Pelvic Venous Insufficiency: Overlooked and Underdiagnosed Cause of Chronic Pelvic Pain

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DISCLOSURES

• None
LEARNING OBJECTIVES

- Define pelvic venous insufficiency (PVI)
- Identify Risk factors for and causes of PVI
- List signs and symptoms of PVI
- Recognize physical exam findings that may indicate PVI
- Identify psychological and quality of life impact of PVI
- Review management/treatment modalities

PELVIC VENOUS INSUFFICIENCY

- Pelvic congestion syndrome
- Pelvic venous incompetence
- Varicose veins in the pelvis

CHRONIC PELVIC PAIN

Chronic pelvic pain is a common problem presenting a major challenge to healthcare professionals. This is partly due to the lack of understanding of the aetiology and natural history of the disease. This condition may be managed using a multidisciplinary approach. It may be related to psychological problems in the clinical management of chronic pelvic pain. Chronic pelvic pain has been identified as a psychosocial problem after organic disease has been excluded. (Sex Transm Inf 2000;76:419–425)

- Intermediate or constant pelvic pain of unknown etiology present >6 mos refractory to conventional therapies. Not exclusively related to menstruation, intercourse or pregnancy.
- Often multiple components—physical & psychological

Chronic pelvic pain is a SYMPTOM—NOT a diagnostic entity.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Cause</th>
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<tbody>
<tr>
<td>Endometriosis</td>
<td>Intestinal cysts, pelvic bladder syndrome, endometriosis, diverticulitis, irritable bowel syndrome, inflammatory bowel disease</td>
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<td>Adenomyosis</td>
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<td>Recurrent ovarian cysts</td>
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**Prevalence of chronic pelvic pain**

- In ages 18-50: 15%
- Accounts for 10% of all outpatient GYN visits
- Estimated that one third of all women will experience chronic pelvic pain in their lifetime
- In 55-60% of patients the cause remains undiscovered
- Close to 2 billion $ spent in health care WITHOUT significant patient benefit
CHRONIC PELVIC PAIN IMPACT

**COMPLICATED DIFFERENTIAL DIAGNOSIS**
- Causes are varied
- Numerous consultations with a variety of specialists
- Time consuming negatively affects patients' psychosocial well-being

2009-VEIN-TERM transatlantic interdisciplinary consensus document described PCS as:
- "Chronic symptoms, which may include pelvic pain, perineal heaviness, urgency of micturition and postcoital pain, caused by ovarian and/or pelvic reflux and/or obstruction, which may be associated with vulvar, perineal, and/or lower extremity varices."

PELVIC CONGESTION SYNDROME

**SIGNS/SYMPTOMS PCS**

**Leg pain, heaviness, fatigue, throbbing**
- Severe symptoms during menstruation
- Dull, aching or "dragging" pain in the pelvis or lower back, particularly on standing and worse during menstrual period

**Vulvar, vaginal pain**
- Severe, painful heaviness during pregnancy "worse pain ever"
- May continue after delivery, especially premenstrual and/or during menstruation
- Deep dyspareunia—painful during or prolonged postcoital pain
- Pelvic pain may be continuous and worse during menses or only present during menses
SIGNS/SYMPTOMS PCS

Urinary symptoms
- Irritable bladder that sometimes leads to stress incontinence
- Irritable bowel

Presence of varicosities
- Vaginal or vulvar varicose veins
- Varicose veins of the top of the inner thighs or the back of the thighs, gluteal

QOL IMPACT

NO decrease in the QUANTITY of life
Significant negative impact on the QUALITY of life

- Many suffer from symptoms for extended period of time prior to seeking treatment (often reluctant to discuss with HCP)
- Numerous providers seen-PCP,OB/GYN,GU,GI without a diagnosis or effective treatment/relief of symptoms
- Gap in HCP knowledge of venous etiology of CPP/PVI and available treatments
- Diagnosis is often missed-exam is usually with patient supine, relieving pressure from the ovarian veins so they do not bulge.
- Difficult to quantify QOL impact of PCS/PVI as no disease specific quality-of-life tools have been developed and validated.

EMOTIONAL/PSYCHOLOGICAL IMPACT

- Dysmenorrhea, dysuria and dyspareunia are significant factors that influence a sexual relationship between partners
- Sitting or standing for long periods of time exacerbates pain affecting productivity and job satisfaction
- Profound negative impact on activities, fitness, social life and body image

Pelvic congestion syndrome associated:
- Depression → 25% to 50%
- Anxiety → 10%-20%
- Somatic complaints → 10%-20%
ANECDOTAL - "RECURRENT THEMES"

No one can figure out what's wrong with me

"I feel like they all think I'm a crazy woman"

"I just want to be..."

"I want... again"

"I am in so much pain I can't work anymore. It affects even the periods..."

"Thank you for making me know I AM NOT CRAZY"

RISK FACTORS

- Multiple (2 or more) pregnancies
- Presence of a "tipped" (retroverted) uterus
- Fullness of the leg veins
- Hormonal increases or dysfunction
- Polycystic ovarian syndrome (PCOS)
- Varicose veins of the legs, groin, vulva

Prevalence
- PCS accounts for 16–31% of pelvic pain
- Second only to endometriosis in frequency

ETIOLOGY OF PCS

- Uncertain but likely multifactorial
  - Valvular insufficiency
  - Venous obstruction or compression
  - Hormone influence
  - Number of pregnancies
  - Family history

- Cause of pain?
  - Increased dilatation
  - Venous stasis
  - Release of local inflammatory mediators
  - Possible neuro/pain influence differences in central pain processing among patients with chronic pelvic pain

Meissner MH and Gibson K. Phlebology. 2015, Vol. 30(1S) 73–80
Lower extremity exam

- Trail of varicosities down the leg that originates in the high anterior or posterior thigh
- Varicosities present in the high medial thigh that extend into the vulvar area
- Scattered varicosities in the thigh and calf both anterior and posterior

ATYPICAL VARICOSE VEINS

Varices from the vulvar, perineal and gluteal area extending down in the lower extremity of multiparous women warrants pelvic vein examination
INTERNAL Iliac Vein Reflux

• Lower Extremity Venous Duplex
• Transabdominal / Transpelvic Ultrasonography
• MR / CT Venography
• Direct puncture phlebography
• Retrograde Ovarian / Internal Iliac Venography

Duplex criteria
OV > 6mm + Reflux
Pelvic Varicosity >5mm + Reflux
PELVIC VENOUS ANATOMY

- Left ovarian vein → drains into the left renal vein
- Right ovarian vein → drains into the IVC just below the right renal vein
- Anatomic variability is very common
- The ovarian veins and the internal iliac veins often communicate

PELVIC VENOUS DISEASE

Two Clinical Presentations
(Isolated or Combined)

<table>
<thead>
<tr>
<th>Leg Symptoms</th>
<th>Pelvic Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Heaviness</td>
<td>• Pelvic pain</td>
</tr>
<tr>
<td>• Ache</td>
<td>• Heaviness</td>
</tr>
<tr>
<td>• Varicosity</td>
<td>• Dyspareunia</td>
</tr>
<tr>
<td>• PTB</td>
<td>• Dysuria</td>
</tr>
</tbody>
</table>

Treatment should focus on the patients dominant clinical symptoms

DEFINITION

Pelvic Venous Disease
- Reflux
- Obstruction
**PELVIC VEIN PATHOLOGY**

### PATHOLOGY

#### Reflux
- Gonadal veins
- Internal iliac veins

#### CLINICAL PRESENTATION
- Pelvic congestion
- Testicular varices
- Non-saphenous vv

### PATHOLOGY

#### Obstruction/Compression
- Iliac veins
- Renal vein

#### Acute
- LE – Deep vein thrombosis

#### Chronic
- LE – PTS
- Pelvis – PCS

#### Nutcracker syndrome
- PCS

### PELVIC VENOUS REFLUX

#### Three Anatomic Patterns of Reflux

- PRIMARY
- SECONDARY

- Gonadal Vein Reflux
- Internal Iliac Reflux
- Compression Syndrome
FORMATION OF PELVIC VARICES

PELVIC LEAKS TO LOWER LIMBS

2 FORMATION OF VULVAL, ATYPICAL VARICES, ETC...

PELVIC FLOOR INCOMPETENCE

PELVIC FLOOR COMPETENCE

TRIGGER FACTOR
PREGNANCIES
- Hemodynamics
- Hormonal

FORMATION OF PELVIC VARICES

PELVIC VENOUS HYPERTENSION

PELVIC CONGESTION SYNDROME

PATHOPHYSIOLOGY

• Hemodynamics
• Hormonal

PELVIC FLOOR INCOMPETENCE

Ovarian Vein Reflux => Pelvic varicosities with no exit

- Majority Asymptomatic
- Symptomatic – Pelvic congestion

PELVIC CONGESTION WITH PELVIC FLOOR COMPETENT

PELVIC CONGESTION WITH PELVIC FLOOR INCOMPETENT

PELVIC VENOUS HPERTENSION of any etiology with an incompetent pelvic floor may develop leakage points to lower limbs

Non-saphenous varicose veins
PELVIC CONGESTION
INTERNAL ILIAC REFLUX

PATHOPHYSIOLOGY

TRIGGER FACTOR

PREGNANCIES
- Hemodynamics
- Hormonal

PELVIC VENOUS HYPERTENSION

FORMATION OF PELVIC VARICES

PELVIC FLOOR INCOMPETENCE

FORMATION OF VULVAL, ATYPICAL VARICES, ETC...

PELVIC FLOOR INCOMPETENCE

LOWER EXTREMITY SYMPTOMS

COMPRESSION – ILIAC VEIN

COMPRESSION SYNDROMES

VENOUS HYPERTENSION
Compression – Renal Vein

Compression syndromes

Venous hypertension

PCS

Nutcracker Syndrome

Pelvic venogram

Diagnosis

Signs and symptoms

Ultrasound (+)

CTV/MRV (+)

Pelvic varicosities

Left renal vein compression

Left iliac vein compression

Ovarian vein reflux

Internal iliac vein reflux

Ovarian vein > 6 mm with reflux

Uterine crossing vein

Pelvic varicosities

Polycystic ovaries

Duplex evaluation of IVC and iliac veins

LCIV compressed from RCIA but no significant stenosis
Duplex Evaluation of Renal Vein

Duplex Evaluation of LOV

LOV reflux in a patient with PCS
MANAGEMENT/TREATMENT

Medical
- Progestin (MPA)
- Danazol
- Combined oral hormonal contraceptives
- Nonsteroidal anti-inflammatory drugs
- Gonadotropin-releasing hormone (GnRH) agonists

• Prognosis
- 73% of women reported ≥50% benefits
- Pain always recurred after the cessation of therapy
- Systemic side effects limit compliance or long-term use


MANAGEMENT/TREATMENT

Surgical

Laparoscopic
- Transperitoneal ligation of ovarian veins

Open
- Retropertoneal ligation of ovarian veins
- Hysterectomy and bilateral salpingo-oophorectomy, ligation or excision of ovarian veins, with interruption of collaterals
  - women who have completed childbearing
  - indicated only in case of unavailability or failure of less invasive techniques

• Symptomatic relief ≤75% of women
  - Based on observational data and case series

**MANAGEMENT/TREATMENT**

**Percutaneous/Endovascular treatment**

Sclerotherapy
- Ovarian varices
- Internal iliac varices

**Transcatheter embolization**

- Coils
  - Ovarian veins

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**TRANSCATHETER EMBOLOTHERAPY**

**OVARIAN VEIN TREATMENT**

- ScleroTx + Balloon occlusion
- Contrast diluted sclerosant
  - Sodium tetradecyl sulfate
    (Liquid vs foam)

- Coil embolization
  - Embolization at upper 1/2 of SI joint
  - 5 - 15 mm, 0.035” coils

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**TRANSCATHETER EMBOLOTHERAPY**

**INTERNAL ILIAC VEIN TREATMENT**

- Balloon occlusion venography
- Balloon occlusion sclerotherapy
  - Sodium tetradecyl sulfate
- ± Coil embolization

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29 year old female with pelvic pain, dysuria and lower extremity non-saphenous varicose veins.

**Physical Exam** – Bilateral groin and posterior thigh varicose veins.

**DU** – Left ovarian vein 8.4 mm with reflux
Right ovarian vein 6.1 mm no reflux
So, Where Is the data for pelvic embolization …

**COMPARISON OF TREATMENTS OF PCS-RANDOMIZED**

**CHUNG ET AL; TOHOKU J EXP MED, 2003**

- 106 women with PCS
- Randomized to
  - Ovarian vein embolization (n = 52)
  - Hysterectomy/BSO / HRT (n = 32)
  - Hysterectomy/USO (n = 34)

Evaluated improvement in pain using VAS

Embolization was significantly more effective at reducing pelvic pain, compared to the other methods (p < 0.05)

**TREATMENT OF PCS-CASE SERIES**

<table>
<thead>
<tr>
<th>Study</th>
<th>No. of Women</th>
<th>Embolization Technique</th>
<th>Mean Follow Up [mo]</th>
<th>Clinical Outcome</th>
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</thead>
<tbody>
<tr>
<td>Lalonde et al²</td>
<td>175</td>
<td>Coil</td>
<td>1.7</td>
<td>VAS improvement 13.9-58</td>
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<tr>
<td>Lachen et al²</td>
<td>120</td>
<td>Coil</td>
<td>12</td>
<td>Significant relief in 80%, no relief in 10%, 2% worsened</td>
</tr>
<tr>
<td>Cheng et al²</td>
<td>80</td>
<td>Coil</td>
<td>15</td>
<td>Significant relief in 80%, no relief in 20%, 10% worsened</td>
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<tr>
<td>Leite et al³</td>
<td>63</td>
<td>Coil</td>
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<td>Pham et al²</td>
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Swelling/Pain
Venous claudication
Lipodermatosclerosis
Venous ulceration

Utrasound guided sclerotherapy

TREATMENT OF LE SYMPTOMS
NON-SAPHENOUS VARICOSE VEINS
Fluroscopy guided sclerotherapy
- Deliver large volumes of sclerosant
- Peri-uterine venous plexus can be reached

TREATMENT OF LE SYMPTOMS
NON-SAPHENOUS VARICOSE VEINS

Microphlebectomy

TREATMENT OF LE SYMPTOMS
NON-SAPHENOUS VARICOSE VEINS

DIAGNOSING VENOUS OBSTRUCTION
Diagnosis
Venous obstruction

• GHI
• HealthFirst
• HP
• Affinity
• Aetna
• Cigna
• Fidelis
• HealthCare
• Island Group

[Aetna considers embolization (e.g., using metallic coils or foam/gel sclerotherapy) of ovarian veins, with or without the internal iliac veins, medically necessary for the treatment of pelvic congestion syndrome (PCS) when both of the following criteria are met:
1. The member has had a definitive diagnostic venography, CT or MRI; and
2. The member has failed a trial of appropriate pharmacotherapy (e.g., analgesics, hormonal therapy).]

IS IT COVERED?

• Minimally invasive procedure
• Pre op testing
• Outpatient procedure – about 45 minutes to 2 hours
• Home after a few hours observation
• Initially no heavy lifting, vigorous exercise, sexual activity, bowel straining
• Next day may shower and remove puncture site dressing
• Return to normal activity after first week
• NSAIDS/acetaminophen if needed
• Follow up DUS
The complication rate is low
- Hematoma at puncture site
- Local phlebitis
- Allergic reaction to the contrast dye
- Kidney dysfunction
- Coil migration
- Ovarian vein perforation/rupture
- Deep vein thrombosis

FUTURE DIRECTION/IDENTIFIED NEEDS
- Consensus agreement for diagnosis
- Systematic studies – Determine true prevalence of PCS/PVI
- Accurately measure quality of life PCS/PVI patient population
- Well designed outcome studies to examine whether trans-venous occlusion of PVI improves quality of life for these women
- Evidence based treatment algorithms
- Education for health care providers and public

SPECIAL THANKS TO:
- Kristan Probeck ANP-C
- Antonios Gasparis MD and Nicos Labropoulos PhD
- Mark H Meissner MD
- SB Vascular Center Providers
REFERENCES


