Varicocele

Varicocele occurs when the pampiniform plexus of veins within the spermatic cord becomes dilated, due to obstruction of venous drainage. Patients present with a soft, scrotal mass around the left testicle that feels like a “bag of worms.” The mass increases in size with standing or Valsalva maneuvers, and decreases in size when supine. Testicular atrophy and subfertility may occur if identification and treatment is delayed. Diagnosis is made using ultrasound to look for retrograde venous flow. Treatment includes supportive therapy and surgical gonadal vein ligation in unresolving cases.



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Pathophysiology

Dilation of Pampiniform Plexus Veins

Dilation of Phone-cord like Vines

The pampiniform plexus is the group of veins that follows the course of the spermatic cord as it exits the scrotum. The pampiniform plexus collectively drains into the testicular vein; on the left side the testicular vein drains into the left renal vein, while on the right side the testicular veins drains directly into the IVC. When venous occlusion occurs, blood backflows into the pampiniform plexus and a varicocele forms.

Signs and Symptoms

Soft Left-Sided Scrotal Mass

Soft-feather on Laughing-left Scrotal Mass

Because of the left side anatomy, a varicocele is more likely to occur around the left testicle, as more opportunities arise for venous compression, such as a left-sided renal carcinoma, or a dilated superior mesenteric artery compressing the left renal vein. When venous occlusion occurs, blood backflows into the pampiniform plexus and a varicocele forms. For a right-sided varicocele to occur, a large retroperitoneal mass or fibrosis would have to directly compress the right testicular vein. Varicoceles are usually noted on the right side when bilateral varicoceles are present.

Bag of Worms

Bag of Worms

Upon inspection and palpation of the scrotum, the distended pampiniform plexus will look and feel like a bag of worms.

Increased Size with Standing or Valsalva

Up-arrow Ruler with Standing-guy and Valve-stopped

Due to gravity and pressure, any positional maneuver that increases venous pooling like standing or Valsalva will increase the size of the varicocele. Contrast this to hernias, which will maintain their size.

Decreased Size while Supine

Down-arrow Ruler Supine-spine

Due to gravity, any position that decreases venous pooling will decrease the size of the varicocele.

Testicular Atrophy

Testicular @-trophy

When there is blood pooling around the testicles, the increased surrounding temperature can trigger cell death within germ cells, and can lead to a decline in both testicle size and sperm production.

Subfertility

Wilting Fertile-plant

When there is blood pooling around the testicles, the increased surrounding temperature can trigger cell death within germ cells, and can lead to a decline in both testicle size and sperm production.

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Diagnosis

Ultrasound

Ultrasound-machine

Ultrasound is an effective way of distinguishing varicocele from other scrotal pathologies, like hydroceles, spermatoceles and testicular malignancies. Another important characteristic of varicoceles is the lack of transillumination when light is held behind the scrotum. Both hydroceles and spermatoceles will transilluminate.

Retrograde Venous Flow

Retro-guy Vine Flow

The color Doppler function of ultrasound machines, which shows blood movement as blue when it moves away and red when it moves toward the ultrasound probe, can be used to identify retrograde venous flow within the pampiniform plexus.

Treatment

Surgical Gonadal Vein Ligation

Scalpel Gopher Vine and Lion-gate

When preservation of fertility is a priority, as is often the case with young men, surgery is often recommended even if not clinically established as a first-line treatment. With ligation of the obstructed testicular vein, retrograde flow ceases and the testes can begin to recover.

Scrotal Support

Supporting Scrotum with towel

Supportive therapy for varicoceles includes compression with jockstraps, ice packs, and NSAIDs for pain relief. This conservative treatment approach is recommended for older men where fertility is no longer a priority.

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