EXTENSIVE SAPHENA MAGNA VEIN THROMBOSIS


Abstract:
Thrombosis of great saphenous vein (GSV) and crossa is a frequent complication of neglected varicose disease. Thrombosis may be located in: the collateral varicose veins, the trunk of the GSV or the trunk associated with crossa of the GSV. We followed 88 cases with GSV thrombosis - 25 men, 63 women throughout a 5-year-period of time (01.01.2001-20.03.2006). The performed investigations were Doppler and in 28 selected cases phlebography for the deep venous system. In extended venous thrombosis we applied surgery as a delayed emergency and we performed saphenectomy (stripping and phlebectomies - 44 cases), crossectomy with femoral thrombectomy (30 cases - 1 case bilateral crossectomy), femoral-iliac thrombectomy (4 cases), 10 not operated. Postoperatively we administered oral anticoagulant treatment in patients with DVT for 3 months, respectively aspirin 100 mg/day, anti-inflammatory, phlebotonic treatment in SVT. Postoperative recovery was good in 85 cases; non-lethal pulmonary embolia was the only important complication in two patients, who were transferred to cardiology unit. The postoperative follow-up exam (at 3 - 24 months, mean 14 months) showed good results, without any relapse, edema or any complaints from the patients. We had also one case with pulmonary embolia after sclerotherapy (the drug entered in the calf perforans veins and it determined DVT. Surgical treatment of extensive GSV thrombosis is a delayed emergency and consists in high ligation of the crossa and thrombectomy. Stripping or phlebectomies are electively indicated, depending on the patients' condition and thrombosis extension. Pulmonary embolia is a very rare complication after operated varicose disease or sclerotherapy and in SVT extended to deep veins, or in operated cases.

Keywords: thrombosis, great saphenous vein, varicose disease.

Introduction

Varicose disease has a frequency of 20-55% in the adult population. When it is untreated or incorrectly treated evolves continuously. The complications of this evolving disease are the following:
- chronic venous insufficiency: 15-20 years of disease evolution leads to trophic lesions
- rupture of the varicose veins: spontaneous or posttraumatic
- varicose thrombophlebitis
- thrombosis of the GSV and its crossa with or without extension in the perforans veins and the deep venous system with high risk in pulmonary embolia

There are many forms of superficial venous thrombosis (SVT):
- varicose veins with SVT
- non-varicose veins with SVT in thrombophilia and paraneoplasia
- traumatic SVT
- infectious SVT (4)
- postoperative or iatrogenic complication

The thrombosis of the saphenous vein and crossa is mainly the complication of the varicose disease and it is frequently reported in the surgical patients. It may occur spontaneously or as a complication of surgical interventions. Usually there is a process of sterile inflammation of the venous wall associated with blood clot formation.

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There are some anatomo-clinical forms of the GSV thrombosis:

- thrombosis limited to the varicose packages
- thrombosis of the important collaterals
- thrombosis of superfi cials veins with thrombosis of the perforans veins
- thrombosis of the great saphenous vein trunk at calf and thigh level
- thrombosis of the great saphenous vein trunk + thrombosis of the crossa
- thrombosis of the trunk and crossa of the saphenous vein + extension in the femoral vein

The frequency rate of DVT (deep venous thrombosis) is 2-6 ‰. Only in France there are 150000 DVT cases / year, 75000 pulmonary embolia cases, 20000 lethal cases. The relation between varicose veins -> DVT -> pulmonary embolia is a debatable issue, which is worth studying.

The multi-factorial etiopathogeny of SVT is determined by the following factors:

1. exogenous:
   - mechanical factors (traumas)
   - medical factors (contraceptive drugs, K vitamin, diuretics)
2. endogenous:
   - age 60-70
   - women
   - heredity

The determinant factors are included in VIRCHOW triad:

1. venous parietal lesions causes by thrombotic hypoxic lesions in the venous endothelium and by external traumas, catheterisations and compressions of the vein;
2. venous stasis in the dilated varicose packages determines changes in vascular electronegativity and platelets adherence (as in bed rest);
3. hypercoagulability of the blood in the varicose packages - represent favourable conditions for thrombosis extension to the trunk and crossa of the saphenous vein (deficiency of S or C protein, deficiency of anti-thrombin III, resistance to activated C protein, hyper-homocisteinemy).

The above mentioned etiopathogenic factors act synergetically leading to localized thrombosis (the white thrombus made of platelets in a fibrino-leucocytary network) followed by extension of the thrombus to first collateral of the saphenous vein (mixed thrombus made of red blood cells in a fibrino-leucocytary network). The extension of thrombosis is progressive or 'creeping jumping' from collaterals to saphena magna trunk. The process may also extend to crossa of GSV (great saphenous vein) or LSV (little saphenous vein) and through the crossa and perforans veins into the femoral or ilio-femoral veins. The major complications are DVT, pulmonary embolia, postthrombotic syndrome, disabling chronic venous insufficiency.

The diagnosis is established clinically, by imaging method and laboratory tests. The following symptoms and signs can be observed:

1. pains in varicose packages, GSV trunk, crossa, extension to the lower limb;
2. thrombosed, painful, noncompressible varicose veins
3. local edema: over the thrombosed packages located in calf and thigh
4. echo-Doppler and / phlebography

The treatment depends on the extension of thrombosis.

1. Limited superficial venous thrombosis:
   - anti-inflammatory drugs for reduction of local inflammation;
   - ointments with hyaluronidase for clot dissolution, liposomal heparin spray (16, 11, and 23);
   - LMWH - not recommended, but may be used prophylactic for deep vein thrombosis in some special circumstances (13);
   - surgical treatment: excision of thrombosed varicose packages

2. Extended venous thrombosis:
   - surgical treatment: may be performed as delayed emergency and it consists of saphenectomy, phlebectomies, crossectomy, and thrombectomy (3);
   - anticoagulant treatment for 3 - 6 months

Material and method

The clinical study is performed in The First Surgical Clinic of the County Hospital Timisoara over the period 01.01.2001-30.03.2006. The patients' age ranges from 28 to 79, there were 25 men and 63 women (88 cases).

![Fig. 1. Men-women ratio with SVT.](image)
The topography of the lesions is the following (Fig. 2.):
- 36 cases - calf limited
- 16 cases - extended to thigh
- 32 cases - thrombosis of the crossa extended to femoral vein
- 4 cases - femoral thrombosis extended to iliac vein.

Before hospitalization an ambulatory anticoagulant treatment was performed for the following cases: 8 patients (thrombosis located in the thigh) + 10 (in crossa) + 2 (in femuro-iliac venous system).

The time interval from thrombosis onset to admission in surgery clinic is variable:
- 2-4 weeks for limited forms
- 1-4 weeks for femoral extended forms
- 3-10 days for crossa thrombosis
- 3-21 days for ilio-femoral thrombosis

The treatment consists of:
- saphenectomy and phlebectomies: 44 cases
- crosectomy and femoral thrombectomies: 30 cases
- femoro-iliac thrombectomy: 4 cases;
- only anticoagulation treatment: 10 cases

Minor intraoperative incidents and accidents and postoperative complications may occur:
- local hematomas -2 cases and
- pulmonary embolism -2 non-lethal cases.

The evolution of SVT is favourable in most of the cases with a good postoperative recovery.

The following 2 cases with pulmonary embolism are relevant:

**The first case**: a woman, 61 years old, hospitalised for extensive SVT who underwent preoperative treatment with LMWH; we performed crosectomy, thrombectomy femoral and iliac and short saphenectomy; LMWH was given postoperatively. On the 6-th day after the surgery procedure repeated dyspnea occurred and the patient was diagnosed with pulmonary embolism. The patient was given unfractioned heparin, the evolution was satisfactory and she was discharged after 20 days; the treatment included acenocumarol for 6 months.

**The second case**: a man aged 34, chef by profession. He was hospitalized with the following diagnosis: GSV thrombosis extended to crossa and femoral vein; the patient was given LMWH for 7 days before being admitted to surgery; we performed short saphenectomy, crosectomy and thrombectomy. LMWH was given to the patient for 10 days after the surgery. On the 20th day after the surgery the patient presented left basal pneumonia; the pulmonary scintigraphy confirms a pulmonary embolism; he was treated with antibiotics and heparin. His evolution was favourable.

**Discussions**

The deep venous thrombosis may be caused by surgery procedures or it may occur after some technical failures as "tangential" high ligature of GSV crossa which leads to a decrease in femoral vein diameter, "low" ligature of GSV crossa, femoral vein trauma.

Sclerotherapy as a method of treatment for varicose disease has a relative low risk in thrombo-embolism. The complications of sclerotherapy (F.Vin -1999) are: echimosis, hematomas, inflammation, necrosis, hyper-pigmentation, pains, intra-arterial injections, venous thrombosis (superficial or DVT), lipothymie, allergic reactions, thrombo-embolic disease.

Superficial venous thrombosis is associated with DVT in 20-30% of the cases. 50% of these cases have pulmonary embolism proved by lung scintigraphy (Barrellier, Bilancini, Gillette J.P., Azoulay, D.Sellier Franchitti, F.Vin - 2000). They studied 18 cases (all women) with early thrombosis caused by sclerotherapy (13 patients had constitutional thrombophylia):
- 5 cases - superficial thrombosis
- 7 cases - gastrocnemian veins thrombosis
- 6 cases - DVT out of which 2 had pulmonary embolism

The frequency rate of thrombosis in sclerotherapy was: 1 / 896.

10 000 cases were treated with sclerotherapy in the 1st Surgical Clinic of Timisoara over a period of 30 years. 21 of these cases presented superficial thrombosis, 3 of them - DVT and 1 case was diagnosed with pulmonary embolism.

The two therapeutic attitudes adopted in SVT are completely opposed:
1. Conservative - anticoagulant therapy, external compression, evolution follow-up
2. Operative - delayed emergency with crossectomy, thrombus extraction from GSV or LSV, associated or not with stripping or extensive phlebectomy. In cases with high risk of lung embolism we perform a limited operation namely crossectomy with thrombectomy, in local anaesthesia and post-operative anticoagulant therapy for 3 months. The surgical attitude is the best in our experience.
3. The non-invasive diagnosis by means of Echo-Doppler is useful and sufficient in most of the cases.
4. The medical treatment of SVT consists of NSAI, anticoagulant drugs, phlebotonics (detralex) and ointments.
5. The surgical treatment is performed as delayed emergency; it consists of crossectomy, thrombectomy, more or less extended saphena trunk excision or stripping; the last procedure may increase the risk of embolism especially for the patients with extensive thrombosis who needed preoperative anticoagulant treatment for perforans veins or saphena junction thrombosis. We obtained the best results in the case of crossectomy, thrombectomy, limited trunk phlebectomy in local anaesthesia.
6. Sclerotherapy has a low risk of thrombosis and pulmonary embolism; major risk occurs only in patients with thrombophilia and after extensive or massive sclerotherapy.

Conclusions

1. The surgical treatment of the varicose disease in stage C2, before having any complications, is the appropriate prophylaxis of superficial or deep venous thrombosis.
2. GSV thrombosis has a high frequency in neglected varicose disease. The nonvaricous GSV thrombosis is present in thrombophilia and neoplasia.

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