

EDITORIAL

H. Partsch (Vienna, Austria) **Page 44**

PHLEBOLOGY

**Stripping of the great saphenous vein under
micronized purified flavonoid fraction (MPFF)
protection (results of the Russian multicenter
controlled trial DEFANCE)** **Page 45**

V.S. Saveljev (Moscow, Russia)

**The white book of venous disease
in Spain** **Page 52**

M. Cairols (L'Hospitalet de Llobregat, Spain)

**The relation between pelvic varicose veins,
chronic pelvic pain, and lower extremity
venous insufficiency in women** **Page 61**

A. Kurt (Ankara, Turkey)

Book review **Page 68**

M. Perrin (Chassieu, France)

**An American Surgeon in Paris
A brief report from a Servier Traveling Fellow** **Page 73**

B. S. Knipp (Ann Arbor, MI, USA)

CONGRESS

Congress and conference calendar **Page 78**

Dear Readers,

In a recent review article in Phlebology, Michel Perrin and George Geroulakos¹ nicely summarized the pharmacological targets of phlebotropic drugs in chronic venous disease. The analgesic, antiedema, and capillary protection effects of such compounds have been demonstrated in many pharmacological trials. As a therapeutic consequence it is stated that in patients in whom invasive therapy (sclerotherapy, surgery) does not appear warranted, drugs are a good first-line treatment. New clinical reports show that phlebotropic drugs may also be useful in the postoperative management of patients undergoing varicose vein surgery.

In a previous issue of Phlebology, Lenka Veverkova and coworkers² from Brno demonstrated that Daflon 500 mg may have beneficial results after varicose vein surgery by reducing pain and hematoma.

*The first article in this issue of Phlebology supports these data. In a large Russian multicenter study, **Victor S. Saveljev** and coworkers compared the outcome of varicose vein surgery in two groups of patients. The treatment group (n= 200) received micronized purified flavonoid fraction (MPFF, Detralex®=Daflon® 500 mg, 1000 mg/day) starting two weeks before surgery and continuing for up to 30 days after the procedure. The control group (n=45) did not receive Daflon® 500 mg in the pre- and postoperative periods. It was shown that the drug significantly reduced pain and hematoma. As a practical consequence, the administration of MPFF should not only be considered in patients with chronic venous disorders, but also as an adjunctive treatment in connection with varicose vein surgery, in order to reduce the side effects of pain and bruising.*

***Marc Cairols and Josep Marinello** from Barcelona describe interesting data concerning health care problems of chronic venous disorders in Spain. One of the intentions of their report is to extrapolate the present situation to the changes to be expected during the next few years. It may be assumed that the Spanish problems are very similar to those in other industrialized countries.*

*Pelvic congestion syndrome is the third main focus of this issue of Phlebology. **Neslihan Zehra Gültasli** and coworkers from Ankara used pelvic and transvaginal ultrasound to study 100 women complaining of chronic pelvic pain. The veins of the lower extremities were also scanned. Parauterine and paraovarian veins with a diameter of more than 5 mm were defined as pelvic varicose veins. Pelvic varices were found in 30 women, 21 of whom also presented with leg vein insufficiency, which interestingly was more common in the deep than in the superficial system.*

*A report from **Brian Knipp**, Department of Surgery, University of Michigan Health System, MI, USA, who won the last Servier-sponsored American Venous Forum fellowship, teaches us how an American in Paris views European practice. Book reviews conclude this issue of Phlebology.*

Enjoy!

Hugo Partsch, MD

1. *Phlebology* 2007;14(1):23-30.

2. *Phlebology* 2006;13(4):195-201.



Stripping of the great saphenous vein under micronized purified flavonoid fraction (MPFF) protection (results of the Russian multicenter controlled trial DEFANCE)

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Keywords:

stripping, great saphenous vein, stab avulsion, phlebectomy, varicose veins, micronized purified flavonoid fraction.

SUMMARY

This paper presents the results of the DEFANCE study (Daflon 500 mg* – assessment of efficacy AND safety for Combined phlebectomy study).

The aim of the study was to compare the intensity of postoperative pain, the size of postoperative hematoma, and quality-of-life score between two groups of patients:

- a Daflon 500 mg group: patients who underwent stripping of the great saphenous vein (GSV) and were treated with Daflon 500 mg 14 days before and 30 days after surgery
- a control group: patients who underwent stripping of the GSV and were not treated with Daflon 500 mg

The study enrolled 245 patients with varicose vein disease who underwent unilateral stripping of the GSV in combination with stab avulsion. The treatment group (n=200) received micronized purified flavonoid fraction (MPFF, Daflon 500 mg, 1000 mg/day) for 2 weeks before and 30 days after the procedure; the control group (n=45) did not receive Daflon 500 mg in the pre- and postoperative periods.

Pain severity was assessed by means of a 10-point visual analog scale (VAS) and an original 12-point scale was used to evaluate subcutaneous hematomas in the medial aspect of the thigh (zone of the GSV stripping). Subjective symptoms and quality of life were evaluated 7, 14, and 30 days after the procedure.

* Daflon 500 mg (MPFF) is also registered under various trade names, including: Alvenor, Ardium, Arvenum 500, Capiven, Detralex, Elatec, Flebotropin, Variton, Venitol, Viatic

Subjective symptoms and the area of subcutaneous hematomas were significantly lower in the Daflon 500 mg group than in the control group: 7 days after the procedure, VAS scores were 2.9 and 3.5, respectively and hematoma area 3.4 and 4.6 points, respectively. The same trend was observed for limb heaviness and fatigue, evidencing the better exercise and orthostatic tolerance of patients of the Daflon 500 mg group in the early postoperative period. Quality of life assessment by means of CIVIQ, a chronic venous insufficiency questionnaire, failed to reveal statistically significant differences between the Daflon 500 mg and control groups in 4-week postoperative follow-up.

Micronized purified flavonoid fraction (Detralex, Daflon 500 mg) in the pre- and postoperative period after phlebectomy attenuated pain, decreased postoperative hematomas, and accelerated their resorption, thus increasing exercise tolerance in the early postoperative period.

INTRODUCTION

Stripping in combination with stab avulsion is a current basic principle of lower limb varicose vein (VV) management. According to cumulative worldwide experience, stripping is a commonly used safe and radical procedure in most cases. Nevertheless, the principles and technique of stripping have been revised repeatedly throughout the history of VV surgery. Different types of removal technique have been suggested for major veins and their tributaries, as well as variants of ligation for perforating veins.¹⁻⁴ Several generations of surgeons have made numerous improvements not only in efficacy, but also in surgical safety. The current technique of phlebectomy achieves a reasonable balance between radical surgery and minimal invasiveness, providing a noticeable decrease in postoperative complications. Long-lasting unsightly scars, septic complications, lymphorrhea, and serious motor or sensory deficits are things of the past.

Given the impressive achievements of vascular surgery, it is natural to inquire whether phlebectomy has become an ideal procedure. The answer, unfortunately, is no. It is human to put forward less noteworthy problems as soon as more essential tasks have been solved. The absence of severe postoperative complications was long considered the main criterion of success among phlebologists, but patients evaluate our work by quite

different measures. About 70% to 80% of patients suffer from postoperative pain and hematomas,⁵ while some authors point out that subcutaneous bruising is present in absolutely all patients after phlebectomy.⁶

Such criteria as leg pain, heaviness, and massive bruises are very important for patients, though phlebologists may pay little attention to these complaints, considering them quite “natural” in the postoperative period. These are the very parameters that became primary end points of the multicenter, open-label, nonrandomized DEFANCE (Daflon 500 mg – assessment of efficacy AND safety for Combined phlebectomy) study carried out in 2006 in 9 Russian surgical clinics located in Ekaterinburg, Krasnoyarsk, Moscow, Omsk, Samara, St Petersburg, Stavropol, Rostov-on-Don, and Riazan.

The main objective of the trial was to refine the role of venoactive drug therapy in postoperative care of patients with VV, treated with high stripping in combination with stab avulsion. The theoretical principles of the study were based on the well-known analgesic, antiedematous, and venotonic effects of Daflon 500 mg. We suggested that the first two effects could provide pain relief after phlebectomy, while the elevation of venous tonus can decrease hemorrhage volume after high stripping of the GSV.

MATERIALS AND METHODS

The main inclusion criteria were as follows:

- female
- age 25-60 years
- C2 CEAP clinical class
- ultrasound angiological features of reflux in the GSV
- clinical symptoms (heaviness, fatigue, and others)
- unilateral lesion of GSV
- the absence of varices in GSV tributaries in the thigh
- the absence of phlebotropic therapy 8 weeks prior to inclusion

Patients were assessed 4 times: 2 weeks before surgery (D-14), and 7, 14 and 30 days after the procedure (D7, D14 and D30, respectively). The first assessment included the measurement of pain severity, heaviness and fatigue, tingling, and night leg cramps by 10-point VAS. Disease history focused on the existence of risk factors and of previous treatment for chronic venous disease. Severity of VV-related physical and emotional discomfort was measured by quality of life tool specific for the VV disease (CIVIQ.)

After inclusion, patients of the treatment group (n=200) received Daflon 500 mg orally (500 mg, bid for 6 weeks). So, patients were treated for 2 weeks prior to surgery and for 4 weeks after surgery. The control group (n=45) received no phlebotropic agents in the pre- and postoperative period.

In order not to interfere with the formation of hematoma, no antithrombotic prophylaxis was given whatever the group. Compression class 2 (20-30 mm Hg) was prescribed during 4 weeks postoperatively in patients of both groups.

Group characteristics are presented in *Table 1*.

Before the procedure, all varicose veins scheduled for removal and incompetent perforating veins of the medial group on the leg were marked upon the skin. The procedure was carried out under general or spinal (peridural or conduction) anesthesia. According to the inclusion criteria, phlebectomy was restricted to GSV short stripping (to the upper third of the lower leg), microphlebectomy of leg varicose veins and ligation of incompetent Cockett perforating veins through small incisions. Cases of total GSV removal were excluded from the trial, because venous trunk extraction can be accompanied by neural damage and development of special pain syndrome. Invagination or the conventional Babcock technique was used for GSV stripping.

	Treatment group (n=200) (phlebectomy + Daflon 500 mg)	Control group (n=45) (phlebectomy)
Age (years)	42.0 ± 9.6	42.8 ± 9.7
Body mass index	24.5 ± 3.2	24.9 ± 3.2
Disease duration (years)	9.6 ± 4.5	10.4 ± 5.3
Risk factors		
Pregnancy and delivery	88.5%	88.9%
Oral contraceptives	27.5%	20.0%
Hormone replacement therapy	11.0%	8.9%
Previous therapy		
Previous therapy	60.5%	82.2%
Venoactive drugs	42.5%	44.4%
Compression therapy	39.0%	51.1%
Sclerotherapy	7.0%	11.1%
Symptoms (VAS score)		
Pain	3.7 ± 1.2	3.8 ± 1.3
Leg heaviness	4.0 ± 1.3	4.9 ± 1.2
Fatigue	2.7 ± 0.8	3.8 ± 1.0
Cramps	1.9 ± 0.5	2.9 ± 0.8
Tingling	1.1 ± 0.3	2.1 ± 0.5
Quality of life (CIVIQ score)		
Physical discomfort	44.6	49.4
Emotional discomfort	47.9	48.1

Table 1. Demographic and baseline clinical characteristics of patients.

Postoperative follow-up included assessment of subjective symptoms and quality of life. The area of hematoma in the projection of the removed GSV (in inguinal, femoral and upper-third of the lower leg zones) was measured by a special scoring method. The whole specified zone was divided into 12 segments by several notional lines perpendicular to the limb long axis: along the inguinal fold, adjacent to the upper and lower edges of the patella and adjacent to the upper edge of the proximal access to GSV in the shin upper third of the lower leg (Figure 1). The segment between the inguinal fold and the patella was divided into 9 segments by 2 transverse and 2 longitudinal lines (in anterior-medial and posterior-medial parts of the thigh) (Figure 1). So, the whole area was divided into 12 segments (including the zone above the inguinal fold). Bruises in each segment were given 1 point, and the total hematoma score was calculated as a sum of all involved segments. Division of the area of phlebectomy into segments was difficult, so limbs were photographed digitally, with subsequent computer analysis of images.

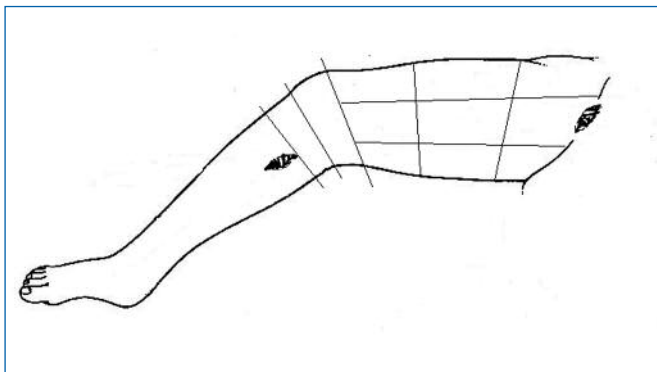


Figure 1. Schematic division of limb into segments to determine the area of postoperative hematomas.

Statistical analysis was carried out in the State Research Institute of Preventive Medicine with the SAS statistical program (Version 6.12).

RESULTS

The treatment (Daflon 500 mg) and control groups had similar baseline demographic and clinical parameters including age, body mass index, disease duration, and extent (Table 1). There was minor difference in occurrence of VV risk factors. Patients of the Daflon 500 mg group were more often exposed to regular orthostatic loads due to standing or sitting during work, and more often used

estrogen/ progestagen drugs for contraception or hormone replacement therapy. Nevertheless, clinical symptoms (excluding leg pain) were more severe in the control group. This was probably related to more active previous treatment of venous stasis in the control group, compared with the Daflon 500 mg group.

Surgical strategy was similar in the two groups (Figure 2). The Babcock technique was used in the majority of interventions; invagination stripping accounted for one fifth of all procedures. The typically incompetent Cockett perforating vein was ligated in the lower leg in 35% of patients in the Daflon 500 mg group and in 37.8% of patients in the control group. The perforating vein in the middle third of the leg was transected and ligated in 45.5% and 51.1% of patients in the Daflon 500 mg and control groups, respectively.

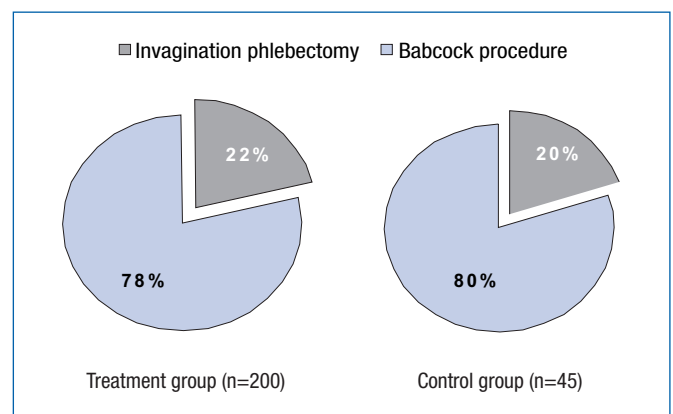


Figure 2. Type of saphenectomy.

Different types of analgesia were similarly frequent in the two groups. The modern technique of motor and sensory innervation blockade (spinal, peridural, and conduction blocks) was used in 78% and 76% of patients in the Daflon 500 mg and control groups, respectively. General anesthesia was used in the remaining cases.

The postoperative period was uneventful in all 245 patients. Minor adverse effects (gastric irritation) of Daflon 500 mg appeared in 4 cases (1.6%) during the first 2 weeks of administration and resolved spontaneously. No cases of venous thrombotic complications, delayed wound healing, or peripheral neural damage were observed.

At the same time, subcutaneous hemorrhage and subjective symptoms were less pronounced in the

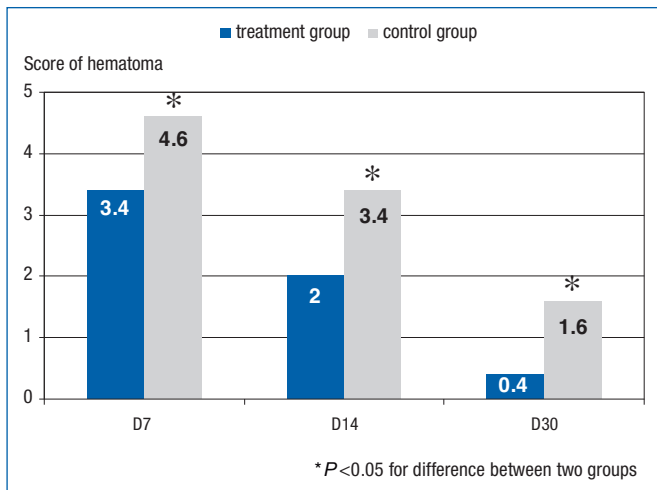


Figure 3. Postoperative hematoma area (points on original scale, see text).

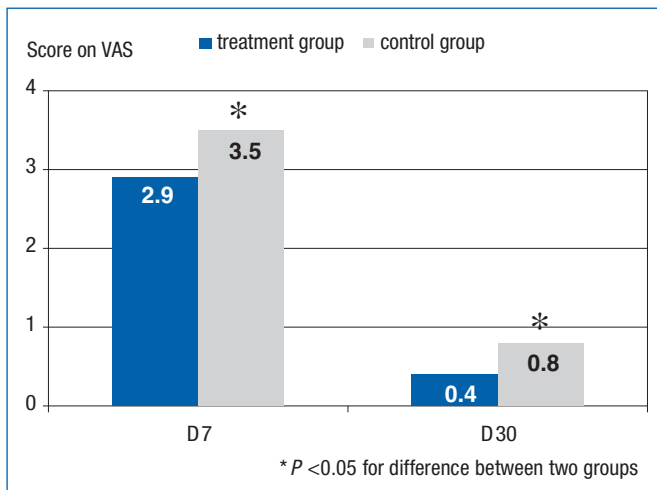


Figure 4. Pain severity in postoperative period (points on visual analog scale).

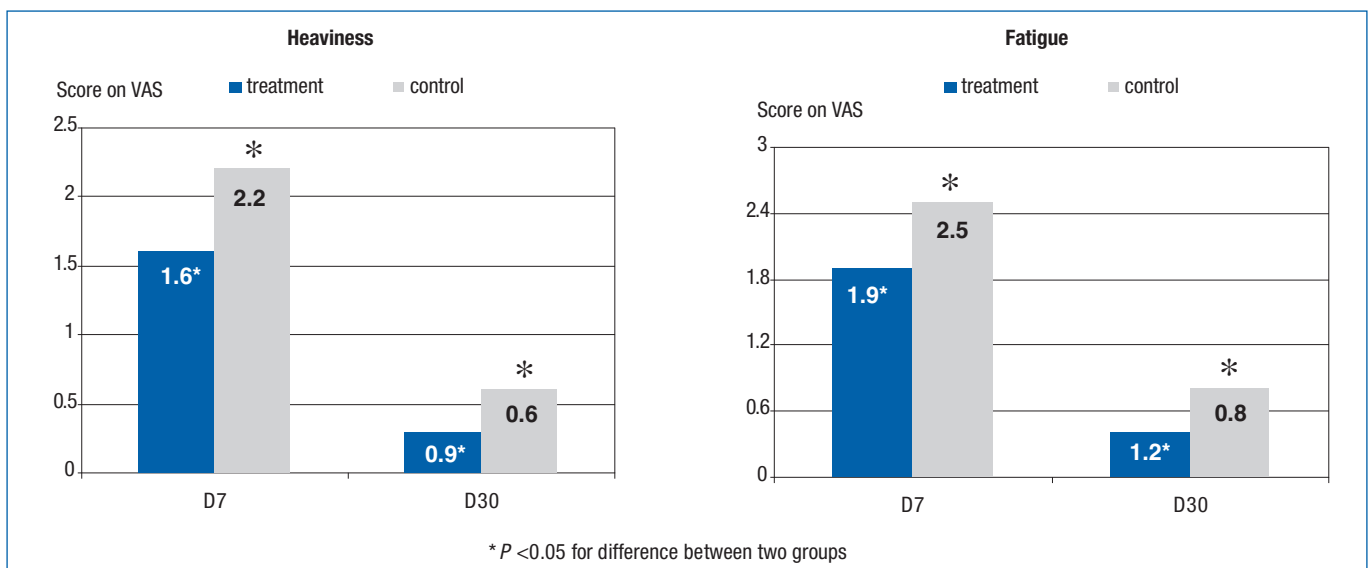


Figure 5. Heaviness and fatigue of operated legs (points on visual analog scale).

Daflon 500 mg group, according to the main end points—hemorrhage size (Figure 3) and pain severity (Figure 4).

Postoperative hematoma area in the Daflon 500 mg group was smaller than in the control group throughout the follow-up period. Seven days after the procedure, the mean area of hematomas was 3.4 points in the Daflon 500 mg group and 4.6 points in the control group ($P < 0.05$). Furthermore, the difference gradually increased: 26% on D7, 40% on D14, and 70% at the end of the trial, showing that the phlebotropic agents accelerated hematoma resorption.

The difference in pain severity was most prominent 7 days after the procedure (Figure 4). At this time point the mean VAS score was 2.9 in the Daflon 500 mg group and 3.5 in the control group ($P < 0.05$). One week later (D14), pain was less severe in both groups and was practically absent at the end of the trial.

Interesting trends were observed in subjective criteria, such as heaviness and fatigue of the operated limb (Figure 5). These complaints (along with pain) are most typical for patients after phlebectomy. Leg heaviness and tiredness after walking usually develop early in the postoperative period. These symptoms were less severe in the Daflon 500 mg group, indicating better orthostatic tolerance.

In our opinion, though pain severity, limb heaviness, and fatigue were more pronounced in the control group at

baseline, this fact had little impact on the cumulative results of the trial. Postoperative pain, as well as limb heaviness and fatigue, has a quite different cause than the same symptoms caused by venous stasis.

Quality of life scores measured by CIVIQ in the preoperative period (Table 1) and in 4-week follow-up were similar in the two groups (Figure 6). It should be mentioned that this scale is intended for patients with chronic venous disease, while the postoperative period specifically alters a patient's condition. Disturbing symptoms after phlebectomy are usually related to surgical trauma, wound healing, and round-the-clock wearing of compressive bandages, rather than to venous pathology. Despite the use of CIVIQ to assess quality of

life after surgery in previous trials,⁷⁻⁹ we did not find any changes in the patients' physical and emotional state after the intervention using this tool.

Besides the main aim—to assess the efficacy of venoactive drugs in pre- and postoperative management of phlebectomy patients—our study had some secondary objectives worthy of attention for surgeons who specialize in venous pathology. We analyzed the correlation between main outcome measures (pain severity and hematoma area) on the one hand and type of phlebectomy or anesthesia on the other.

Invagination stripping is considered less invasive than the conventional Babcock technique of GSV trunk removal,

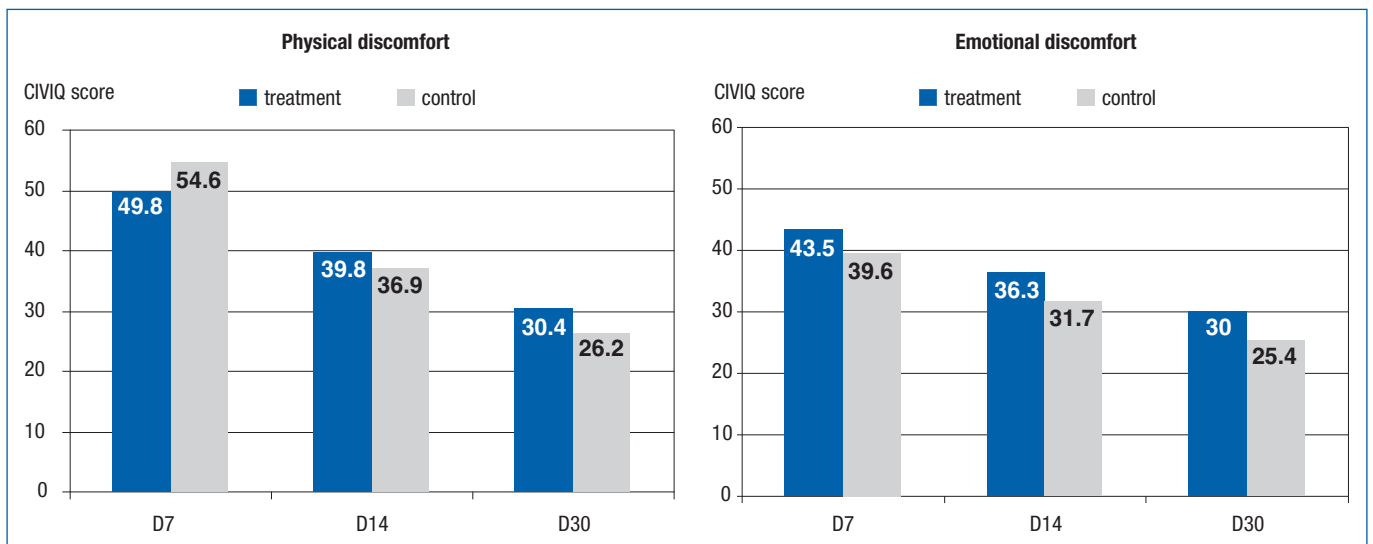


Figure 6. Time trends in quality of life (physical and emotional discomfort) in postoperative period (points on CIVIQ).

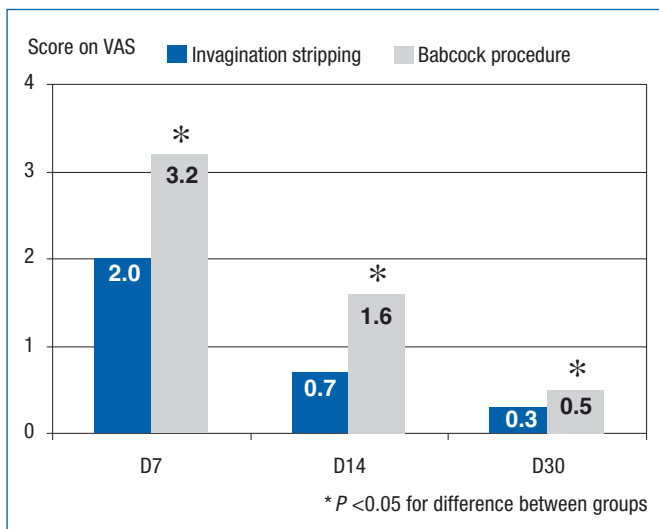


Figure 7. Pain severity in postoperative period according to the type of saphenectomy (points on visual analog scale).

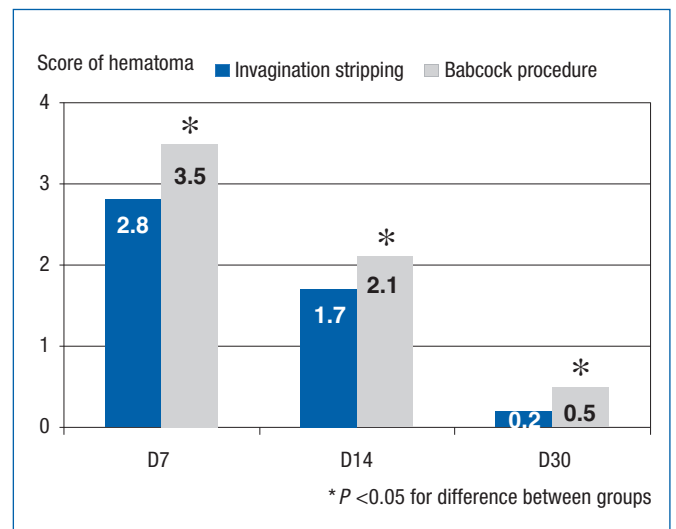


Figure 8. Postoperative hematoma area according to the type of saphenectomy (points on original scale).

and our results prove this point. Pain severity and hematoma area were compared in patients of the Daflon 500 mg group who underwent different types of GSV stripping (Figures 7 and 8). Invagination stripping yielded more beneficial results in terms of both parameters.

According to the world of anesthesiological practice, spinal (epidural, conduction) anesthesia is accompanied by an increased risk of hemorrhagic events, because peripheral

neural block elicits dilatation of the arterial and venous vasculature. Nevertheless, we failed to reveal any difference in hematoma area in patients operated under this type of anesthesia. Furthermore, subcutaneous hemorrhage was less extensive in this subgroup than in patients who had surgery under general anesthesia. Naturally, in subgroups of both spinal and general anesthesia, mean hematoma area was lower in those patients who received micronized diosmin (Table 2).

Postoperative day of assessment	Spinal anesthesia		General anesthesia	
	Treatment group (n=120)	Control group (n=34)	Treatment group (n=43)	Control group (n=11)
D7	3.5	3.8*	3.9	6.8*
D14	2.0	2.7*	2.5	5.6*
D30	0.2	0.9*	1.3	3.8*

Table 2. Postoperative hematoma score according to type of anesthesia (points on original scale, see text).

In summary, our study demonstrates that invagination stripping of GSV must become a key technique of modern phlebectomy. Different variants of peripheral neural blockade can be considered the anesthesiological method of choice for these procedures. And, finally, it is clear that micronized diosmin can be an essential part of pharmacological preoperative care and postoperative recovery for patients with VV who undergo phlebectomy. This venoactive drug helps to attenuate pain, to decrease postoperative hematomas and accelerate their resorption, and to increase exercise tolerance in the early postoperative period.

Besides, according to our cumulative experience of patients with chronic venous insufficiency, preoperative

management should include prolonged administration of Daflon 500 mg (for 4-6 weeks) and compressive therapy in cases of VV with manifest indurated cellulitis and lymphostasis. Postoperatively, this therapy should be continued for at least 4 weeks.



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The white book of venous disease in Spain

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Chronic venous disease (CVD) is extremely important in Western countries because of its high prevalence, chronic nature, repercussions on quality of life, and complications.¹⁻³ In Spain, there is a high incidence of CVD both in primary care and in vascular surgical departments. Consequently, CVD consumes a high percentage of available resources⁴ and a large part of the public health budget.

A first step towards improving care for patients with CVD will be to improve our knowledge of different aspects of the management of CVD and to outline foreseeable developments between now and 2010. With this aim in mind, the Spanish Society of Angiology and Vascular Surgery (SEACV) and the Spanish Chapter of Phlebology (CEF) of the Spanish Society have produced the 'White Book of Venous Disease in Spain'.⁵

AIMS

The aim of this initiative is to provide human and logistic resources for health care, as well as managers and experts with sufficient, reliable, and rigorous information concerning the health care problems associated with CVD in Spain. Therefore, the aim was not just to describe and explain the current status of the problem, but also to outline foreseeable trends over the next three years.

The analysis covered risk factors and populations at risk, main consultation complaints, diagnostic methods, guidelines for prevention, therapeutic strategy and its compliance, cost/benefit of treatments, predictable trends in terms of care and repercussions on quality of life, and lost working time.

MATERIALS AND METHODS

The prospective Delphi study "*Chronic Venous Disease: impact on the Spanish Health Care System. Perspectives for 2010. A prospective macro study using the Delphi method*" was performed from the beginning of October 2003 until the end of May 2004. It involved the following steps:

Keywords:

venous disease epidemiology, chronic venous insufficiency, risk factors, diagnosis, treatment and cost.

Phlebology. 2008;15(2):52-60.

1. Creation of a scientific evaluation committee.

The committee included 18 specialists from the SEACV and the CEF, and its task was to draft the essentials of the Delphi questionnaire.

2. Desk research. During this phase, documentation was collected and analyzed, together with available studies on the same topic, in order to define the study framework.

3. Preliminary study comprising:

- **Qualitative study** involving **30 in-depth interviews** with various experts from the health care sector
- **Three opinion polls** conducted among 100 specialists in angiology and vascular surgery, 150 primary care doctors, and 50 patients in whom CVD was diagnosed

4. Prospective Delphi study. The study was based on the Delphi method,⁶⁻⁸ which involved collection of quantitative (numerical) information to use in modeling trends in various aspects of CVD up to the year 2010: epidemiology, disease development, health care and health care policy and, in particular, treatments, based upon assessments made by a group of highly qualified experts.

The prospective Delphi study was carried out in both public and private community services (17 autonomous communities).

RESULTS**1. EPIDEMIOLOGICAL ASPECTS**

The prevalence of CVD is high in the Spanish population. The increase in its incidence in recent years reflects two trends. One rather unfavorable trend is related to population aging, increases in obesity and sedentary lifestyles, work involving prolonged periods of standing or sitting, and so forth, all factors known to increase the incidence of CVD. The other trend is more favorable and is seen in increasing awareness of the need to adopt healthy lifestyles, greater attention to diet and the body, and more exercise.

Despite this ambivalent situation, the Delphi study experts consider that **the rate of prevalence of CVD will tend to increase as we approach 2010**. This increase will affect both sexes, although it will be greater among women. In younger people (under 25 years), the prevalence of CVD will remain stable, but will tend to increase among the rest of the population, particularly in those aged over 45 years (*Figure 1*).

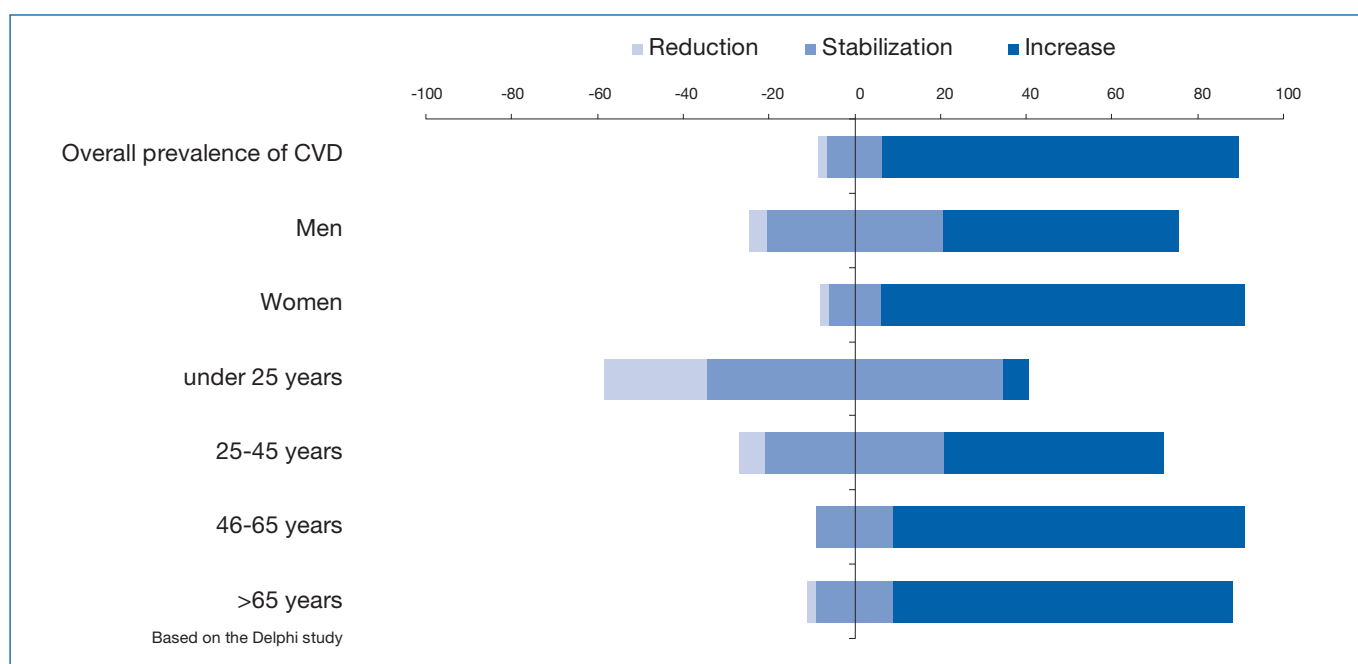


Figure 1. Trends in the prevalence of CVD between now and 2010 according to the Delphi study experts.

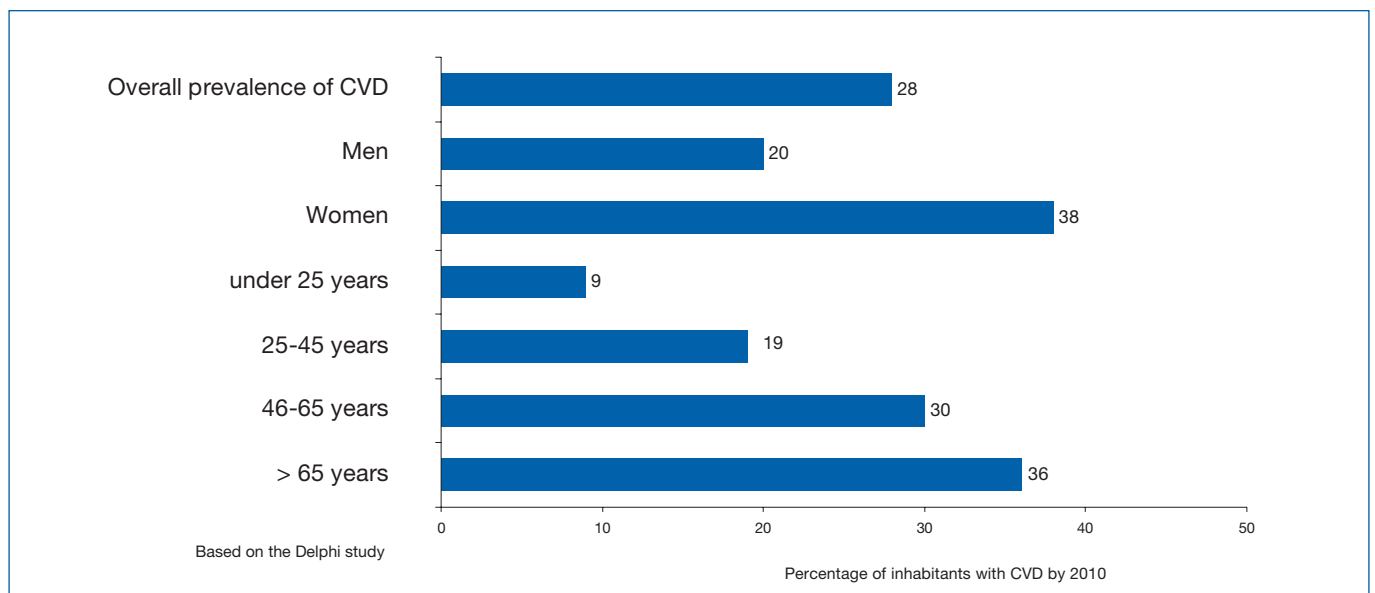


Figure 2. Estimated prevalence of CVD per 100 inhabitants by the year 2010.

In absolute numbers, the experts predicted that the prevalence of CVD per 100 inhabitants in Spain will be 28% by the year 2010. Prevalence will increase considerably more among women (38%) than among men (20%), and it will also be higher in subjects aged over 65 years (36%) whereas in those aged between 46 and 65 years it will be higher (30%) than among 25- to 45-year-olds (19%) (Figure 2).

Ninety-three percent of Delphi study experts considered that CVD is currently **undiagnosed in a large percentage of the population**. No change is expected in this percentage.

Among the various risk factors for CVD, the most important in the years ahead are overweight, old age, and jobs involving risk (ie, long periods of standing or sitting or exposure to heat). Of less importance are sedentary lifestyle, female gender, prolonged standing, and prolonged sitting. Other important risk factors (although less frequently evaluated than those given above) are heat, oral contraceptives, and genetic predisposition.

Knowledge of the risk factors that will be important in the future is essential if we are to draw up prevention policies and thereby reduce the incidence and prevalence of CVD.

2. PREVENTION OF CVD

Some CVD risk factors cannot be modified, such as age, gender, and genetic predisposition, but most can, particularly those related to lifestyle. A wide range of corrective actions and policies may be implemented:

- prevention campaigns in primary care
- training programs for general practitioners
- early diagnosis campaigns in primary care
- mass media information campaigns for the general population
- promotion of lifestyle changes among the population (eg, increased physical exercise, avoidance of obesity), and
- promotion of the prevention of risk factors at work

The Delphi study experts consider that all of these preventive actions and policies will have been introduced to a certain degree by the year 2010. However, it is difficult to evaluate the **efficacy** of such **preventive measures**, particularly since the benefits are only apparent in the medium to long term.

Primary care plays a key role in prevention, as general practitioners are the main source of information for the population at large about the control of CVD risk factors. In addition, the experts also feel that the presence of angiologists and vascular surgeons in primary care centers will greatly improve prevention of CVD. As we know, the specialties dealing specifically with treatment of CVD are currently only available in hospital settings.

3. DIAGNOSIS OF VENOUS DISEASE

During the initial stages of CVD, the symptoms do not affect quality of life, and so patients tend to avoid consulting a doctor. Delays in diagnosis and initiation of treatment ensue, with all the consequences that this entails. It is therefore advisable to recommend **early diagnosis of CVD** to allow early initiation of treatment so as to improve patients' quality of life.

The preliminary study clearly shows that the diagnostic methods most widely used today are clinical and physical examination, together with Doppler ultrasound investigation. According to the Delphi study' experts, these will continue to be the most important tests for detection of CVD in the coming years. In addition, continuous-wave Doppler ultrasound or hand-held Doppler devices will continue to be used much as they are today, while plethysmography, leg volumetry, and phlebography will become less important.

4. TREATMENT OF CVD

The Delphi study experts estimate that around 57% of patients diagnosed with CVD will be on some form of treatment by the year 2010. This percentage is low compared with the results of the preliminary study in which vascular surgeons estimated that 76% of patients with CVD are currently receiving treatment. This

discrepancy is probably due to undertreatment of such patients by primary care physicians, who underestimate the importance of the disease.

Compression therapies will become more widespread as 2010 approaches, as will hygienic and postural measures, and changes in lifestyle. Although less marked than for the above measures, increases are also anticipated in surgical procedures, drug treatment and sclerotherapy. Use of surgical procedures not involving ablation is not expected to change, but topical treatment will tend to decline.

In terms of the **period of treatment**, 85% of experts consider drug therapy should be given in the summer (when symptoms are more acutely felt and patients are less tolerant of compression hosiery), **75% when symptoms appear**, 61% intermittently in periods of two to three months, and 25% continuously. In addition, 85% of experts stated that compression therapy should be used continuously, while 74% feel it should be used only when symptoms become apparent (*Figure 3*).

One **aspect of drug treatment for CVD** that will tend to affect the future of therapy is the education of patients regarding their treatment.

As we approach the year 2010, improvement in symptoms (pain, heavy legs, swelling, cramp, etc.) and signs of venous disease, together with patients' quality of life, will be the

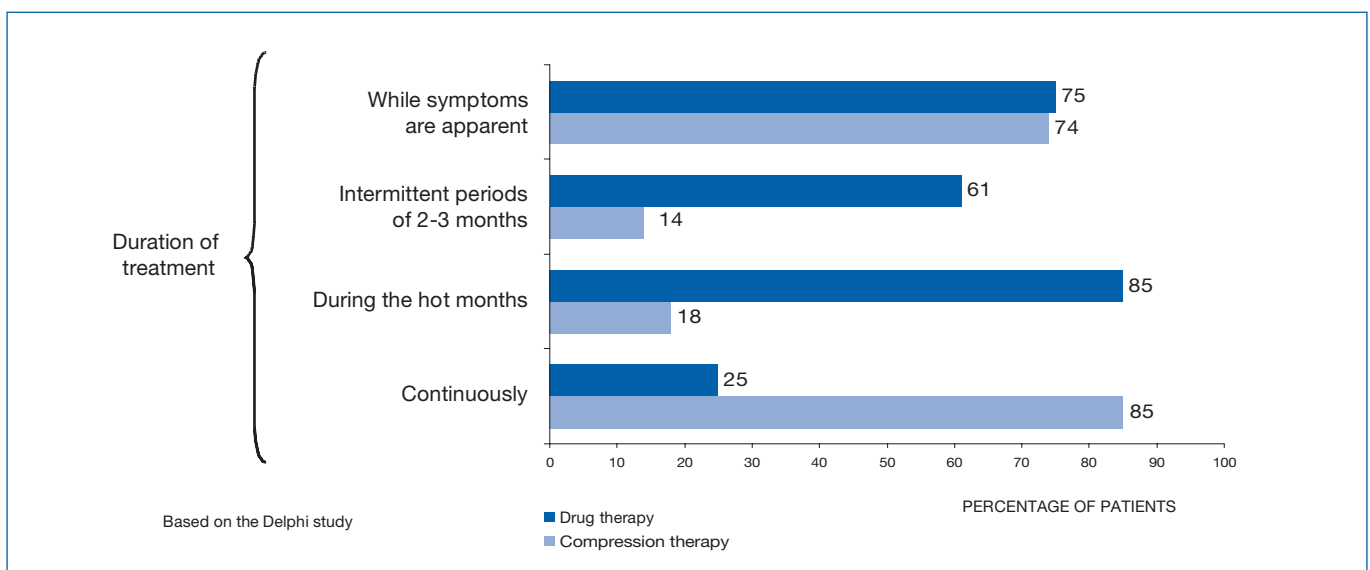


Figure 3. Most accurate periods for drug and compression therapy, according to the experts.

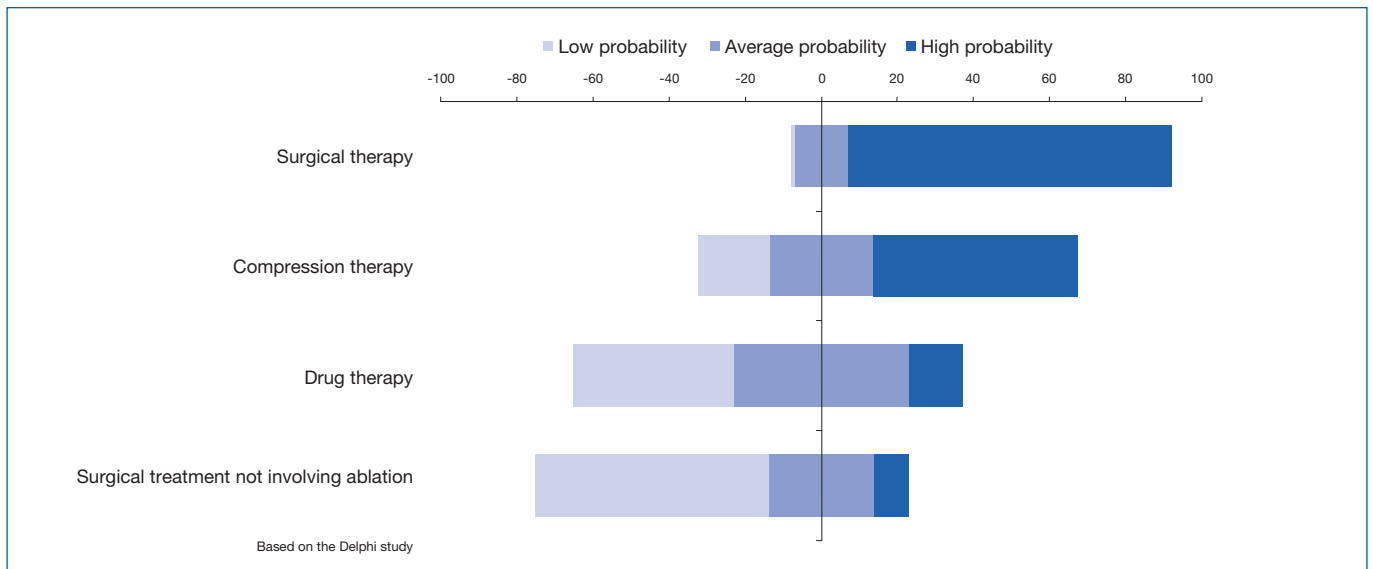


Figure 4. Likelihood of continued funding of the following treatments by the Spanish National Health System in 2010

most important **criteria** affecting **choice of venotonic drugs** in the treatment of CVD. Much importance will also be attached to the following criteria: funding by the Spanish social security system, drug safety, patient convenience (facilitating compliance), acceleration of healing of venous ulcers and dosage (once a day preferred).

So far, compression therapy, drug treatment, surgery, and surgical procedures not involving ablation, such as radiofrequency, are financed by the Spanish National Health System. In the view of the experts, it is highly likely that surgical treatment will continue to be funded in this way in the year 2010, and they also feel that compression therapy may possibly be financed. **In contrast, there are doubts about continued funding for drug treatments and, above all, it is unlikely that funding will continue for surgical methods not involving ablation** (Figure 4).

Should **venotonic drugs** not be financed by the Spanish National Health System, there will be negative consequences for CVD therapy. The experts feel that withdrawal of financing will most probably result in delays in early treatment.

5. PATIENT COMPLIANCE

For treatment of CVD to be effective, patients must complete their therapy as prescribed. Patients' awareness of their situation and of the importance of continuing

therapy is fundamental in ensuring a successful outcome. Patient compliance depends upon the type of treatment. The preliminary study showed that primary care doctors and vascular surgeons consider that patients find it easiest to comply with drug treatment. Conversely, compliance with hygienic and postural measures and changes in lifestyle was poor.

The experts consider that among various important factors associated with adequate patient compliance, the following will be the most important between now and 2010:

- factors relating to *education and information* (degree of knowledge and understanding of the disease, ability to understand the situation, etc)
- factors relating to *patients' attitudes* (acceptance of the disease, desire to fight the disease, commitment, etc), and
- *cultural* factors (educational level, ideology, religious views, etc)

Regarding **medical and health care aspects** that can help improve treatment compliance between now and 2010, the experts feel that the following are extremely important:

- improvement in quality of life and in symptoms seen by patients as response to treatment
- disease progression (severity, clinical stage, complications, etc)
- doctor-patient relationship, and
- duration of consultations

Availability of comprehensive and detailed information concerning CVD and its treatment is another important part of therapy, since it enhances patient compliance.

The Delphi study experts feel that patients will be better informed in the coming years, and that such information about CVD will become more widely available thanks to the Internet.

6. HEALTH CARE AND HEALTH CARE POLICY

Various health care professionals are involved in the care of patients with CVD. The Delphi study experts consider that, between now and the year 2010, the most important professionals in this regard will be specialists in angiology and vascular surgery, as well as primary care physicians, followed by members of the nursing profession.

The need to act on certain aspects of health care over the years ahead is underscored by the high percentage of patients in whom CVD is undiagnosed or is diagnosed but untreated.

Primary Health Care Continuous Training Programs, developed to improve management of CVD, are one method of **improving health care**. In addition to these, the Delphi study experts feel that over the years to come **health care for patients with CVD** will tend to improve in the following areas:

- information about preventive measures
- specific preventive actions in groups at risk
- information on preventive measures among the general population
- provision of information to patients and their families, and
- increased patient awareness concerning the need for compliance

Coordination between the various levels of health care providers, which predictably will not change significantly in the coming years, nevertheless remains an important factor in the management of CVD. The introduction of angiology and vascular surgery consultations in outpatient departments will encourage more direct relations between family doctors and these specialists, particularly in matters concerning diagnosis and treatment.

7. PROGRESSION OF CVD AND RELATED COSTS

CVD is a chronic progressive disease. Based on the epidemiological survey on the prevalence of CVD in Spain,⁹ the 21 566 participants in the DETECT study (patients seeking primary care for any reason, but not previously selected) were distributed as follows using the CEAP classification (*Table 1*).

CEAP class	MEN (%)	WOMEN (%)
Class 0: No visible signs of CVD	66.4	29.7
Class 1: Telangiectasias or reticular veins	15.5	29.7
Class 2: Varicose veins	10.7	22.6
Class 3: Edema	2.6	6.2
Class 4: Skin changes due to CVD	5.1	9.3
Class 5: Skin changes + healed ulcer	0.9	1.5
Class 6: Skin changes + active ulcer	0.6	0.9

Table 1. Prevalence of Spanish patients with CVD (adapted from reference 9).

The experts feel that the numbers of patients diagnosed in each clinical stage will remain stable or increase for the initial stages (classes 0-3) but will tend to remain stable in the most advanced stages (classes 4-6) (*Figure 5*).

CVD can result in complications of differing degrees of severity. While complicated clinical forms of venous disease are not generally life-threatening, they can nevertheless seriously reduce quality of life. The participants in the Delphi study are optimistic about future trends regarding complications of CVD. Thus, the incidence of skin complications, superficial phlebitis and deep venous thrombosis is expected to remain similar to current levels. In contrast, the incidence of ulcers, recurrence of ulcers, lymphangitis, and bleeding from varicose veins will tend to decline.

Because of the high prevalence of CVD, the associated costs are also high. Furthermore, since it is a chronic disease, patients require long-term treatment and care. Venous disease involves **health care costs** that are both **direct** (prevention, treatment, hospitalization, investigation, training, etc), and **indirect** (loss of

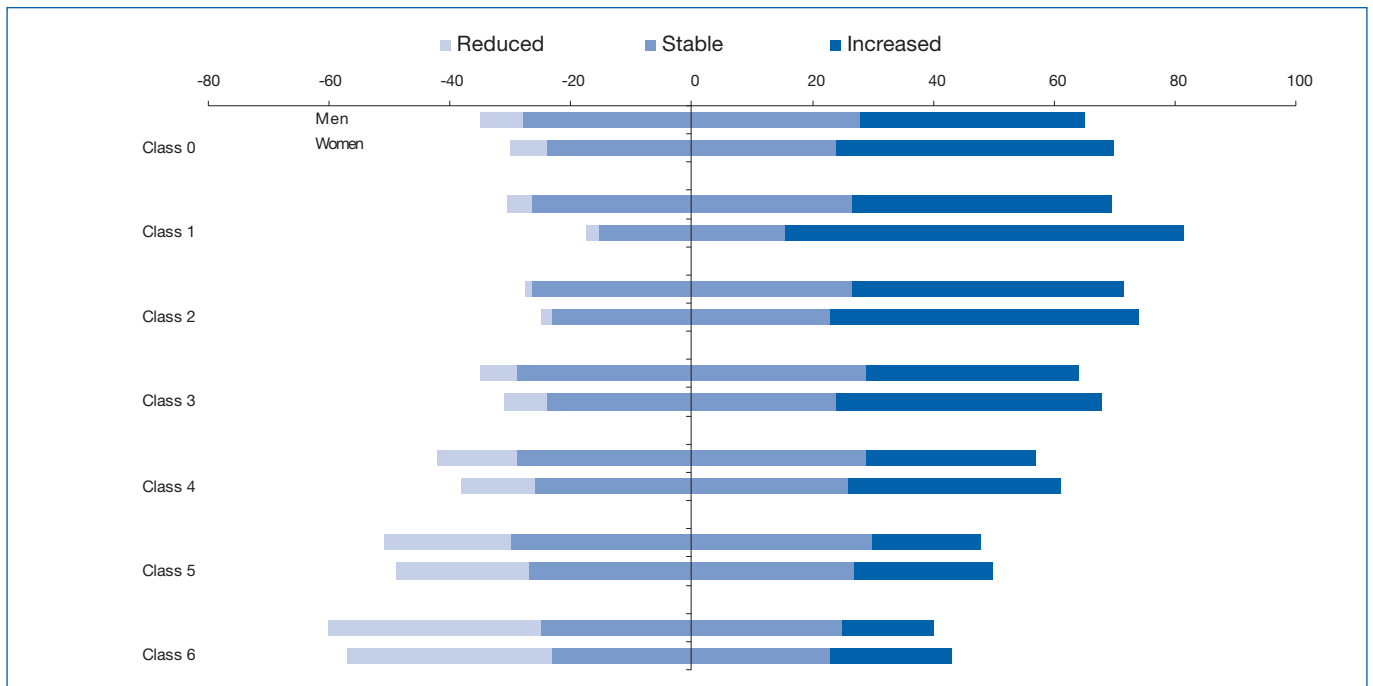


Figure 5. Trends in numbers of patients diagnosed in each class of the CEAP classification.

productivity because of sick leave and incapacitated patients). The experts consider that the economic cost of CVD will tend to increase in the coming years, particularly direct costs (Figure 6).

needing greater care and who have more complications, resulting in more working days lost and longer hospitalization. Delayed diagnosis and treatment initiation is counterproductive for CVD patients. In contrast, early treatment can help improve outcome and reduce the risk of complications, thereby reducing disease-related costs.

The greatest savings will be made among patients at the more advanced stages of the disease and among those

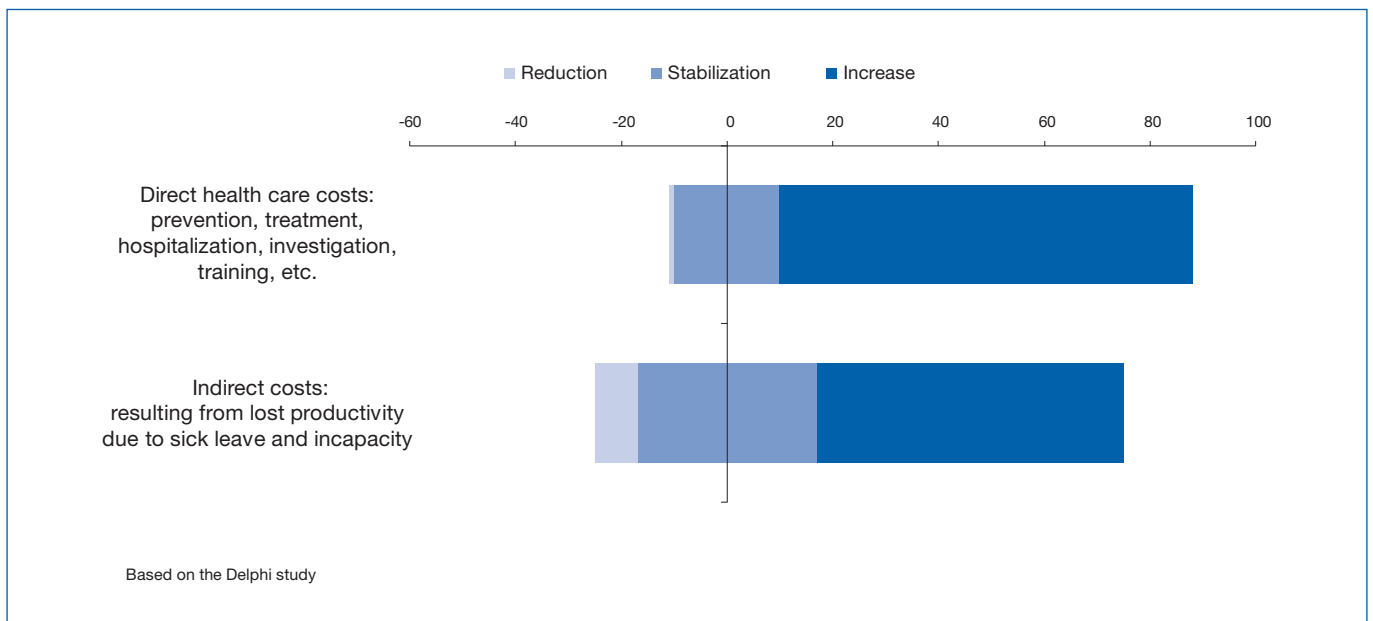


Figure 6. Trends in direct and indirect costs associated with CVD.

8. RESEARCH

The Delphi study experts considered it likely that over the next few years treatment will improve and will become available for the various complications of CVD, together with advances in surgery. By 2010, the **main lines of research into CVD will concern drug therapy** (development of new drugs, greater drug efficacy, more convenient forms of administration, etc.) and surgical treatment (simpler procedures, development of less aggressive surgical therapy, day-patient surgery, improved surgical techniques, etc).

CONCLUSIONS

- The **prevalence** of CVD will tend to rise between now and 2010, particularly among women and the over-45s.
- The current high percentage of the population with **undiagnosed CVD** will be maintained in the coming years. This hidden incidence of venous disease results in delayed initiation of treatment. **Early diagnosis of CVD should therefore be recommended.**
- The main **risk factors** for an increase in CVD in the next few years are overweight, old age, and jobs with associated risks, followed by sedentary lifestyle, gender, prolonged standing, and lack of physical exercise. Age and gender cannot be modified, but other risk factors can and must be reduced in order to lower the incidence of venous disease.
- The **diagnostic methods** most widely used by 2010 will be the clinical syndrome and the physical examination, as well as Doppler ultrasound in the experienced hands of angiology and vascular surgery specialists.
- The **treatments** expected to be most widely used in the years ahead are compression therapy, hygienic/postural measures and changes in lifestyle, and surgical and pharmacological treatment.
- Withdrawal of public funding of venotonic drugs by the Spanish National Health System will have **negative consequences** for patient therapy, including delays starting treatment, and drawbacks associated with reluctance of patients to pay for this type of medication themselves.
- In the next few years, insistence on **patient compliance** is recommended in order to improve

therapeutic efficacy. The most important factors in this regard are improvement in quality of life and symptoms in CVD patients, disease progression, doctor-patient relations, and duration of consultations.

- As regards health care policy, in the coming years there should be increased **coordination between the various levels of health care providers** with regard to CVD, as well as the establishment of **referral criteria** in order to optimize treatment of CVD.
- The **direct and indirect economic costs** generated by CVD will tend to increase. Early diagnosis of venous disease and rapid institution of treatment could help reduce the economic burden generated by this condition.

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The relation between pelvic varicose veins, chronic pelvic pain, and lower extremity venous insufficiency in women

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SUMMARY

Purpose: to determine the frequency of pelvic varicose veins with transvaginal ultrasound and associated lower extremity venous insufficiency with Doppler ultrasound in women with chronic pelvic pain of undetermined origin.

A total of 100 women with chronic pelvic pain of undetermined origin lasting more than 6 months were included in the study. The presence of anechogenic and non-pulsatile vascular structures demonstrating flow in Doppler ultrasound with a diameter >5 mm in parauterine and paraovarian localizations was accepted as pelvic varicose veins. In all patients, lower extremity venous systems were examined with Doppler ultrasound to assess possible associated venous insufficiency. The chi-square test was used for statistical analysis.

RESULTS

Pelvic varicose veins were discovered with transvaginal ultrasound in 30 of 100 patients. This association was shown to be statistically significant. Various degrees of associated lower extremity venous insufficiency were also discovered in 21 of these 30 patients.

CONCLUSION

This study has shown that pelvic varicose veins in women with chronic pelvic pain are not infrequent and, in the majority of cases, are associated with lower extremity venous insufficiency. Since the diagnosis of lower extremity venous insufficiency plays an important part in deciding the course of treatment, lower extremity Doppler ultrasound must be included in the evaluation when pelvic varicose veins are discovered.

Keywords:

pelvis, varicose veins, ultrasonography, Doppler.

INTRODUCTION

Chronic pelvic pain is a frequent disorder in women and considerably disrupts daily activities. Although dilatation of the broad ligament and the ovarian plexus veins has been identified as the cause of the pain, it is usually not taken into consideration because of the difficulty of diagnosis and treatment^{1,2}. Pelvic venous congestion and pelvic varices have increasingly been identified as the causes of chronic pelvic pain. Although ultrasonographically a normal pelvic venous plexus appears as one or two small, smooth tubular structures that are <5 mm in diameter, pelvic varices typically appear as parauterine or paraovarian dilated and tortuous vascular segments, and anechoic structures that are >5 mm in diameter²⁻⁵. Since transvaginal ultrasonography (TVUS) is a non-invasive, inexpensive, relatively easy procedure, it has been widely accepted for use in the diagnosis of pelvic varicose veins and is the most commonly used diagnostic tool⁵⁻⁷. Pelvic varices are commonly associated with vulvar, perineal, and lower extremity varices^{2,3,8,9}. To the best of our knowledge, there are no studies of the frequency with which pelvic varices are associated with lower extremity venous insufficiency.

MATERIALS AND METHODS

One hundred women between the ages of 22 and 52 years (mean, 38 years) presenting between February 1 and May 1, 2004, with chronic pelvic pain of undetermined origin that continued for more than 6 months were included in the study. None of the cases

had been previously diagnosed to have lower extremity venous insufficiency.

The study adhered to the principles of the World Medical Association's Declaration of Helsinki and informed consent was obtained from every subject. An institutional ethics board had not been established during the time of the study. Each patient's age and number of births were noted before ultrasound examination. High-resolution 6.5 MHz transvaginal and 7.5 mm linear probes, and a Shimadzu SDU-2200 were used in the ultrasound examinations. Initially, TVUS was performed. Before examination, patients emptied their urinary bladder. Examinations were performed when the subjects were in the supine position with knees in 30-45 degree flexion. Endometrial thickness was noted and, when present, uterine and ovarian abnormalities were recorded. The presence of nonpulsatile flow in dilated veins was shown by Doppler ultrasound. The presence of parauterine or paraovarian circular or linear, nonpulsatile anechoic structures that were >5 mm was accepted as pelvic varices^{2,7} (*Figures 1 and 2*).

In the second phase, the lower limb venous system was examined with Doppler ultrasound. The common femoral vein (CFV), superficial femoral vein (SFV), deep femoral vein (DFV), popliteal vein (PV), long saphenous vein (LSV), and short saphenous vein (SSV) were examined on a gray scale, with patients in the supine position, according to the wall structure, intraluminal echogeneity, diameter, and compressibility. Later, color and spectral examinations of venous structures were performed. In the literature, it has been shown that there is no absolute

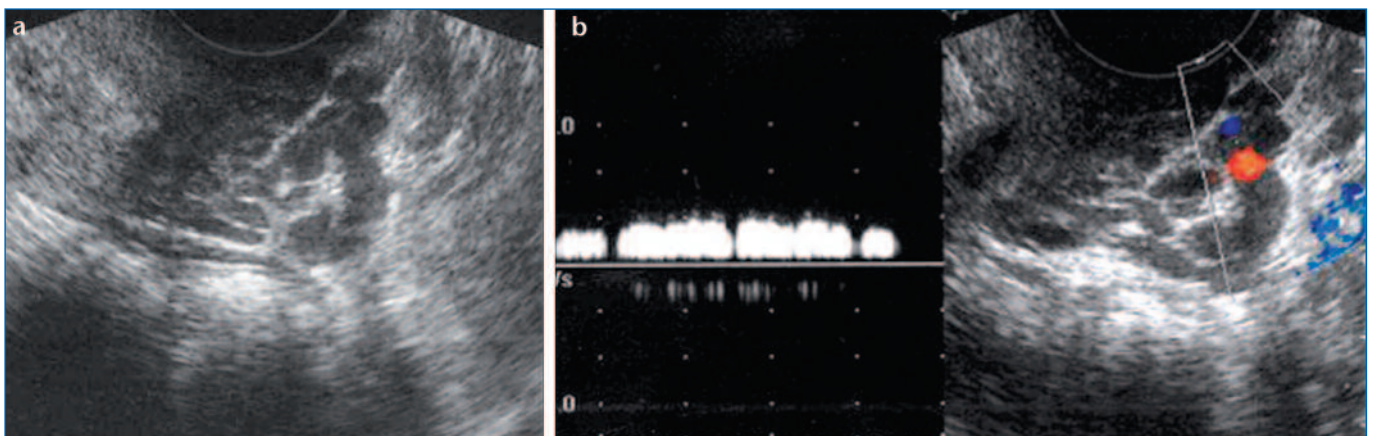


Figure 1: a, b. Gray scale ultrasound examination (a) of the pelvic region in a 45-year-old woman reveals serpiginous structures, which are thought to be varicose veins. Color and duplex Doppler ultrasound (b) shows venous flow within these structures.

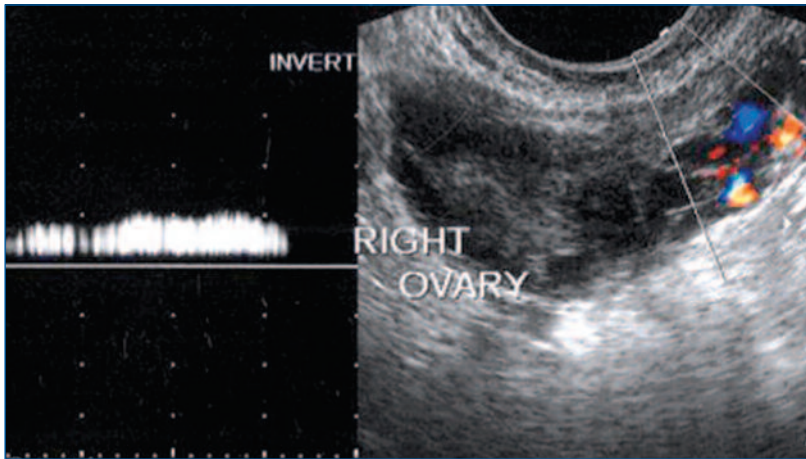


Figure 2: Varicose venous veins around the right ovary with venous flow on Doppler ultrasound examination are seen in a 34-year-old woman (vein diameter: 5.4 mm).

limit for reflux duration, and the duration of reflux changes depending on the position of the patient, diameter of the lumen, and number and localization of the venous valves. Generally, a duration of 0.5-1 sec has been suggested as pathological.¹⁰ In this study, we accepted inverse flow >0.7 sec with mechanical compression and Valsalva maneuver to be pathological. In order to evaluate the association between pelvic varices and lower limb venous insufficiency and the relationship with the number of deliveries, the chi-square statistical test was used.

RESULTS

The diameter of pelvic veins was >5 mm in 30 of 100 patients. In 21 of these 30, concomitant lower limb venous insufficiency was found. Although in 6 patients pelvic vein diameter was <5 mm, lower limb venous insufficiency was observed. Venous insufficiency was not observed in 64 patients in whom pelvic vein diameter was <5 mm (Table 1). Statistical analysis revealed (C=0.05 confidence interval; C=34; 29 > X₂ 0.95; 1=3.84) a significant relationship between the presence of pelvic varices and the presence of lower limb venous insufficiency.

Number of patients	Pelvic congestion	Venous insufficiency
21	+	+
9	+	-
6	-	+
54	-	-

Table 1: Distribution of the number of patients according to pelvic congestion and venous insufficiency.

While the diameter of pelvic veins was observed to be bilaterally >5 mm in 13 patients, they were right sided in 10 and left sided in 7. In 9 of 21 patients who had concomitant venous insufficiency, dilated pelvic veins were bilateral, whereas in 7 patients they were on the left side and in 5 on the right.

In 21 patients with concomitant pelvic varices and lower limb insufficiency, insufficiency was observed in the CFV of 16 patients, LSV of 7, DFV of 2, SFV of 2, PV of 3, and in the SSV of 1 patient (Figure 3).

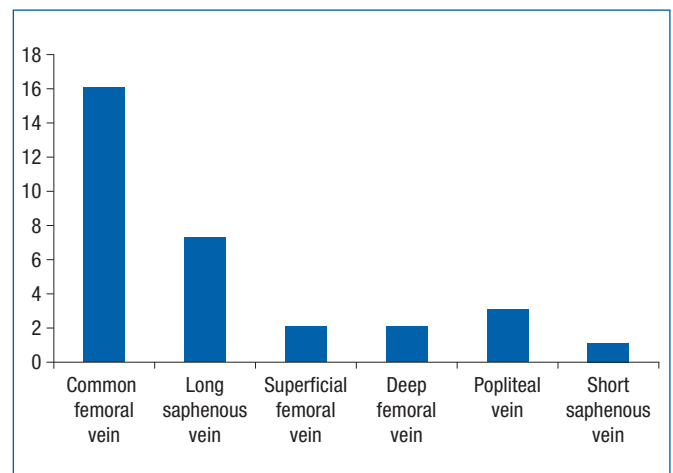


Figure 3: Distribution of lower limb venous insufficiency within the group of women with pelvic congestion.

Among 30 patients whose pelvic vein diameters were >5 mm in TVUS, 24 had normal TVUS findings, 3 had myoma foci, which, based on their size and appearance, may have been the cause of pelvic pain, and 3 had hemorrhagic ovarian cysts that were >3 cm in diameter. There was no retroverted uterus detected in this study group (Figure 4).

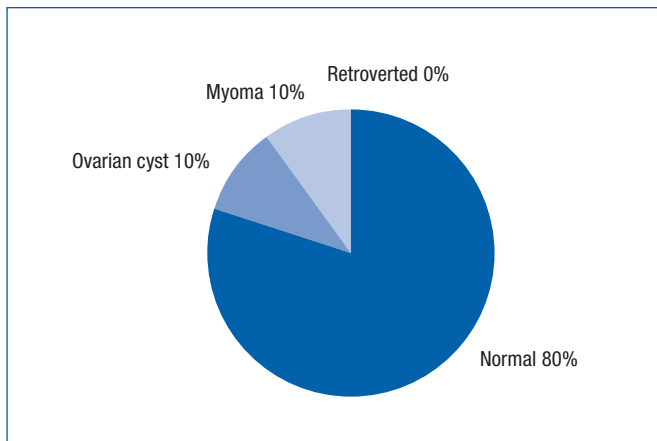


Figure 4: TVUS findings of patients with pelvic pain and pelvic congestion.

Among 70 patients whose pelvic vein diameters were <5 mm, 50 had normal TVUS findings, 7 had myoma foci, which, based on their size and appearance, may have been the cause of pelvic pain, 11 had complicated ovarian cysts that were >3 cm in diameter, and 2 patients had retroverted uteri (Figure 5).

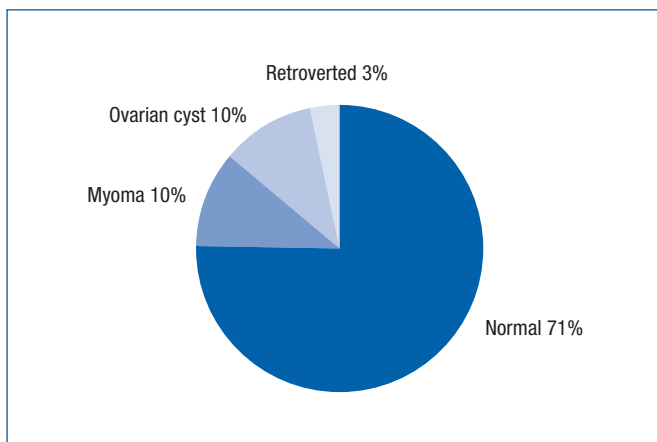


Figure 5: TVUS findings of patients without pelvic pain and pelvic congestion.

Mean endometrial thickness was 9.2 mm in patients that had pelvic varices and 6.7 mm in those that did not.

The mean number of deliveries was 2 (range, 0-7) in the study group, which was composed of 5 nulliparous and 95 multiparous women. Pelvic varices were observed in 18 of 63 patients who had fewer than 2 births and in 12 of 37 who had more than 2 deliveries (Table 2). There was no statistical relationship between pelvic varices and the mean number of deliveries (C=0.039; 79<2 0.95; 1=3.84).

Number of deliveries	Pelvic varix (+)	Pelvic varix (-)
<2	18 cases	45 cases
>2	12 cases	25 cases

Table 2: Distribution of cases with and without pelvic varices according to the number of deliveries.

DISCUSSION

Chronic pelvic pain accounts for 10% to 40% of all presentations to obstetrics and gynecology outpatient clinics^{7,11,12}. Pelvic pain among women is a common condition, which may have various causes. The most common causes include pelvic varicocele, endometriosis, pelvic adhesions, atypical menstrual pain, urological problems, spastic colon syndrome, and psychosomatic disorders⁷. Dilatation of broad ligament and ovarian plexus veins and the presence of an incompetent ovarian vein constitute a specific entity known as pelvic congestion syndrome (PCS) or pelvic varicocele¹. It has been reported that pelvic varicocele occurs in 10% of the general female population and in about half of women who have chronic pelvic pain^{2,7}. Pain secondary to pelvic congestion increases with fatigue, coitus, and conditions that increase intraabdominal pressure, such as walking, bending, heavy lifting, and prolonged sitting during the premenstrual period. Chronic pelvic pain is generally unilateral^{2,3,8,9}. Pelvic congestion is diagnosed mostly in multiparas. During pregnancy, the ovarian vein dilates permitting a 60-fold increase in blood flow, which is considered to be one of the most important causes of venous insufficiency^{3,13}. In our study group, which had a mean number of deliveries of 2 (range, 0-7), pelvic varices were observed in 18 (28.5%) of the 63 women who had <2 deliveries and in 12 (32.4%) who had >2 births. Statistical analysis did not reveal any significant relationship between pelvic congestion and the mean number of births.

Venous drainage of ovarian veins occurs via the ovarian plexus, which connects with the uterine plexus at the level of the broad ligament. Generally, a single ovarian vein leaves the ovarian plexus and ascends superiorly along the course of the psoas muscle and drains into the left renal vein on the left side, and into the inferior vena cava (IVC) on the right side. Sometimes more than one ovarian vein leaves the ovarian plexus and they unify before draining into the IVC or left renal vein. In autopsy series, valves in the upper portion of ovarian veins were

absent on the right side in 6% and on the left side in 15% of the study population. The presence of pelvic congestion in nulliparous women is believed to be linked to the congenital absence of these valves³. Although invasive methods such as vulvar phlebography, transuterine venography, retrograde phlebography, and selective ovarian venography have been used in the diagnosis of pelvic congestion, all of these methods, except selective ovarian venography, have been abandoned. Selective ovarian venography is used only in patients who will have an endovascular intervention. Selective ovarian venography is performed with local anesthesia. After excluding the possibility of pregnancy, the femoral vein is catheterized using the Saldinger technique. The left ovarian vein draining into the left renal vein is selectively catheterized fluoroscopically, and nonionized contrast material of low osmolality is administered. Radiographs are taken with the patient in the semierect position. The same procedure is applied to the right ovarian vein since it may also drain into the right renal vein⁸.

At the present time, the use of transabdominal ultrasonography, TVUS, spiral computed tomography (CT), and magnetic resonance (MR) imaging is increasing for diagnostic purposes^{4,8,13,14}. There are also studies that report that reflux in the left ovarian vein could be demonstrated with CT and MR imaging^{3,15}. With the use of multidetector CT (MDCT), a larger region can be imaged in the same phase as compared with spiral CT. Reflux of the contrast material to the left renal vein generally occurs in the corticomedullary phase, ie, the arterial phase. When the contrast material is in the arterial system and the renal veins are in the arterial phase, simultaneous opacification of the ovarian veins shows reflux to the ovarian vein. It is not accurate to diagnose every case that shows reflux to the ovarian vein in CT or MR examinations as pelvic congestion, because studies have shown that reflux is found in 40% to 60% of asymptomatic women^{3,16}. Pelvic varices can be visualized efficiently in 3-dimensional T1-weighted gradient echo MR sequences after the administration of intravenous gadolinium, and flow in the pelvic varices appears in high signal intensity¹⁷.

Pathogenesis of pelvic congestion is multifactorial. Hiromura et al showed that stenosis of the left renal vein at the aortomesenteric level may cause reflux to the left ovarian vein and development of venous collateral structures¹⁶. Stenosis of the left renal vein at the

aortomesenteric level may also be seen secondary to compression of the superior mesenteric artery, which is known as the nutcracker syndrome, and is characterized by intermittent gross hematuria secondary to left renal vein hypertension. An increase in the venous pressure gradient between the left renal vein and IVC above 1-3 mm Hg causes development of collateral veins and inverted flow. When there is a suspicion on the basis of ultrasound, CT, and MR imaging findings, diagnosis should be confirmed by retrograde renal venography by measuring the pressure gradient between the left renal vein and IVC. The reason why most patients remain asymptomatic in ovarian reflux secondary to stenosis at the aortomesenteric level is thought to be related to the fact that venous pressure gradient does not increase as it does in the nutcracker syndrome¹⁶. In addition, pelvic congestion may also occur secondary to a retroaortic left renal vein, in portal hypertension and acquired inferior vena cava syndrome¹⁸.

The cause of pelvic vein dilatation has not been clearly defined. Hormonal factors contribute to vasodilatation, and pelvic veins are exposed to high doses of ovarian hormones. Estrogen is a potent vasodilator. This effect occurs by various mechanisms, and estrogen receptors on human vascular cells are known to exist. Estrogen also causes nitric acid secretion, which causes relaxation of smooth muscle via stimulating nitric oxide synthase. Nitric oxide not only dilates the uterine vessels, but also causes pelvic pain that can be blocked by nitric oxide inhibitors. However, there is no evidence related to the increase in estrogen in the peripheral blood. There are indirect effects of estrogen on pelvic organs. Ultrasound studies have shown a significant increase in endometrial thickness and size in pelvic congestion¹⁷. In the present study, mean endometrial thickness was 9.2 mm in the group that had pelvic varices and 6.7 mm in the group that did not have pelvic varicose veins. This supports the notion that hormonal factors are important in pelvic congestion.

TVUS is extensively used as it is inexpensive and noninvasive². TVUS may be used with patients who will be followed up in outpatient clinics, and a detailed examination can be completed within as little as 15 minutes²⁰. In TVUS, a full bladder is not required. TVUS, in comparison with transabdominal sonography, is more beneficial in obese patients, patients with an incision scar, and patients who are hysterectomized⁵. Pelvic structures are examined at a higher resolution because of the

proximity of the vaginal probe to the uterus and ovaries. Pelvic varices are observed with TVUS as multiple dilated veins that are >5 mm in diameter, located within the broad ligament of the uterus and have various venous Doppler ultrasound signals. In a study of 35 females whose adnexal vein diameters measured >5 mm in TVUS, Giacchetto et al identified reflux in the ovarian veins using retrograde venography². For that reason, TVUS has been recommended as a noninvasive method in the diagnosis of pelvic congestion and varicocele^{1,2}.

In the present study, the diameters of the pelvic veins in 30 of 100 women with pelvic pain were found to be >5 mm. In 24 of these patients (80%), no other pathology that could have caused pelvic pain was found. Pelvic pain in these patients was thought to be secondary to pelvic congestion. No pelvic varicose veins were detected in 50 patients that had pelvic pain.

Embolization or ligation of the ovarian vein shows good results in ovarian varicocele. Combined extraperitoneal vein ligation and ligation of the branches of the internal iliac vein were demonstrated to be curative in 77% of cases, whereas 58% of cases were successfully treated with ovarian vein embolization²³. In addition to ligation of the uterine veins, which are in relation to the ovarian vein, varicectomy of vulvar and leg varices yields good outcomes^{9,19}.

Pelvic varices are frequently associated with vulvar, perineal, and lower limb varices^{2,3,9}. Valvular insufficiency of the pelvic venous system, such as in the internal and

external iliac veins, has an important role in the pathophysiology of pelvic venous congestion³. Although in the literature lower limb varices are reported to accompany pelvic varices, to the best of our knowledge there is no study regarding the frequency of this association. In the present study, in 21 of 30 (70%) patients with pelvic veins >5 mm in diameter, we observed venous insufficiency of various degrees in the CFV, DFV, SFV, LSV, SSV, and PV. While lower limb venous insufficiency was most frequently seen in the CFV (in 52% of the women), it was also seen, in the LSV (23%), PV (10%), DFV (6%), SFV (6%), and SSV (3%). In 6 patients with pelvic pain and lower limb insufficiency, the diameter of the pelvic vein was <5 mm. Statistical analysis showed a significant relationship between the presence of pelvic varices and the presence of lower limb insufficiency. Therefore, in the presence of pelvic varices, lower limb insufficiency should also be investigated, and if it is present it should be treated.

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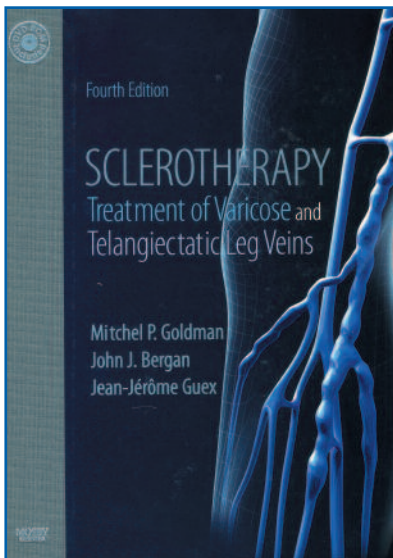
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Book review



**Sclerotherapy.
Treatment of Varicose and
Telangiectatic Leg Veins.**

Goldman MP, Bergan JJ, Guex JJ, eds
4th edition. Mosby Elsevier. 2007.
ISBN 0-323-04258-9



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A review by Michel Perrin

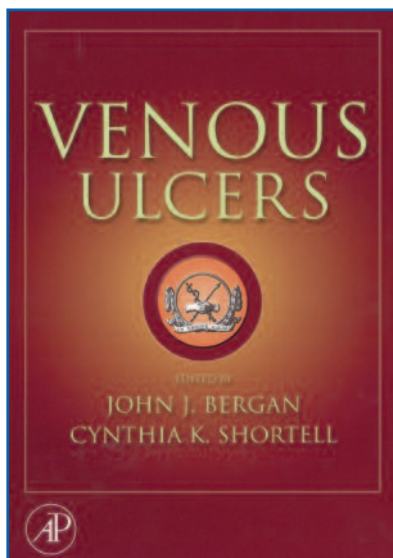
First published in 1991, republished in 1995, 2001, and 2007, this book remains the backbone of our knowledge concerning sclerotherapy of chronic venous disorders. Divided into 15 chapters plus 8 appendices, this reference work of 439 pages covers not only sclerotherapy, but also surgery and intravascular procedures for treating varices, the use of compression (contributor Hugo Partsch), venoactive drugs (contributor Albert-Adrien Ramelet), and laser and high-density light treatment of telangiectasia.

I particularly appreciated the 2 chapters devoted to noninvasive investigations and injection techniques. They provide all the details that both the beginner and the experienced phlebologist need to know. At the end of the various treatment chapters, the reader will find several case histories with outstanding illustrations that are crucial to understanding the clinical course throughout treatment, from preinterventional status to the final result. The last innovative chapter provides very practical and useful recommendations on how to set up a sclerotherapy practice.

I liked the 8 appendices at the end of the book. These give information on compression, manufacturers and distributors of sclerosing solutions, various equipment companies (including their Web sites), answers to patients' questions, and a guide to reimbursement in North America.

More than 2600 references are quoted, including 536 on sclerotherapy complications and how to avoid them. Over 500 figures, most of them new and in color, illustrate the book and facilitate understanding of the anatomy, physiology, and pathophysiology, and of the technical details recommended by the authors. The DVD supplied with the book is particularly appealing and easy to use.

Some politicians may oppose globalization, but medicine has no borders, as is fully apparent from the diverse nationalities of this book's authors and contributors.



Venous Ulcers

John J. Bergan,
Cynthia K. Shortell (eds).
Elsevier. Academic Press 2007
ISBN: 13:978-0-12-373565-2

A review by Michel Perrin

The last books published in English on venous ulcer were the third edition of Leg Ulcers. Diagnosis and Management by D. Negus, PD Coleridge-Smith, JJ Bergan (eds) in 2005, which was mainly a revision of the previous editions, and Management of Leg Ulcers by J Hafner, A-A Ramelet, W Schmeller, and UV Brunner (eds) in 1999.

At that time, both were outstanding books, but the fast-evolving field of chronic venous disease needed to an update on this crucial topic. This new book fills the gap. It is divided into four sections: etiology and initial evaluation of the patient with chronic venous insufficiency, nonsurgical management of chronic venous insufficiency, therapeutic procedures for chronic venous insufficiency, and special topics.

All 22 chapters written by 39 different authors working in 8 countries are valuable, but some of them are more original. Among them, I particularly enjoyed:

- chapter 4 on ultrasound evaluation, which is very informative,
- chapter 5 on hypercoagulable states associated with chronic venous insufficiency, which is both uncommon and original,
- chapter 19, which describes free tissue transfer for limb salvage with a detailed analysis of the outcome of this unusual treatment,
- chapter 21, which deals with the very difficult situation in patients combining arterial and venous insufficiency.

The editors should be congratulated for describing all the available and updated methods for managing venous ulcers, including the most recent techniques, as adjuvant therapies and topical negative pressure techniques, foam sclerotherapy, endovenous treatment, including radiofrequency, and laser. Deep venous reconstructive procedures are not forgotten as one chapter is devoted to valve repair and another to dilatation and stenting.

As a European reviewer I have to say that 2 topics should have been considered: the first one, although debated, is the role of drugs as adjunctive treatment; the second concerns etiological ulcer diagnosis since it is sometimes difficult to identify non-venous leg ulcers.

All surgeons, dermatologists, angiologists, and internists who are in charge of treating patients with venous ulcers have a unique opportunity to update their knowledge by reading this appealing book of more than 300 pages lavishly illustrated, and amply referenced.

A review by Michel Perrin

Two special issues of medical journals indexed in MEDLINE and written in English, entirely devoted to venous disorders of the lower limbs, have been published within the last few months.

Acute and Chronic Venous Disease. *J Vasc Surg.* 2007;46(suppl S):1-93.

Management of Chronic Venous Disorders of the Lower Limbs. Guidelines according to scientific evidence. *Int Angiol.* 2008;27:1-60.

The first of these issues is a summary report on the meeting held in Big Island, Hawaii, in January 2006. About 50 international experts on venous disorders and representatives of the pharmaceutical industry (Figures 1-2), who are listed in the preface, attended this 5-day meeting whose twofold aim was:

- First, to provide an update of knowledge on venous disorders of the lower limbs and to identify the areas where the former in particular is insufficient.
- Second, to identify where our efforts should be concentrated in order to fill in gaps, so as to select what appear to be the most promising future methods of diagnosis and treatment.

The special issue of *Journal of Vascular Surgery* starts with a short preface summarizing the objectives and the agenda of the meeting followed by the report, which is divided into 5 chapters with the following titles:

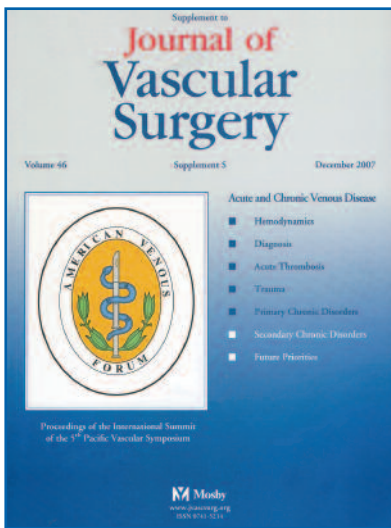
- Hemodynamics and the diagnosis of venous disorders
- Acute venous disease: venous thrombosis and venous injury
- Primary chronic venous disorders
- Secondary chronic venous disorders
- Projections: which priorities should be developed in terms of organization, clinical studies, and research

The bibliography contains 666 references.

The overall unity of the special issue is ensured by the fact that the first author of each chapter is Mark Meissner, President elect of the American Venous Forum 2007 and the direct successor of the late Eugene D Strandness, University of Washington Medical Center, Seattle, Washington.

The CEAP classification is ever present in the background, as shown by the classification of chronic venous disorders as primary and secondary, which is unusual in phlebology. The approach to some disorders is quite typical of North American authors and may surprise "Old Europe", but such approaches should encourage us to reflect. I am referring, in particular, to thrombolytic therapy of some cases of deep vein thrombosis (DVT), and the large amount of space devoted to surgery of deep veins in reflux or obstructive syndromes.

Conversely, no noninterventional treatment is proposed in primary chronic venous disorders for patients rated C0s, C1 or C2, even though in this same



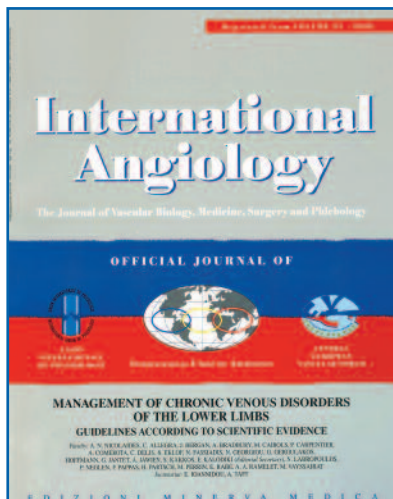
No author. Acute and chronic venous disease. Proceedings of the international summit of the 5th Pacific Vascular Symposium. Supplement to *J Vasc Surg.* 2007;46:S1-93



Figure 1. From left to right P. Neglen, D. Pavcnik, M. Perrin.



Figure 2. One of the working group (5th Pacific Vascular Symposium).



Nicolaides AN. Management of chronic venous disorders of the lower limbs. Guidelines according to scientific evidence. *Int Angiol.* 2008;27:1-60.

chapter the 3 epidemiological surveys conducted¹⁻³ identified a high percentage of such patients. Apart from in English-speaking countries, these patients received noninterventional therapies (venoactive drugs, compression therapy).

In terms of treatment, the grades of recommendations are limited to DVT and postthrombotic syndrome (pages 51-53). The rating scale used predates the one proposed by Guyatt,⁴ since the manuscripts of the different articles were submitted prior to its publication. The authors did not formulate any graded recommendation for the treatment of primary chronic venous disorders, which is readily understandable, considering the absence of a long-term, randomized, controlled study on this disease.

The most stimulating chapter is, of course, the one involving “future” research initiatives, presented in a table, where 13 investigative projects are listed. It is likely that many new approaches suggested both in terms of diagnosis as well as treatment will be developed over the next ten yearsTo be continued.

The special issue of *International Angiology* was limited to chronic venous disorders.

It was produced at a 5-day consensus conference held in Cyprus, in December 2004, and attended by 25 specialists (*figure 3*) a large number of whom then participated at the above-mentioned meeting held in Hawaii.

The initial document, which contained several hundred pages, was reduced in size under the guidance of AN Nicolaides and E Kalodiki. The final report was a condensed 60-page version with no less than 824 associated references. It is divided into 3 chapters whose arrangement is more in conformity with European habits:

- Pathophysiology and investigations
- Therapeutic methods
- Management

Each of these chapters is very well documented. Thus, in the pathophysiology section, macro- and microcirculation abnormalities are described separately. The review of treatment methods is also very complete and is presented as follows:

Noninterventional methods:

- Compression therapy (bandages, stockings, and intermittent compression devices)
- Pharmacological therapies. These are described at length since 6 pages are devoted to venoactive drugs.

Interventional methods:

- Sclerotherapy
- Open surgery for treatment of superficial and deep venous insufficiency
- Surgery of the perforating veins
- Endoluminal surgery of varicose veins and deep venous insufficiency

Results of these different treatments, their indications, and their grades of recommendation are listed in several tables with many references.

The last chapter summarizes the respective indications of the different investigations and treatments, by disorder. The following are reviewed in succession:

- Treatment of patients presenting with symptoms of venous disease with no clinical signs suggesting a venous disorder. Such patients do exist, but rarely receive special attention
- Varicose veins
- Postthrombotic syndrome: prevention and treatment
- Leg ulcer: healing and prevention of recurrence

A final paragraph of great interest reviews all of the unclear aspects of chronic venous disease and lists the questions we want to answer in order to progress in the management of chronic venous disorders.

These two special issues discuss venous disease from a very different angles. Each deserves to be read attentively and they justify the title of this editorial: put them on your desk so that you can take your time in reading them.



Figure 3. The "Cyprus Consensus Meeting" group.

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An American Surgeon in Paris

A brief report from a Servier Traveling Fellow

Brian KNIPP

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INTRODUCTION

As the plane touched down on the tarmac at the Istanbul Ataturk airport, I realized that my horizons had just broadened substantially. Born in the central United States, I had rarely ventured beyond our nation's borders. Yet here I sat in Turkey, my body unsure of what time it was, or what time even meant, anticipating new vistas and experiences. We were transported to the Hotel Marmara, a beautiful edifice in the commercial district of Istanbul on Taksim Square, a short cab ride from several of the most stunning sights in the city. We toured the Aya Sofia, a huge museum which started its life in 537 A.D. as a Christian basilica, subsequently became a mosque in 1453 after the capture of Istanbul by the Ottoman Turks, and finally became a museum in 1935 after the fall of the Ottoman Empire. We also entered the Blue Mosque, built between 1609 and 1616, and the Basilica Cisterns, a fantastic underground grotto full of the shadows of Roman architecture. Trips to



Phlebology. 2008;15(2):73-77.

Working with Dr Jean-Luc Gerard in Paris.

bazaars, rug shops, and street cafés highlighted our stay in the city.

The meeting began with a beautiful dinner at the top of our hotel. Classic Middle Eastern cuisine and wine highlighted an evening spent meeting our European and Turkish counterparts. The next morning, the presentations commenced. While a notable percentage were in tongues I was unfamiliar with, I was still able to glean a great deal from them. Discussions involved prevention, epidemiology, and treatment of superficial and deep venous disease as well as venous thromboembolism. I found the presentations excellent and informative. My colleague Reagan and I presented our research on the outcomes of primary repair of traumatic venous injuries and factors predictive of poor outcome for deep venous stenting, respectively. Our presentations were both very well received; it was notable how much more lively the post-presentation discussions were at this meeting than at meetings I have attended in the United States.

At the conclusion of the meeting, we boarded a plane for Paris. We checked into our hotel in the 3rd district, one block from the Seine and within easy walking distance of Notre Dame Cathedral. We had no meetings scheduled that evening, so we sought out a local eatery, eschewing the touristy locations in favor of something an average Parisian might frequent. Fortunately, years of French lessons were not completely in vain. We found a small diner and ordered an excellent meal. The staff were extremely friendly and made our experience memorable.

The next morning, we were met at our hotel by a tour guide and chauffeur. We were given free rein to see whatever sights interested us. We toured the Place des Vosges, Notre Dame, the Sacre Coeur on Montmartre, and visited the Arc de Triomphe and Napoleon's tomb at the Military Hospital. We briefly stopped at the Louvre, long enough to view the Mona Lisa, the Nike of Samothrace, and the Venus de Milo, as well as a few other notable exhibits. It was a breathtaking whirlwind tour through a city whose very cobblestones are steeped in hundreds of years of history.

Dinner that evening was on the top floor of the new Museum of Nature, located a stone's throw from the Eiffel Tower. We had an excellent meal with our Servier hosts, and we had the opportunity to meet two of the surgeons who would be allowing us to observe their practice over the next two days, Dr Jean-Luc Gerard and Dr Christian

Lebard. It was a very enjoyable evening topped off by the fact that my courageous traveling partner chose the calf's head salad ("la tête de veau" en français, which gives a great deal of elegance to a dish that most Americans would have difficulty with).

The next morning we were transported to the Servier offices and laboratories where Françoise had arranged a tour and several presentations for us. We had the opportunity to see what major pharmaceutical and basic applications research projects their scientists are currently engaged in. Targeted molecular therapy for chronic venous disease was the major topic. It was very enjoyable meeting with these bright individuals. Their research efforts parallel many of those I have been involved with in our own academic research laboratories.

After a very pleasant lunch with our hosts, we were taken to the offices of Dr Jean-Luc Gerard, an angiologist who practices vascular interventions in addition to medical management of venous disease. He had several patients scheduled that morning and allowed us to observe his practice of endovenous laser ablation. I was impressed at his ability to achieve adequate analgesia for these patients who were being treated without general anesthesia. His rationale was that, first, it was far more convenient for the patients.

But more importantly, he contended that general anesthesia has a peripheral vasodilatory effect which serves to decrease the contact of the vessel with the laser catheter, decreasing the utility of the technique. I found this viewpoint interesting and contradictory to our practice; I was, however, unfortunately unable to find any literature to support or refute this position. His final argument regarding the superiority of local anesthesia was the immediate feedback regarding potential damage to the superficial nerves, an issue highly relevant when performing laser ablation of the lesser saphenous vein.

The next morning, we arrived at the Clinique Internationale du Parc Monceau, where we met with Dr Christian Lebard. We spent the morning with him observing his use of radiofrequency ablation of several saphenous veins. He made use of the VNUS FAST-CLOSURE system. While it is true that, historically, time requirements have been substantial for RF delivery systems, as high as 45 minutes per leg, the FAST-CLOSURE system requires a fraction of that, with speeds equaling that of laser ablation. At this point, there seems

to be no evidence in the literature to support the use of one technology over the other. My observations would suggest parity and that it is truly operator preference which should dictate choice of modality.

At the conclusion of his cases for the day, Dr Lebard escorted us to Le Vigny, a small café one block from the hospital. At our arrival that morning, he had pointed out the Statue of Liberty scale model in the entrance foyer to his hospital. I did not realize the significance of this model, however, until we were seated at the café and he handed us a photo from the wall which showed a view up the street to his hospital. In the photo, in place of his hospital a scaffold stood guarding the not-yet-complete Statue of Liberty. We had been standing at the birthplace of the Statue herself. What an exciting realization!



Dr Christian Lebard holding the photo of the birthplace of the Statue of Liberty at the restaurant Le Vigny.

Our visit was not about to slow down. After lunch, we boarded a train and headed south for Lyon. Once we arrived in the station, we found our way to the taxi stand. As our bags were being loaded into the trunk, I told the driver, in my best broken French, that we would like to

go to the Radisson. The driver looked at me with a mixture of puzzlement and amusement, and replied “Bien sûr.” Off we went. For one block. I finally understood our driver’s amusement. To his credit, he was very professional and only charged us a meager fee. The hotel, I discovered later, is the tallest hotel in Europe, in a city where a building over three stories is noteworthy.

That evening, Dr Michel Perrin and Dr Philippe Nicolini took us to dinner at Au Petit Bouchon in downtown Lyon. Dr Perrin explained that the name meant “the little cork” and came from a time when patrons of the restaurant would order bottles of wine and hide them under the table. The clever restaurateurs would then simply hold the corks for each table as a means to correctly charge them for their wine purchases. I could not tell if Dr Perrin was in earnest or whether he was sporting with me. In either case, our dinner and entire experience were fantastic. After dinner, Dr Nicolini showed us some of the sights of Lyon. The highlight in my mind was the Basilique Notre-Dame de Fourvière, a powerful and beautiful basilica built on top of the Hill Fourvière and visible from all over Lyon.



From left to right: B. Knipp, P. Nicolini, R. Quan.

The next morning we met Dr Nicolini at La Clinique du Grand Large, and observed several of his cases, including an attempted inferior vena cava recanalization which unfortunately was unsuccessful despite heroic efforts to traverse the occlusion from above and below. He completed the day with a couple cases of vascular embolizations for pelvic congestion syndrome.



With Dr Nicolini in Lyon.

After our morning at the clinic, we boarded a train again for Marseilles. It was a very good thing that I had had several days to hone my nascent French skills, as I quickly discovered that, in the south of France, English is extremely uncommon. The primary language in addition to French is Italian. Dinner that night was at the Vieux Port, the hotel's restaurant as the guests of Dr Olivier Hartung and Dr Yves Alimi. The food was excellent, and I had the opportunity to sample pastis, a derivative of absinthe. When mixed with water, this clear alcohol becomes a milky white color and is reminiscent of licorice. It is synonymous with southeastern France, and a truly delicious drink. After dinner, our wives met us in our rooms and we shared drinks on our balcony overlooking the harbor.



Notre-Dame de Fourvière

The next morning, we met Dr Hartung at the North Hospital where we had the opportunity to do the rounds with his team. We then went to the operating room and observed several interventional cases, primarily managing pelvic congestion syndrome via embolization. At the conclusion of the day in the operating room, we returned to the train station for our trip back to Paris.



On rounds with the team in Marseilles.

Once back in Paris, we took our leave of Reagan and his wife, who were headed for a personal side trip to Versailles and Normandy. My wife and I had a late dinner that evening overlooking the Seine and the Eiffel Tower, followed the next day by a dinner cruise on the Seine.

The thing I ask myself now is what has become of this opportunity? It was a trip of a lifetime, to be sure, but how has it impacted my career? As a surgical resident, do I have the background and experience to make use of the lessons provided me? Those answers took months to develop. But as I conversed recently with one of the pioneers in superficial and deep venous surgery, carrying on a conversation about the intricacies of this field, I realized how much more I had been given than just a collection of beautiful photographs. The practices and philosophies of vascular surgeons throughout the world have been mine to directly observe, to consider, and in some cases accept and in other cases to respectfully disagree with. For a resident with a strong interest in vascular surgery, no amount of sightseeing, while pleasurable, will be as valuable as these insights. I am extremely grateful to everyone who made this trip possible. To Director Françoise Pitsch for supporting and organizing the trip.



Brian Knipp, Olivier Hartung, Reagan Quan

To Sabrina Fadda for coordinating our travels, and ensuring that our dinners were delectable and our nights restful. To Dr Perrin for overseeing our trip and taking time out of his busy schedule to meet with us on several occasions. To everyone else that made this trip possible. And to the Servier company for supporting the trip. I hope that in the future their return on investment will be substantial.

Merci. Merci beaucoup, mes amis.



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ERRATUM

In the previous issue of *Phlebology* (2008;15;1:37-39), Reagan Quan's report of the AVF/Servier Traveling Fellowship contained erroneous information. Contrary to what was indicated, Dr Jean-Luc Gérard uses a 1470 nm laser and not a 1024 nm laser, and Aethoxisclerol® (polidocanol) not Actetaxol. Our apologies to Dr Gérard.



Congress and conference calendar

DATES	CONGRESS	COUNTRY	CITY
23-26 April 2008	III CONFERENCE OF POLISH SOCIETY FOR VASCULAR SURGERY	Poland	Mikolajki
15-16 May 2008	VIII CONFERENCE OF ASSOCIATION OF RUSSIAN PHLEBOLOGISTS	Russia	Moscow
16-18 May 2008	VI INTERNATIONAL CONGRESS OF CENTRAL EUROPEAN VASCULAR FORUM	Slovak Republic	Bratislava
3 May 2008	2nd MEDITERRANEAN MEETING OF VENOUS DISEASE	France	Nice
29-31 May 2008	LIV ANGIOLOGICAL SPANISH DAYS XV National Congress del Capiítulo Español PHLEBOLOGY XI National Congress Capitulo de Diagnóstico VASCULAR No Invasivo de la SEACV IV National Congress del Capitulo de ENDOVASCULAR SURGERY de la SEACV	Spain	Barcelona
6-8 June 2008	WACHAUER VENENSYMPOSIUM	Austria	Melk
21-25 June 2008	XXIII WORLD CONGRESS OF THE INTERNATIONAL UNION OF ANGIOLOGY	Greece	Athens

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CONGRESS

DATES	CONGRESS	COUNTRY	CITY
25-28 June 2008	XX INTERNATIONAL CONGRESS ON THROMBOSIS	Greece	Athens
26-28 June 2008	IX ANNUAL MEETING OF THE EUROPEAN VENOUS FORUM	Spain	Barcelona
26-29 August 2008	25th CONFERENCE OF THE EUROPEAN SOCIETY FOR MICROCIRCULATION	Hungary	Budapest
17-21 September 2008	17th CONGRESS OF THE EUROPEAN ACADEMY OF DERMATOLOGY AND VENEREOLOGY	France	Paris
2-5 October 2008	XII CONGRESSO NAZIONALE CIF	Italy	Brindisi
20-23 November 2008	XXX CONGRESSO NAZIONALE SIAPAV	Italy	Roma
31 August- 4 September 2009	XVI WORLD MEETING OF THE UNION INTERNATIONALE DE PHLEBOLOGIE (UIP)	Principality of Monaco	Monaco
21-25 April 2010	XXIV WORLD CONGRESS OF THE INTERNATIONAL UNION OF ANGIOLOGY (IUA)	Argentina	Buenos Aires

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More information on Venous or Lymphatic Diseases ?



The screenshot shows the homepage of the Phlebology journal website. At the top, there is a navigation bar with links for Editorial Board, Latest Issue, Phlebology by topic, Special Issues, and Events. Below this is a banner with the journal's title and a description: "Phlebology is an international scientific journal entirely devoted to venous and lymphatic diseases." There are buttons for "Email Alert" and "How to publish?". A section titled "Aim and scope" provides details about the journal's content and history. Another section, "Download the last issue", offers a link to the current issue. A "Latest Events" section lists upcoming congresses. At the bottom, there are links for "Web sites of interest" and "Contact | Site Map | Legal Info | Credits".

➤ **What is Phlebology?**

➤ **Events**

➤ **Editorial Board**

➤ **Special issues**

➤ **Latest issue**

➤ **Latest events**

➤ **Download the last issue**

➤ **Web sites of interest**

➤ **Phlebology per topic**

- CEAP classification
- Chronic venous disease
- Chronic venous insufficiency
- Deep venous surgery
- Deep venous thrombosis
- Edema
- Hemorrhoidal disease
- Investigation in venous and lymphatic disease
- Lymphedema
- Pelvic varicose veins and congestion syndrome
- Plebotonic drug
- Postthrombotic syndrome
- Venous and lymphatic pathophysiology
- Thromboembolic disease
- Venous malformations
- Varicose vein (surgery)
- Varicose vein (sclerotherapy)
- Venous anatomy and pathology
- Venous aneurysms
- Venous ulcer
- Venous physiology
- Special congress issues

➤ **How to publish?**

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