



## THE DIAGNOSIS, RISK FACTORS AND TREATMENT OF THE EXTENDED THROMBOSIS OF THE TRUNK AND CROSSA OF THE GREAT SAPHENOUS VEIN

J. AVRAM, FL. CADARIU, E. FLORONI, S. MANCIU,  
M. PASZTORI, A. P. MERCE, M. RUICU, H. MUQAYAD

First Clinic of Surgery, University of Medicine and Pharmacy TIMIȘOARA

### ABSTRACT:

*In our experience in First Clinic of Surgery, County Hospital Timișoara, we followed 36 cases with great saphenous vein thrombosis, aged 28-79 years, period 1.01.2001-15.04.2003.*

*The investigations: continuous Doppler, echo Doppler and phlebography.*

*We applied initially non-steroid anti-inflammatory and anticoagulant treatment with heparin and LMWH. In the cases with extended venous thrombosis we continued with surgical treatment as a delayed urgency and we performed saphenectomy by stripping and phlebectomies, crossectomy with femoral thrombectomy, femoral-iliac thrombectomy. Postoperative we continued the anticoagulant treatment for 3 months with oral anticoagulant drugs at the patients with deep venous thrombosis respectively aspirin 100 mg/day, anti-inflammatory and phlebotonic treatment in cases with superficial thrombophlebitis.*

**Keywords:** *thrombosis of the saphena.*

### 1. INTRODUCTION

The varicose disease is an evolving vascular pathology, frequent and affecting an important percent of population. The frequency is 1 of 2 women respectively 1 of 4 men.

The varicose disease untreated in time evolves continuously and slowly in many years. Suddenly a lot of acute complications may appear: chronic venous insufficiency after 15-20 years of evolution; varicose thrombophlebitis; spontaneous or posttraumatic injury of the varicose veins; thrombosis of the great saphenous vein and its crossa with or without extension at the deep venous system.

The thrombosis of the great saphenous vein and its crossa is a complication of the varicose disease with an increasing frequency in the last period – approximately 1 of 8 cases with hydrostatic varices.

The risk factors of the thrombosis of saphenous vein are:

1. Exogenous: mechanical factors (traumas), long immobilization in bed or due to a immobilization for a fracture; smoking; medical factors (contraceptives, vitamin K, diuretics);

2. Endogenous: age 60-70 years old, primary varices, hyper coagulation, pregnancy, sex (females), heredity.

The determinant factors known as Virchow triad are:

- The venous parietal lesion done by external traumas, catheterizations and compressions;
- The venous stasis in the dilated varicose packets - it creates conditions for thrombosis by hypoxic lesions at the venous endothelium modifying the vascular electro negativity and determining plackets adherence (due to long immobilization in bed);
- The hyper coagulation of the blood in the varicose packets determines the extension of the thrombosis to the trunk and crossa of the great saphenous vein (deficit of S-protein, C-protein).

All these factors together determine the appearance of localized thrombosis (the white thrombus made of placket aggregates and fibrin fibres) followed by the extension of the thrombosis to the first collateral vein (mixed thrombus made of erythrocytes caught in a fibrin and leucocytes network). The evolution of the thrombosis, spontaneous or under treatment consists of the retraction of the clot and the reorganizing process with recanalization or extension of the thrombus in the deep venous system. It determines deep venous thrombosis at the calf through the perforant veins in the femoral vein, through the great saphenous crossa and then in the common iliac vein and inferior cava vein. In this case the edema from the calf extends to the unilateral thigh and then at the opposite inferior limb.

The clinic diagnosis: localized pains at the level of varicose packets; hard, thrombosed venous cordon with eritematous and edematous skin; the edema of the calf and thigh due to the extended thrombosis in the deep venous system (through the perforans veins and the saphenous crossa).

Investigations: continuous Doppler ultrasonography, Echo Doppler and Duplex Doppler used as noninvasive investigations. In selected cases phlebography allows to visualize the deep venous system.

Clinic and anatomic forms:

- Thrombosis localized at varicose packets;
- Great saphenous vein thrombosis;
- Great saphenous vein and crossa thrombosis;
- Trunk and crossa of the great saphenous vein thrombosis + extension at femoral vein.

The treatment differs with the extension of the thrombosis:

- Superficial confined venous thrombosis: anti-inflammatory drugs, with hialuronidase, heparin with low molecular weight (LMWH), surgical treatment;
- Extensive venous thrombosis: "delayed" urgency surgery - saphenectomy, phlebectomies, crossectomy, thrombectomy followed by anticoagulation 3 month.

## 2. MATERIAL AND METHOD

Prospective study - 01.01.2001- 30.06.2003: 516 patients with hydrostatic varices and with ages between 19-75 years old have entered the hospital in this period in the First Clinic of Surgery University of Medicine and Pharmacy Timisoara. 361 (61.25%) were females and 155 (38,75%) were males. Unilateral varices were observed in 336 cases (65,11%) and bilateral in 181 cases (34,89%).

Etiology: primary varicose disease – 423 cases (81,97%); secondary varices due to postthrombotic syndrome – 39 cases (7,55%); congenital varices – 2 cases (0,4%); relapsed varices after saphenectomy – 52 cases (10,07%).

Using CEAP classification the patients are grouped in the following classes: C4 – 348 cases (67,45%); C5 – 128 cases (24,8%); C6 – 40 cases (7,75%).

The treatment consisted in:

- saphenectomies – 124 cases (24,03%),
- saphenectomies and phlebectomies, ligatures of perforating veins, sclerotherapy with catgut – 231 cases (44,76%),
- phlebectomies, ligations of perforating veins, sclerotherapy with catgut – 138 cases (26,74%),
- crosssectomy and thrombectomy – 12 cases (2,32%),
- Chiva operation – 6 cases (1,16%),
- SEPS – 4 cases (0,77%)
- an operation for decreasing the diameter of the great saphenous vein near its crossa – 1 case (0,19%).

We studied prospectively from all these cases an homogenous group of 174 patients, with ages between 19-69 years, 124 females (71,26%) and 50 males (28,74%), with unilateral disease – 115 cases (66,09%) and bilateral – 59 cases (33,91%).

The etiology of their varicose disease was: primary varices – 137 cases (78,73%); secondary varices due to postthrombotic syndrome – 17 cases (9,77%); congenital varices – 2 cases (1,14%); relapsed varices after saphenectomy in antecedents – 18 cases (10,34%).

After CEAP classification, we grouped them in: C4 class – 102 cases (58,62%); C5 class – 37 cases (21,26%); C6 class – 35 cases (20,11%).

The surgical treatment consisted in:

- Intern saphenectomy – 46 cases (26,43%);
- Intern saphenectomy + phlebectomies, ligations of perforating veins, sclerotherapy with catgut – 68 cases (39,08%);
- Phlebectomies, ligations of perforating veins, sclerotherapy with catgut – 45 cases (25,86%);
- Crosssectomy + thrombectomy – 10 cases (5,74%);
- SEPS – 4 cases (2,29%);
- Operation for decreasing the diameter of the great saphenous vein near its crossa – 1 case (0,57%).

### 3. RESULTS AND DISCUSSIONS

We observed 39 cases (24,41%) with hydrostatic varices complicated with extended thrombosis at the great saphenous vein, patients selected from this group of 174 cases. There were 15 males (38,47%) and 24 females (61,53%) with ages between 19-75 years old. They entered the hospital for: pain at the level of varicose packets, inflammation in the presence of a hard superficial venous cord, important eritema and edema of the calf and/or thigh, recent pulmonary embolias (2 cases).

The extension of the thrombosis was varied: 14 cases (35,89%) – confined at calf; 8 cases (20,51%) – extended at thigh; 12 cases (30,76%) – thrombosis of the crossa, 3 of them with floating thrombus in the femoral vein; 5 cases (12,82%) – thrombosis extended in the femoral and iliac vein.

Anticoagulant treatment has been started before a surgeon consulted them. Surgical treatment was performed at all these 39 cases and it consisted of: saphenectomy and crossectomy – 22 cases (56,41%); crossectomy and femoral thrombectomy – 12 cases (30,76%); crossectomy and femoral-iliac thrombectomy – 5 cases (12,82%).

The surgical treatment is preceded by heparin administration 5000UI, i.v. at 6 hours stopping it 6 hours before the surgery, at cases with femoral and femoral-iliac extended thrombosis. After we extracted the thrombus and after the vein has become permeable, we administrated intraoperatively 5000UI, i.v. heparin and we continued this treatment 7 days after surgery followed by oral anticoagulants (with 5 days of association of these 2 types of anticoagulants drugs). The treatment with oral anticoagulant drugs must continue minimum 2 years with a periodic evaluation of INR.

The incidents and accidents in surgery were minor.

The postoperative evolution was favorable with remission of symptoms at 5-7 days postoperative; the period of admission in hospital was about 10-15 days and the time of returning to normal life and work was 1-2 months.

The postoperative complications were minor and local and we observed them in 4 of our cases. A major complication – pulmonary embolia was occurred in 1 case (it was treated with unfractionated heparin preoperatory then crossectomy, thrombectomy, saphenectomy and LMWH postoperative).

#### 4. CONCLUSIONS:

- Prophylaxis – surgery in time for varicose disease;
- The thrombosis of the saphenous vein – significant frequency;
- Diagnosis – it is sufficient the Echo Doppler exam;
- Treatment - surgical: delayed urgency
- Medical: anti-inflammatory, anticoagulant and phlebotonic drugs.

#### 5. REFERENCES

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