Pelvic Vein Compression Syndromes

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Center for Vein Restoration 70 Clinics and Growing!
OBJECTIVES
For this CME talk

• Presentation of Pelvic compression
• Common causes of Pelvic venous hypertension;
  – Pelvic Venous Compressions (Non Thrombotic compressions)
  – Enhanced venous inflow – Ovarian vein reflux
  – Thrombotic occlusions
• Diagnosis of Venous Compression Syndromes.
• Treatment of Venous Compression Syndromes
• Review of CVR data on Non Thrombotic Pelvic Venous Compression
Conditions leading to Pelvic Venous Hypertension; Obstruction and/or Reflux

- **Obstruction**: Restriction of outflow to blood from below the diaphragm:
  - Non Thrombotic Obstructive compression of the veins:
    - May Thurner's Syndrome
    - Nutcracker Syndrome
  - Thrombotic outflow restriction
    - Deep Venous Thrombosis
- **Restriction**: ‘Too much’ venous inflow into the pelvis
  - Ovarian vein reflux
Clinical presentation of Venous Compressive Syndromes of the pelvis & abdomen

Venous Hypertension

I. Contained within the Pelvis - Uncompensated
   Pelvic Congestion syndrome

II. Leaks into the legs through escape veins - Compensated
   Chronic venous disease of the legs
When venous hypertension is transmitted to the lower extremities -Compensated- Non Saphenous Varicosities
When venous hypertension is contained within the pelvis: PCS – clinical presentation:

- Lower abdominal/pelvic pain
  - Chronic
  - Dull
  - May have a predisposition to the left flank with radiation to the buttock (mimicking sciatica)

- Relieving and aggravating factors
  - Relieved by laying down
  - Aggravated by standing, increased intra-abdominal pressure (pregnancy), premenstrual period.

- Associated with
  - Dyspareunia
  - Bladder irritability & urgency
  - Vulvar/vaginal varicosities

- Other non specific symptoms:
  - Fullness in legs, lethargy, depression, abdominal or pelvic tenderness, vaginal discharge, dysmenorrhea, swollen vulva, lumbosacral neuropathy, rectal discomfort, non specific GI symptoms.

PCS – Demographics & Differential diagnosis

• **Demographics**
  – Primarily premenopausal age range 20-45 years
  – Most 20-40 years of age
  – Genetic or ethnic predilections are unclear
  – Family history and multiparity are both risks

• **Differential diagnosis**
  – *Pelvic Malignancy*
  – Endometriosis (39%)
  – Pelvic Congestion Syndrome (31%)
  – Pelvic Inflammatory disease (11%)
  – Adhesions (10%)
  – Fibroids (4%)
  – Other (5%)

Soysal et al, Hum Reprod 2001
Incidence of PCS: The magnitude of the challenge

- Chronic pelvic pain;
  - Responsible for 30% of outpatient Gyn. visits in the US
  - **Potentially affecting up to 40% of the female population during their lifetime**

- Pelvic Congestion Syndrome;
  - PCS accounts for 30% of the patients presenting with Chronic pelvic pain.

- For patients with lower extremity varicose veins;
  - 10-15% have non saphenous varicosities
Pathological anatomy of May Thurner’s Syndrome
Pathological anatomy defining PCS

• Two anatomic findings define PCS:
  – Ovarian vein reflux
  – pelvic varicosities.

• Each may be seen without the other or both can be present in asymptomatic patients.
Pathological anatomy of Nutcracker syndrome

- Most typical nutcracker morphologic features imply compression of the LRV between the aorta and the Superior Mesenteric Artery (SMA)
Clinical presentation of Nutcracker syndrome

• Asymptomatic hematuria or hematuria with severe pelvic pain.
• Signs are aggravated by physical activity
  – Hematuria
  – Varicocele
  – Orthostatic proteinuria
  – Orthostatic intolerance

• Hematuria, pelvic pain, pelvic varicosities, and varicoceles are the most common clinical signs that should raise suspicion for the diagnosis
Diagnosis of Venous Compressive Syndromes
US diagnosis for PCS

- Helping identify etiology
  - Primary PCS
  - Secondary PCS
    - Lt. Common Iliac vein stenosis
    - Lt. Renal vein stenosis
- Proving sequelae of PCS
  - Ovarian vein (dilatation and reflux)
  - Peri-uterine veins (dilatation and reflux)

- Pelvic and lower extremity (LE) duplex ultrasound (US) examination,
  - performed preferably while standing.
  - With transabdominal 5-MHz and transvaginal probes
  - After 3 days of a no-residue diet and an empty stomach.
CTV/MRV for PCS

- Good sensitivity, fair specificity
- ** Supine position can decrease size
- Criteria
  - >4 tortuous parieterine veins
  - Periuterine veins > 4mm
  - Ovarian vein diameter > 8mm

Clinical Practice Guidelines, SVS, JVS 2011
Hilar portion of the left renal vein and the gonadal vein are distended. Distended lumbar and azygous collaterals may be seen in some cases.
Diagnostic Venography: Was The Gold standard
Current Gold standard: IVUS

Indications:
1) Suspected PCS based on non invasive imaging, proceed with intervention in the same sitting if confirmed
2) Suspected PCS - Equivocal non invasive imaging.
Diagnostic Venography – ‘The Gold standard’
Intra Vascular Ultrasonography
Treatment of Pelvic Congestion Syndrome

• **TEAM APPROACH**
  – Gynecologist with special interest in pelvic pain
  – Psychologist
  – Vascular Specialist
  – Venous Disease specialist
  – Administrator with special interest in treating these extremely frustrated patients

• **Rule out Malignancy**

• Hormonal therapy

• Interventional therapy
Treatment of Pelvic Congestion syndrome
Schematic – Ovarian Vein Embolization
Iliac vein stenosis: An under diagnosed cause of pelvic venous insufficiency.

Nookla R., Lakhanpal S., Satwah V., Lakhanpal G, Malone M., Pappas PJ.
Center for Vascular Medicine/Center for Vein Restoration
Lakhanpal Vein Foundation
Methods

• Retrospective chart review of 220 women who underwent 227 procedures for PCS at the Center for Vascular Medicine from January 2012 to September 2015.

• All patients had a complete Gynecologic evaluation and a pre-op lower extremity and ovarian vein venous duplex prior to any interventional procedure.

• All patients had pre and post procedure visual analog pain scores recorded.

• The majority of patients with OVE and obstructive lesions were treated with stage procedures: OVE followed by stenting.

• A subset of patients were treated with simultaneous OVE and Stenting due to travel restrictions.
Results: Age Distribution

Avg Age was 45

Age in years

Percent Total

<20
0.40%

21-30
8.30%

31-40
25.50%

41-50
38.76%

51-60
18.50%

61-70
12.30%

71-80
0.80%

Avg Age was 45
Results: Average Number of Pregnancies

Pregnancy Distribution
Avg=3.36±1.99
## Visual Analog Pain Scores

### Visual Analog Pain Score by treatment type

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<th>OVE (n=39)</th>
<th>OVE+stenting (n=127)</th>
<th>Stenting alone (n=50)</th>
<th>OVE+venoplasty (n=8)</th>
<th>Venoplasty alone (n=3)</th>
<th>P value</th>
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<tr>
<td><strong>Pre-pain score</strong></td>
<td><em>7.41 ± 1.33</em></td>
<td>8.62 ± 0.96</td>
<td>8.78 ± 0.83</td>
<td>8.75 ± 0.83</td>
<td>#8.67 ± 0.47</td>
<td>*p&lt;0.006</td>
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<td><strong>Post-pain score</strong></td>
<td>3.15 ± 3.10</td>
<td><em>1.63 ± 2.36</em></td>
<td><em>1.48 ± 2.57</em></td>
<td>1.89 ± 2.20</td>
<td>1.33 ± 1.25</td>
<td>*p&lt;0.007</td>
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<td><strong>Pre vs Post pain score</strong></td>
<td>p&lt;0.001</td>
<td>p&lt;0.001</td>
<td>p&lt;0.001</td>
<td>p&lt;0.001</td>
<td>p=0.25</td>
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Results: Center for Vascular Medicine
Results (Iliac Vein Obstruction Group)

Only 9 of 88 patients reported a decrease in pain with OVE prior to stenting.
CONCLUSIONS
For this CME talk

• Concept of venous hypertension:
  – Lower extremity and pelvis; Pelvis -> escape veins -> lower extremities

• Common causes of Pelvic venous hypertension;
  – **Pelvic Venous Compressions (Non Thrombotic compressions)**; May Thurner Syndrome, Nutcracker Syndrome
  – Enhanced venous inflow – **Ovarian vein reflux**; Ovarian vein reflux
  – Thrombotic occlusions

• Diagnosis of Venous Compression Syndromes:
  – Clinical presentation, Surface Ultrasound, CT/MRI, Venography & IVUS

• Treatment of Venous Compression Syndromes:
  – Rule out D/D, Medical and psychological care, Iliac vein Stenting, Embolization of the Ovarian veins
Thank You for your attention !!!