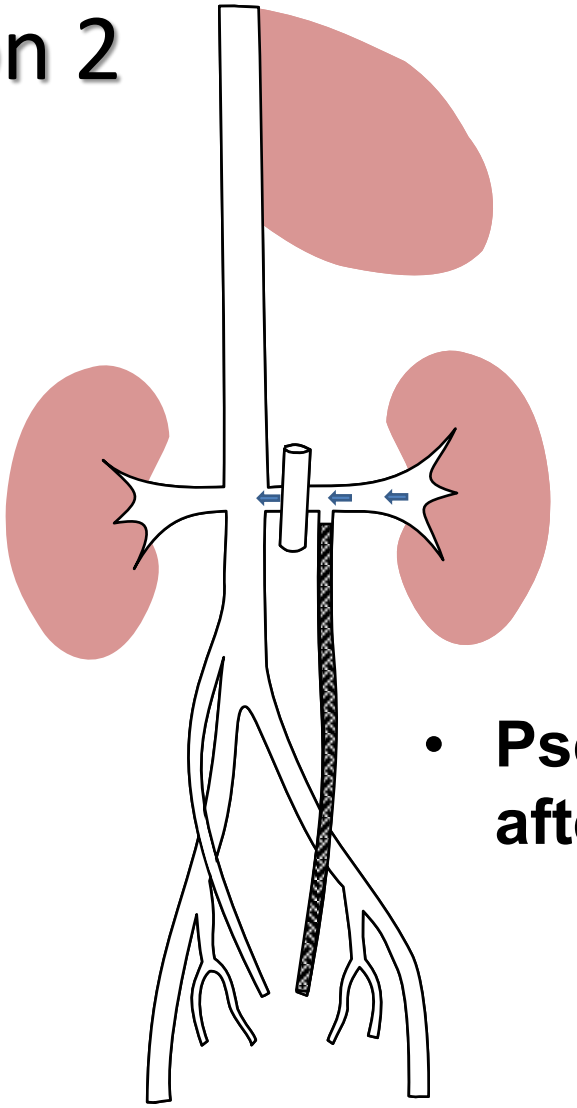




Conclusion 2



- **True Nutcracker after PVE :**



- **Pseudo-Nutcracker after PVE :**