The Role Of Extravascular Correction Of Deep Vein Valves

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No Disclosures

• Up to the present days reconstructive surgery has enjoyed both loyal support and vigorous opposition. The opponents of these operations point to the unproved efficacy of the deep vein reconstruction, because

  1. The number of patients with primary valve insufficiency of the deep veins is extremely small (less than 5%)

• It is well known that reflux in the deep veins is mainly caused by four events:

  • post-thrombotic syndrome;
  • primary deep vein insufficiency;
  • congenital valve hypoplasia;
  • congenital vascular malformation.

2. These surgical operations are commonly accompanied by corrective procedures (stripping, ligation or perforating veins coagulation)

3. And finally, the use of the idea of “reflux circulation” – the elimination of reflux in the deep veins following standard stripping – proves the fact that there is no need for these operations on the whole
• Reflux:
  • axial (continuous reflux from the groin to the lower leg only in the deep vein system, or composite, when the process involves deep and superficial venous systems)
  • segmental (one segment of femoral and/or lower leg veins)
  • associated (axial or segmental reflux, which are not related)

Two issues remain urgent:
1. Do the patients with primary valve insufficiency of the deep veins need valve correction?
2. What is the role of the extravasal correction?

In Russia, the extravasal correction of incompetent valves with elastic spirals is the most commonly used procedure, the innovative technique being proposed by A.N. Vedensky in 1979.

Our experience with extravasal valve correction (EVVC) comprises 263 patients and includes five stages of development:
• the study and development of the technique
• the analysis of short-term and long-term results
• the comparison with our own valvuloplasty results
• the introduction of tactical and technical changes into the procedure
• the identification of place and role of EVVC in deep vein valve correction

Long-term results were studied in the follow-up period of 5-10 years (age: 50-60 years old)
• 41 patients after EVVC
• 37 patients after valvuloplasty

EVVC - satisfactory in 44%, all patients had segmental reflux before correction (along the whole thigh)

Valvuloplasty – satisfactory in 67%

What caused these results?
• We studied:
  • morphology of incompetent superficial vein valves (54 trials)
  • morphology of competent deep vein valves (38 trials)
  • ultrasonic image of deep vein valve anatomy and physiology (256 trials)

• Morphology of outcomes:
  • 5 types of valve torus have been identified.
VERSIONS OF VALVULAR STRUCTURE IN MAGISTRAL VEINS OF THE LOWER EXTREMITIES

I version
1. valvular torus;
2. cusp of valve;
3. intima;
4. valvular torus.

II version
1. hypertrophy of the intima;
2. valvular torus;
3. cusp of valve;

III version
1. collagen fibers;
2. cusp of valve;
3. muscle fibers;

IV version
1. loose connective tissue;
2. intima;
3. cusp of valve;

V version
1. granulated tissue;
2. collagen fibers;
3. vessel;

Valvular torus VSM
1. intima;
2. cusp of valve;
3. collagen fibers;
4. valvular torus.

CONCLUSIONS
• Valve torus of the deep and superficial veins are identical in each case
• Two last types are always accompanied by valve insufficiency

Ultrasonic image of anatomy and physiology

Mean MRVD was 30.5% ± 10%

Each valve has its own physiologic geometry!
• Introduction of tactical and technical innovations into EVVC technique

• Based on the performed trials we made a conclusion about the need in a preoperative simulation of extravasal spiral along the geometry of each individual valve
• The outcomes of different corrections after technique changes based on the trials’ results
  
  • Good
  
  • -EVVC 87% of outcomes
  • -Valvuloplasty with EVVC – 93%

Conclusions:

• EVVC should be carried out for all patients with segmental reflux along the whole length of the femoral vein
• EVVC should be an integral part of valvuloplasty
• EVVC should be performed after reconstructive surgical operations on the deep veins in post-thrombotic syndrome (valve transplantation, Maletti-Lugle, Opi, valve transposition)
• EVVC should be carried out using an individual spiral previously simulated by the valve geometry