Varicocele Debate: Mechanical Occlusion is Enough

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• **What is a varicocele?**
  An abnormal enlargement of the pampiniform plexus in the scrotum

• **What causes a varicocele?**
  Defective valves or increased pressure / reflux can cause dilatation of the testicular veins near the testis, leading to the formation of a varicocele
- **How do we treat varicoceles?**

An alternative to surgery is embolization, a minimally invasive treatment for varicocele that is performed by an interventional radiologist. This involves passing a small wire through a peripheral vein and into the abdominal veins that drain the testes. Through a small flexible catheter, the doctor can obstruct the veins ...
• Are all varicoceles created equal?
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Not really
Peripheral Vascular Disease

**Type A lesions**
- Single stenosis ≥10 cm in length
- Single occlusion ≥5 cm in length

**Type B lesions:**
- Multiple lesions (stenoses or occlusions), each ≤5 cm
- Single stenosis or occlusion ≤15 cm not involving the infrageniculate popliteal artery
- Single or multiple lesions in the absence of continuous tibial vessels to improve inflow for a distal bypass
- Heavily calcified occlusion ≤5 cm in length
- Single popliteal stenosis

**Type C lesions**
- Multiple stenoses or occlusions totaling >15 cm with or without heavy calcification
- Recurrent stenoses or occlusions that need treatment after two endovascular interventions

**Type D lesions**
- Chronic total occlusions of CFA or SFA (≥20 cm, involving the popliteal artery)
- Chronic total occlusion of peptile artery and proximal bifurcation vessels
Internal Spermatic Vein Anatomy

Right 22%

3%

7%

2%

1%

2%

2%

Classical pattern

Left 21%

78%

79%

19%

1%

GONADAL VEINS

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Choice of Embolics

• Several embolic agents have been used for transcatheter embolization, including hot contrast medium, isobutyl-2-cyanoacrylate (glue), coils, detachable balloons, and sclerosant agents.

• The choice of embolic material may reflect operator preference, product availability in the market, cost, ISV anatomy, and safety of use.

• For example, liquid/sclerosant agents may distribute better than solid embolic agents (eg, coils) in the presence of venous collaterals; they can also be used alone or in combination with solid agents.

*Endovascular Today;* January 2011; *Endovascular Treatment of Male Varicocele: An overview of recent evidence-based literature.* Gloria M. Salazar, MD and T. Gregory Walker, MD
The technical success rate of coil embolization in abnormally drained varicoceles is 73% on the left and 57% on the right. These success rates are lower than in varicoceles with normal anatomic venous drainage patterns (97%).

• Single-institution study of 64 patients referred either for persistent pain or for infertility at the University of Toronto
• The varicoceles were embolized with either stainless steel or platinum coils
• Technical success rate was composed of 94% in left-sided procedures

“Varicocele Embolization Reduces Pain and Infertility”, Amol Mujoomdar, M.D
SIR presentation, March 2008; Washington, DC
• 197 varicocele embolizations to assess changes in semen characteristics and pregnancy outcome (compared to 149 surgical ligations)

• In all but three cases, Gianturco coils, ranging in size from 3 mm to 12 mm, were used to embolize the gonadal vein depending on its size. In one additional case, ethanol was combined with coils because of the small size of the venous collaterals. In two additional cases, embolization balloons were used.

• The recurrence rate was 16% for surgery and 4% for embolization; 96% success (non-recurrence) rate for embolization

Richard D. Shlansky-Goldberg, MD, Keith N. VanArsdalen, MD, Carolyn M. Rutter, PhD, Michael C. Soulen, MD, Ziv J. Haskal, MD, Richard A. Baum, MD, Douglas C.B. Redd, MD, Constantin Cope, MD, Michael J. Pentecost, MD

Percutaneous Varicoceles Embolization versus Surgical Ligation for the Treatment of Infertility: Changes in Seminal Parameters and Pregnancy Outcomes

*JVI*R 1997; 8:759-767
Thirty-nine percent of the embolization patients and 34% of the surgery patients achieved pregnancy after varicocele correction.
• Male Varicocele: Transcatheter Foam Sclerotherapy with Sodium Tetradecyl Sulfate—Outcome in 244 Patients

• Recurrent varicoceles in 8/225 (3.6%)

• Resolution of pain in 96.5%

• 39% (23/59) of pretreatment patients with sperm alterations who desired pregnancy, achieved pregnancy
• 16 adolescent patients (testicular atrophy – 7; pain/discomfort – 6; surgical recurrence – 3) treated with 3% STS foam in combination with fibered coils

• 15/16 patients (94%) exhibited proven disappearance of varicocele

• All patients who had been symptomatic had relief of symptoms except one (persistent pain despite disappearance of varicocele)

• 94% OR 83% clinical success
Mechanical Occlusion is Enough?
Mechanical Occlusion is Enough?

79% of the time
Thank you