Information for Parents About

Varicocele

A varicocele is a dilation of the pampiniform venous plexus of the internal spermatic veins within the scrotum. Although most adolescent varicoceles are asymptomatic, scrotal discomfort, a soft mass in the scrotum, or a difference in size of the testicles should be evaluated for varicocele. Initial presentation usually occurs during puberty, and varicoceles may be present in 15% of the normal fertile male population. There is an increased prevalence (40%) of varicocele in subfertile men (most common cause of poor sperm production and decreased semen quality on evaluation). Interference with testicular thermoregulation by the varicocele, surrounding the testis with a consistently elevated temperature environment (1-2 degrees F) is suspected to be the primary cause of diminished spermatogenesis and of impairment of testicular growth.

Varicoceles are classified according to their clinical size:

• Large - Easily visible (described as feeling like a bag of worms)
• Moderate – Present on palpation
• Small - Identified by increasing intra-abdominal pressure (Valsalva maneuver)

Varicoceles vary in size, and size of the varicocele is generally (but not always) related to the degree of testis growth arrest present on examination.

Measurement of the testis size can be accomplished directly (with a millimeter ruler), with goniometers (ovoid testis models), or by scrotal ultrasonography. Measurement techniques are then used to compare the calculated left and right testis volumes. Although some size discrepancy is expected, calculated left testis volumes more than 20% smaller than the right testis are considered significant.

Varicoceles are much more common (>90%) in the left testicle than in the right testicle because of several anatomic factors, including:

• congenital absence of the valves in the left spermatic veins (which normally prevent retrograde flow of blood in the upright position).
• anomalous venous branches in the gubernaculum, pelvic or femoral regions may be present.
• an asymmetric venous drainage pattern with the right spermatic vein draining directly into the inferior vena cava and the left spermatic vein inserting at an acute angle into the left renal vein.
• the "nutcracker" phenomenon, in which the left renal vein is occasionally compressed between the superior mesenteric artery and the aorta (creating higher pressure in the left internal spermatic veins).

Young men with left varicoceles and normal testis volumes calculated for both testes can safely be monitored with a semi-annual examination, including measurements of testicular volumes (monitor testis growth curve).

Varicoceles in adolescent boys can be associated with significant testicular growth arrest and atrophy that is progressive and persistent.

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Varicocelectomy (varicocele repair) most often results in significant increase in left testis volume (catch-up growth), matching the size of the right testis within the first 4 months following surgery.

Indications for varicocelectomy in adolescent boys include:
- significant testicular asymmetry (>20%) demonstrated on examination
- testicular pain (often described as a dull ache while upright or active)

**Relevant Anatomy:** The testes contain cells that produce and nourish sperm (spermatogonia and Sertoli cells), and cells that produce testosterone (Leydig cells). Sperm mature in the epididymis and then travel through the vas deferens to the prostate gland. The spermatic cord contains the vas deferens, blood vessels, nerves, and lymphatic channels. The pampiniform plexus is composed of the veins of the spermatic cord, which eventually become the internal spermatic veins that drain into the left renal vein. The pampiniform venous plexus may become tortuous and dilated, much like a varicose vein in the leg. Two other veins, the cremasteric and the deferential, also drain blood from the testicles; however, they are rarely involved in the varicocele process. Blood supply to the testicle includes the internal spermatic and deferential arteries within the spermatic cord.

**Surgical Approach:** Repair of the varicocele requires complete ligation of all internal spermatic veins (veins with incompetent valves) and any dilated collateral veins present in the gubernaculum or inguinal region. A fluoroscopic spermatic venogram is helpful to ensure effective identification of all contributing veins. **Preservation of the testicular arteries and lymphatic vessels** is also critical to preserve viability of the testis and to avoid formation of a hydrocele (which could require further surgery for management) postoperatively. A small inguinal incision allows access to all necessary positions in the spermatic cord to accomplish this task. Use of optical magnification (surgical loupes) permits accurate identification of all the elements of the spermatic cord.

Other surgical options include percutaneous transvenous embolization of the varicocele and laparoscopic access to the spermatic cord. These methods are less effective than an inguinal approach to the spermatic cord.

Varicocele surgery is usually performed in an outpatient pediatric surgery center. Strenuous activities should be avoided for the first ten days following surgery. Dressings will spontaneously dislodge (Steri-strips and Tegaderm) over the first 2 weeks following surgery. Bathing or showering is permitted the day after surgery. Pain medication (Hydrocodone with Tylenol) will be prescribed to help control postoperative pain. Ibuprofen tablets can be used in addition to the narcotic pain medication. Benefiber (1 Tbsp in juice daily) is helpful to prevent constipation postoperatively.