
Pelvic Congestion Syndrome

Background

Chronic pelvic pain, defined as non-cyclic pelvic pain of greater than 6 months duration, is a common presenting problem to the Gynaecologist. A third of all patients worked up for chronic pelvic pain with laparoscopy, have no obvious etiology. Pelvic congestion syndrome (PCS) has long been recognized as a cause of chronic pelvic pain, caused by retrograde flow down incompetent gonadal veins resulting in pelvic varicosities. This is anatomically analogous to the male varicocele, but because the pelvic varicosities are not externally visible or palpable, the diagnosis is most often elusive. The treatment of choice is the same as for a male varicocele, transcatheter gonadal vein embolization.

Clinical Diagnosis

The symptom complex can be best understood as the result of gravity related filling of the pelvic varicosities. The classic and almost pathognomonic presentation includes varying degrees of pelvic and lower back pain that is worsened with standing and exercising, and is therefore most severe at the end of the day. It is also often exacerbated with intercourse. Patients who usually describe the pain to be diminished or relieved in the supine position have the most relief upon awakening in the morning. The above presenting complaints are predictive of clinical success after transcatheter embolization of the varices and gonadal veins.

The visualization of incompetent gonadal veins and associated pelvic varices has been difficult without performing invasive gonadal vein venography to demonstrate spontaneous reflux. Clinical pelvic examination is insensitive to recognise pelvic varicosities, unlike in the male of an enlarged scrotum with palpable varices.

Transvaginal color Doppler ultrasound performed in a supine and upright positions with and without Valsalva is the best screening modality. This often reveals an increase in pelvic venous channels and provides confirmation that the pelvic varices are affected by gravity-dependent filling. Laparoscopy is usually unrewarding in making the observation of pelvic varices due to the compression of the varices from the peritoneal CO₂ insufflation and the resultant draining of the varices while the patient is in a Trendelenburg position. There has therefore been no satisfactory accurate non-invasive modality up until recently to confirm the clinical suspicion without performing venography.

Pelvic MRI and gadolinium enhanced 3D magnetic resonance venography (MRV) is almost 100% sensitive in detecting large gonadal veins and associated varices. The MRV combined with pelvic MRI allows us to exclude other common causes of pelvic pain such as fibroids, endometriosis, adenomyosis, ovarian masses and lower lumbar intervertebral disc abnormalities. It is thus an excellent modality for the workup of chronic pelvic pain. The anatomic information garnered from the MRV also provides an excellent roadmap for the Interventional Radiologist prior to venography and embolisation.

Who Should Be Involved With The Decision To Treat?

With the ability to screen for the syndrome with an accurate non-invasive test using Doppler Ultrasound patients may present to General Practitioners, Phlebologists, Surgeons and Gynaecologist alike. It is important to state on the request form that the suspected clinical diagnosis is pelvic varices and gonadal vein reflux. It is our recommendation that these patients are worked up in partnership with a Gynaecologist who understands and appreciates the syndrome. It is imperative that the patients have a complete pelvic examination and, if warranted, a laparoscopy prior to embolisation of the varices by the Interventional Radiologist. The Interventional Radiologist will only proceed with transcatheter embolisation when there is consensus between the patient and physicians involved. This team approach engenders trust and comfort for the patient but due to the protean causes of chronic pelvic pain, consultation with an Urologist, Neurologist, Gastroenterologist, Orthopedic Surgeon, Physiotherapist and Psychiatrist is sometimes necessary.

Pre-Procedure Patient Preparation

The procedure is performed on an outpatient basis but the patient is admitted into the day stay unit. Informed consent is obtained. It is preferred to perform the procedure after menses and prior to ovulation. A Beta-HCG should be performed if there is any chance of pregnancy prior to the procedure. A peripheral IV is started. It is our practice to administer 1g of Cephazolin or if allergic, 80mg of Gentamycin prior to initiating the puncture.

Anatomy of the Gonadal Veins

The left ovarian vein usually drains into the left renal vein at a 90° angle. The right gonadal vein empties most often into the IVC at a 45°. Both ovarian veins usually have multiple tributaries, which are of significance when embolising as there may be communication with the pelvic venous plexus and the internal iliac veins. Rarely is communication seen with inferior mesenteric veins.

Treatment Of The Incompetent Gonadal Veins And Pelvic Varices

Transcatheter embolisation of varicoceles in males is a well established technique. Given the identical anatomic and physiologic setting in the female with PCS, similar therapeutic techniques are embraced for managing the female pelvic varices.

Access to the gonadal veins is traditionally gained via the transjugular or transfemoral route. Access to the right gonadal vein is more challenging via the transfemoral route.

After access is obtained a left renal venogram is performed with the patient in a 10-30 degree upright position on a tilt table. If there is no spontaneous reflux down the left renal vein, embolisation is not pursued. If spontaneous reflux down the left renal vein is present, in the appropriate clinical setting, cannulation of the left gonadal vein is performed. A venogram of the left gonadal vein is then performed to visualise all the tributaries/collaterals of the main gonadal vein. These are critical to map out and embolise for a successful long-term clinical result. The catheter is then advanced to the level of the pelvic varicosities and a hand injection of the pelvic varices is then performed to assess rate of flow and pathways of outflow from the varices. Cross filling to the contralateral side, and or outflow via the internal iliac veins and into the common iliac vein and IVC is critical to evaluate prior to initiating the embolisation especially if sclerosing agents are used.

Where To Begin & End the Gonadal Vein Embolisation, & Which Embolic Agents To Utilize?

The goal of the embolisation is to terminate the pressure head within the gonadal vein that is transmitted to the pelvic veins and varicosities by occluding the gonadal vein and all its tributaries. Most veins are occluded by using embolisation coils alone or in combination with sclerosing agents

Sclerosants are not uniformly employed for the procedure. 2cc of 3% Sotradecol mixed with 0.5cc of contrast in a 3cc syringe is gently administered by hand under continual fluoroscopic vision into the distal gonadal veins and varices to prevent inadvertent reflux or flow into the systemic venous system. The catheter is then retracted and the main gonadal vein and each of its tributaries is embolised using stainless steel coils ranging from 5-12mm in diameter to the level of approximately 3-5cm from the left renal vein. The gonadal vein embolisation is then followed by another left renal venogram from the renal hilum to confirm occlusion of the gonadal vein as evidenced by no spontaneous reflux.

Attention is then turned to the right gonadal vein that usually presents more of a challenge to cannulate and is situated just below the right renal vein. Embolization is then carried out in the same fashion as on the left. The catheter is then used to select both internal iliac veins to confirm that no further large tributaries or varices are being fed via reflux from the pudendal veins. The sheath and catheters are then removed and the patient is transferred to the same day unit for routine observation for two hours.

Post Procedure Care and Follow-up

In our experience, the patients are usually pain free for the first 24 hours after the procedure. Almost all patients however, experience an onset of moderate to severe pain after 24-48 hours that crescendos over 24 hours before subsiding over 2-3 days. The pain is usually controlled with Panadiine Forte and Voltaren, the pain often mimics the initial presenting pelvic pain in location and nature. Some patients develop a low-grade temp of 38°C which is usually controlled with Panadol. Patients are scheduled for a post procedure baseline transvaginal color doppler ultrasound to confirm thrombosis of the pelvic varices within 2 weeks of the procedure. This is then followed by a 1 month, 6 month and 1 year office visit and ultrasound to confirm continued clinical success.

Clinical Results After Transcatheter Gonadal Vein Embolization

A few studies have attempted to address this issue. These have demonstrated clinical effectiveness ranging from 58-78% Most patients experienced initial pain relief but some appeared to recur. A likely cause for failure is incomplete embolisation of the varices and tributaries of the gonadal vein. Over time the pressure head is recreated through the remaining tributaries. It is our experience that those patients who present with atypical symptoms, are those that tend to have partial relief of their pain post embolisation and are the subset of patients that appear to have the most recurrences. This underscores the importance of appropriate patient selection. In all cases that recur, it is imperative to perform repeat gonadal vein venograms together with interrogation of the internal iliac veins, to exclude possible recanalisation of gonadal veins and tributaries with reformation of pelvic varices.

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