The best surgical treatment for varicose veins and partnering with medical treatment

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For Better quality of life

12.45 - 1.00 PM for 15 minutes (20 slides)
History of varicose veins surgery

- 1905 – Keller – hook ended stripper
- 1907 – Babcock – ball ended stripper
- 1916 – Homans removes SFJ collaterals
- 1953 – X-ray guided catheterisation - Seldinger
- 1956 – Dodd i Cockett – „long stripping”
- 1963 – Van der Stricht – invagination stripping

- 1998 – **EVLA, RFA**
- 1999 – Fluoroscopic UGS – Donnelly
  - EVLA + sclerotherapy
  - Multi-access technique
- Sclerotherapy through balloon catheters (KAVS)
- 2010 – Steam Vein Sclerosis
- 2011 – Mechano-chemical ablation
- 2011 – Cyanoacrylate ablation
- 2013 – Laser assisted foam sclerotherapy (LAFOS)

M. Molski CVS Cracow 19-10-2014
Varicose veins are as old as Hippocrates. Varicose vein treatments come and go. Surgery for varicose vein disease is one of the commonest elective general surgical procedures.

We all noted the first descriptions of varicose veins, particularly the ligation of the Sapheno-Femoral Junction (SFJ), stripping of the great saphenous veins, phlebectomy, and perforator vein surgery.

We are seeing the rapid rise of minimally invasive procedures, such as foam sclerotherapy, radiofrequency ablation, and Endovenous laser therapy. Within 10 years, the advantages of minimal invasiveness for these procedures, combined with claims of equivalent short-term outcomes and even better long-term results, have already influenced our everyday practice.
At present, the gold standard treatment of varicose veins still is surgical ligation and stripping of the insufficient vein.

Concomitantly or sequentially with the treatment of truncal insufficiency, residual varicosities can be treated by phlebectomy.

New minimally invasive techniques, however, have changed the clinical landscape for varicose vein surgery tremendously.

The dramatic changes of the last decade are probably the precursors of the next generation
In the United States, an estimated 23% of adults have varicose veins, and 6% have more advanced chronic venous disease (CVD), including skin changes and healed or active venous ulcers.


In our practices this number is much higher !!! (especially in Govt. Hospitals)

Open venous surgery

Open surgical treatment of varicose veins with ligation and stripping of the GSV or SSV, combined with excision of large varicose veins, has been the standard of care of varicose vein treatment for more than a century.

Invagination stripping was first attempted by Kellerin 1905, Charles Mayo in 1906 used an external stripper to remove the saphenous veins, and Babcock in 1907 introduced intraluminal stripping from the ankle to the groin.

High ligation and ankle-to-groin stripping using a metal or, later, a disposable Codman or Myers stripper has become the technique of choice to remove the saphenous vein.

Recognition of frequent saphenous nerve injury during ankle-to-groin stripping and a better understanding of the venous hemodynamics changed the technique to a limited, groin-to-knee stripping.
Open venous surgery

The invagination technique using a silk thread was perfected by Van Der Stricht and using the Myers stripper, without the acorn-shaped head, by Fullarton and Calvert, while perforate invaginate (PIN) stripping was introduced by Oesch and perfected in the United States by Goren and Yellin.

Varicose vein excision performed from multiple larger skin incisions was also abandoned, and ambulatory hook phlebectomy and powered phlebectomy have been adopted.
During the past decade, endovenous thermal ablation has largely replaced the classic ligation and stripping operation, and open surgery for saphenous incompetence is performed much less frequently in the United States.

Indications for ligation and stripping have been restricted to patients with large dilated and tortuous saphenous vein located immediately under the skin or to those with aneurysmal enlargement at the SFJ.

Because of previous thrombophlebitis of the GSV or SSV, percutaneous placement of the laser fiber or radiofrequency (RF) catheter may not be possible, and open techniques have to be used for removal of the vein.
Open venous surgery

It is important to note, however, that the technique of open surgery has also changed substantially in recent years, and today a much less invasive procedure is performed to treat the incompetent saphenous veins than at anytime before.

The groin incision is small, the incision at the knee for inversion stripping is either a puncture wound (PIN stripping) or a small stab wound, and the operation is performed under local tumescent anesthesia with increasing frequency.

Although endothermal ablations are favored in the United States, in many countries conventional surgery remains the standard of care of patients with varicose veins.
Guideline 10 - Open venous surgery

Guideline No. 10. Open venous surgery
GRADE of recommendation  Level of evidence    1. Strong A. High quality   2. Weak B. Moderate quality     C. Low or very low quality

10.1 For treatment of the incompetent great saphenous vein, we suggest high ligation and inversion stripping of the saphenous vein to the level of the knee. 2 B
10.2 To reduce hematoma formation, pain, and swelling, we recommend postoperative compression. The recommended period of compression in C2 patients is 1 week. 1 B
10.3 For treatment of small saphenous vein incompetence, we recommend high ligation of the vein at the knee crease, about 3 to 5 cm distal to the saphenopopliteal junction, with selective invagination stripping of the incompetent portion of the vein. 1 B
10.4 To decrease recurrence of venous ulcers, we recommend ablation of the incompetent superficial veins in addition to compression therapy. 1 A
10.5 We suggest preservation of the saphenous vein using the ambulatory conservative hemodynamic treatment of varicose veins (CHIVA) technique only selectively in patients with varicose veins, when performed by trained venous interventionists. 2 B
10.6 We suggest preservation of the saphenous vein using the ambulatory selective varicose vein ablation under local anesthesia (ASVAL) procedure only selectively in patients with varicose veins. 2 C
10.7 We recommend ambulatory phlebectomy for treatment of varicose veins, performed with saphenous vein ablation, either during the same procedure or at a later stage. If general anesthesia is required for phlebectomy, we suggest concomitant saphenous ablation. 1 B
10.8 We suggest transilluminated powered phlebectomy using lower oscillation speeds and extended tumescence as an alternative to traditional phlebectomy for extensive varicose veins. 2 C
10.9 For treatment of recurrent varicose veins, we suggest ligation of the saphenous stump, ambulatory phlebectomy, sclerotherapy, or endovenous thermal ablation, depending on the etiology, source, location, and extent of varicosity.
We recommend that in patients with varicose veins or more severe CVD, a complete history and detailed physical examination are complemented by duplex ultrasound scanning of the deep and superficial veins (GRADE 1A).

We recommend that the CEAP classification is used for patients with CVD (GRADE 1A) and that the revised Venous Clinical Severity Score is used to assess treatment outcome (GRADE 1B).

We suggest compression therapy for patients with symptomatic varicose veins (GRADE 2C) but recommend against compression therapy as the primary treatment if the patient is a candidate for saphenous vein ablation (GRADE 1B).

We recommend compression therapy as the primary treatment to aid healing of venous ulceration (GRADE 1B).

To decrease the recurrence of venous ulcers, we recommend ablation of the incompetent superficial veins in addition to compression therapy (GRADE 1A).

**For treatment of the incompetent great saphenous vein (GSV), we recommend Endovenous thermal ablation (radiofrequency or laser) rather than high ligation and inversion stripping of the saphenous vein to the level of the knee (GRADE 1B).**

We recommend phlebectomy or sclerotherapy to treat varicose tributaries (GRADE 1B) and suggest foam sclerotherapy as an option for the treatment of the incompetent saphenous vein (GRADE 2C). We recommend against selective treatment of perforating vein incompetence in patients with simple varicose veins (CEAP class C(2); GRADE 1B), but we suggest treatment of pathologic perforating veins (outward flow duration ≥500 ms, vein diameter ≥3.5 mm) located underneath healed or active ulcers (CEAP class C(5)-C(6); GRADE 2B).

We suggest treatment of pelvic congestion syndrome and pelvic varices with coil embolization, plugs, or transcatheter sclerotherapy, used alone or together (GRADE 2B).
Partnering with Medical treatments
Figure 2. Distribution of C of CEAP classification in the Bonn Vein Study population.
Can Micronized Purified Flavonoid Fraction* (MPFF) improve outcomes of lower extremity varicose vein endovenous treatment? First results from the DECISION study - Vadim Yu BOGACHEV, Olga V. GOLOVANOVA, Alexey N. KUZNETSOV, Anna O. SHEOKYAN, and the DECISION Investigators group. 1. Department of Angiology and Vascular Surgery, Russian State Medical University, Moscow, Russian Federation

ABSTRACT

Aim: To evaluate whether the addition of Micronized Purified Flavonoid Fraction (MPFF*) to patients undergoing endovenous treatment (EVT) for varicose veins of the lower extremities improves postoperative symptoms and signs of chronic venous disease (CVD) and patient quality of life (QOL).

Methods: A total of 230 patients with CVD CEAP class C2–4EpAsPr and with at least three CVD-related symptoms were randomly assigned to either the MPFF group (n=126) or the control group (n=104). Patients in the MPFF group received MPFF tablets, 1000 mg daily for 2 weeks before and 4 weeks after EVT. Patients in the control group received standard compression therapy. Venous Clinical Severity Scoring (VCSS) was used to assess postprocedural outcomes and the 14-item Chronic Venous Disease QOL Questionnaire (CIVIQ-14) was used pre- and postoperatively to assess patient QOL. A Darvall questionnaire modified for Russian was used to measure patient expectations and posttreatment satisfaction.

Results: VCSS was significantly decreased at 2 weeks after EVT in the MPFF group (P<0.00001), but not in the control group (P=0.15). The reduction in VCSS in the MPFF group was also markedly greater than the control group 4 weeks after EVT (P<0.00001). Patients' QOL was significantly improved in both groups at 4 weeks postoperatively; a stronger trend observed in the MPFF group. Physicians' overall satisfaction regarding the use of MPFF was significantly greater at 4 weeks than at 2 weeks after EVT (P=0.000018). Patients receiving MPFF expressed significantly greater satisfaction compared with the control group (95% vs 82%, P<0.0001).

Conclusion. MPFF is of benefit for routine use in combination with varicose vein EVT due to its veinspecific pharmacological protection.
Benefit of MPFF in combination with sclerotherapy of telangiectasias of the lower limbs: results from the SYNERGY and SATISFY surveys

Françoise PITSCH

Figure 2. Intensity of symptoms before and after treatment
Treatment = combination of sclerotherapy + Dafilon 500 mg
Figure 3. Reflux flow rates across the valve of the saphenous vein.

Reflux flow rates across the saphenous venous valve measured after 3 weeks of venous hypertension in control (vehicle)- and Daflon (MPFF)-treatment groups at a dose of 50 and 100 mg/kg/day. N is the number of rats in each treatment group. *P<0.05 compared with control.
Figure 5. Arterial and venous capillary bed network.

Capillary bed network associated with an artery (A) and a vein (V). Four “microvalves” are visible (arrowheads). Scale bar=2 mm.

Analysis of the various procedures used in great saphenous vein surgery in the Czech Republic and benefit of MPFF (Daflon 500) to postoperative symptoms

Medication received for 14 days before surgery/ 14 days after surgery

Reduced the symptoms
Figure 1. Complete resolution of pain after surgery.
As per the recent abstracts presented at EVF, ST Petersburg

More evidence supporting the use of MPFF 1000mg peri-procedures.

Endo venous thermal ablation
- Provides venous wall protection, improves VCSS score.

Radio frequency ablation
- Reduces hematoma and other the associated symptoms

Sclerotherapy
- Decreases inflammatory activity and associated adverse events
Part II

Partnering with Medical treatment

Venoactive drugs have been available for treatment of symptoms of varicose veins and more advanced forms of CVD for decades, and they have also been used to decrease ankle swelling and accelerate ulcer healing.

Many compounds have been tried with varying success, but the most promising drugs include saponins, such as the horse chestnut seed extract (aescin); gamma-benzopyrenes (flavonoids), such as rutosides, diosmin, and hesperidin; the micronized purified flavonoid fraction (MPFF), and other plant extracts such as French maritime pine bark extract. Synthetic products include calcium dobesilate, naftazone, and benzarone.
The principle for the use of venoactive drugs has been to improve venous tone and capillary permeability, although a precise mechanism of action of most of these drugs is unknown.

**Flavonoids appear to affect leukocytes and the endothelium by modifying the degree of inflammation and reducing edema.**

A recent Cochrane review of 110 publications selected 44 well-documented studies for analysis. The meta-analysis found that there appeared to be an effect on edema and on restless leg syndrome. Diosmin, hesperidin, and MPFF have been the most effective venoactive drugs. Calcium dobesilate reduced cramps and restless legs. Diosmin and hesperidin helped healing of trophic skin changes and were useful in treatment of cramps and swelling. Rutosides decreased venous edema.

**This meta-analysis, however, concluded that there is insufficient evidence to support the global use of venoactive drugs in the treatment of CVD.**
Phlebotonics for venous insufficiency. Martinez MJ1, Bonfill X, Moreno RM, Vargas E, Capellà D.

Chronic venous insufficiency (CVI) is a common condition caused by inadequate blood flow through the veins, usually in the lower limbs. It can result in considerable discomfort with symptoms such as pain, itchiness and tiredness in the legs. Sufferers may also experience swelling and ulcers. Phlebotonics are a class of drugs that are often used to treat CVI.

OBJECTIVES: To assess the efficacy of oral or topical phlebotonics.

SEARCH STRATEGY: We searched the Cochrane Peripheral Vascular Diseases Group trials register (April 2005), the Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 2, 2005), MEDLINE (January 1966 to April 2005), EMBASE (January 1980 to April 2005) and reference lists of articles. We also contacted pharmaceutical companies.

SELECTION CRITERIA: Randomised, double blind, placebo-controlled trials (RCTs) assessing the efficacy of rutosides, hidrosmine, diosmine, calcium dobesilate, chromocarbe, centella asiatica, disodium flavodate, French maritime pine bark extract, grape seed extract and aminaftone in CVI patients at any stage of the disease.

MAIN RESULTS: Fifty-nine RCTs of oral phlebotonics were included, but only 44 trials involving 4413 participants contained quantifiable data for the efficacy analysis: 23 of rutosides, ten of hidrosmine and diosmine, six of calcium dobesilate, two of centella asiatica, one of French maritime pine bark extract, one of aminaftone and one of grape seed extract. No studies evaluating topical phlebotonics, chromocarbe, naftazone or disodium flavodate fulfilled the inclusion criteria. Outcomes included oedema, venous ulcers, trophic disorders, subjective symptoms (pain, cramps, restless legs, itching, heaviness, swelling and paraesthesias), global assessment measures and side effects. The results of many variables were heterogeneous.

Phlebotonics showed some global benefit (i.e. oedema reduction) (relative risk 0.72, 95% confidence interval 0.65 to 0.81). The benefit for the remaining CVI signs and symptoms must be evaluated by phlebotonic group. There were no quantifiable data on quality of life.

CONCLUSIONS: There is not enough evidence to globally support the efficacy of phlebotonics for chronic venous insufficiency. There is a suggestion of some efficacy of phlebotonics on oedema but this is of uncertain clinical relevance. Due to the limitations of current evidence, there is a need for further randomised, controlled clinical trials with greater attention paid to methodological quality.
A variety of techniques exist for the treatment of patients with great saphenous vein (GSV) varicosities. Few data exist on the long-term outcomes of these interventions. Patients undergoing conventional surgery, endovenous laser ablation (EVLA) and ultrasound-guided foam sclerotherapy (UGFS) for GSV varicose veins were followed up for 5 years. Primary outcome was obliteration or absence of the treated GSV segment; secondary outcomes were absence of GSV reflux, and change in Chronic Venous Insufficiency quality-of-life Questionnaire (CIVIQ) and EuroQol - 5D (EQ-5D™) scores.

RESULTS: A total of 224 legs were included (69 conventional surgery, 78 EVLA, 77 UGFS), 193 (86.2 per cent) of which were evaluated at final follow-up. At 5 years, Kaplan-Meier estimates of obliteration or absence of the GSV were 85 (95 per cent c.i. 75 to 92), 77 (66 to 86) and 23 (14 to 33) per cent in the conventional surgery, EVLA and UGFS groups respectively. Absence of above-knee GSV reflux was found in 85 (73 to 92), 82 (72 to 90) and 41 (30 to 53) per cent respectively. CIVIQ scores deteriorated over time in patients in the UGFS group (0.98 increase per year, 95 per cent c.i. 0.16 to 1.79), and were significantly worse than those in the EVLA group (-0.44 decrease per year, 95 per cent c.i. -1.22 to 0.35) (P = 0.013). CIVIQ scores for the conventional surgery group did not differ from those in the EVLA and UGFS groups (0.44 increase per year, 95 per cent c.i. -0.41 to 1.29). EQ-5D™ scores improved equally in all groups.

CONCLUSION: EVLA and conventional surgery were more effective than UGFS in obliterating the GSV 5 years after intervention. UGFS was associated with substantial rates of GSV reflux and inferior CIVIQ scores compared with EVLA and conventional surgery.
As per the recent abstracts presented at EVF, ST Petersburg

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Endo venous thermal ablation
- Provides venous wall protection, improves VCSS score.

Radio frequency ablation
- Reduces hematoma and other the associated symptoms

Sclerotherapy
- Decreases inflammatory activity and associated adverse events

3 times improved VCSS*
Reduced haematoma
Reduced inflammatory activity

Bogachev V. Y. et al, Abstract presented at EVF July 2015
MPFF 1000mg now proven to be superior compared to divided doses

As per a new study conducted to compare the efficacy of 1000mg of MPFF single dose v/s divided dose...

... its proven that single dose reduces symptoms faster and better compared to divided dose.

This can be attributed to its loading dose which results and fast onset of action.

Reference drug in all international publications

Kirienko et al, abstract presented at EVF July 2015
Thank you