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TELANGIECTASIA: BENEFITS OF A FOAM SCLEROSING AGENT

Benigni J-P, Sadoun S.

J Phlebology 2002; 2:35-49

ABSTRACT AND COMMENTARY BY:
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Microsclerotherapy has been in use for many years and is the most effective treatment for telangiectasias. Several liquid agents are in common use and their use has been quite satisfactory. Nevertheless, foaming of detergent sclerosing agents has been thought to produce better esthetic results. In this report, the short-term efficacy of polidocanol 400 foam (0.25%) was compared to the efficacy of a liquid form of polidocanol 400 (0.25%). This report states that a 20% improvement in use of foam in reticular veins and telangiectasias was found when treatment was given on the lateral side of the thigh. Thrombi and microthrombi were more frequent in the use of foam and it was felt that perhaps lower concentrations should be used.

The authors state that new investigations including transillumination and mapping of reticular varicosities should be used to conduct prospective studies so that these new techniques could be objectively evaluated in such a way that better results could be documented.

COMMENTARY

Although this report is focused on the use of foam in telangiectasias, it provides an opportunity for comment regarding the present status of foam sclerotherapy.

Although the use of foam in treatment of varicose veins was introduced in 1944, there was little interest in this technique until the report of Orbach in 1950 in the *American Journal of Surgery*.[1,2] This stated that sclerotherapy could be improved by 10% and that various detergent sclerosant agents could be made into an effective foam.

The real stimulus to foam sclerotherapy occurred in the early 1990s through the work of Cabrera in Granada, Spain.[3] As his work was carried out in rural Spain and published in

Spanish in an obscure journal, little notice was taken in English-speaking countries. However, French phlebologists took up the method and began publishing after 1995 on the results of their experience.

Various techniques of creating sclerosant foam were tried but the one method to make the treatment practical is that of Tessari.[4] In his technique, a syringe filled with room air is connected to a three-way stopcock. A syringe filled with 2.5 cc of sodium tetradecyl sulfate 1% (FDA approved) is also connected to the three-way stopcock. The room air and sclerosant are mixed together creating foam that has a duration of greater than 5 minutes. Reports on use of this technique in treating incompetent long and short saphenous veins and reticular veins and varicosities followed.[5-8]

New techniques should be viewed both for efficacy and for adverse events. The largest published experience comes from Henriet from Caen, France. He describes more than 10,000 treatment sessions using 0.5% polidocanol (non-FDA-approved). From November 6, 1995 to September 30, 1998, 10,263 treatment sessions were experienced. The ratio of women to men was 4:1, average age 51 (range 8 to 93 years). Eighty percent were injections into reticular varicosities and frank varicose veins. The others were treatment of long and short saphenous vein insufficiency.

Adverse effects included 1) Immediate visual problems (9). Eight patients had blurred vision lasting several minutes, one had monocular blindness which lasted 2 hours. Complete resolution was seen in all patients. 2) Vomiting (1); migraine (7); superficial thrombophlebitis (one per week in recent experience; eliminated by reducing the concentration of the sclerosing agent); bad taste in the mouth (2); and post sclerotherapy ulcer (1).

The most serious complication was in one woman, aged 59, who was given 8 injections of foam (total 3 cc). She experienced malaise, pins-and-needle sensation in the left arm and hand lasting 5 minutes, difficulty in expressing herself, no loss of consciousness. All symptoms disappeared within 90 minutes. No neurological abnormality was found. After treatment, it was learned that this patient had had a recent MRI which showed findings of multiple sclerosis.

It is felt that ultrasound-guided sclerosant foam injections will markedly decrease need for surgery in patients with venous insufficiency. Introducing this treatment in an operating room atmosphere will go far towards insuring safety of each treatment session. Long-term efficacy has yet to be determined but short-term efficacy up to 3 years justifies introduction of the technique.

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SURGERY OF SUPERFICIAL VENOUS INSUFFICIENCY IN YOUNG WOMEN

Perrin M.

Phlébologie 2002; 55:45-49

ABSTRACT AND COMMENTARY BY:

Dr. Georges Jantet
Paris, France

What advice should be given to a young woman who presents with superficial venous insufficiency (SVI) before she has completed all of her intended pregnancies? To answer this question, the author of this study reviewed published studies to determine whether surgery should be delayed until all pregnancies have been completed or whether the patient should be treated on the merits regardless of future pregnancies.

Published studies on the natural history of SVI during and after pregnancy suggest that there is an incidence varying between 8 and 20% of SVI occurring during pregnancy. This is due essentially to 4 main predisposing factors: 1) There is a 20 to 30% increase in blood volume during pregnancy (70% of which is venous); 2) the hypercoagulability state manifest during pregnancy predisposes to venous thrombosis and a secondary SVI; 3) although this is disputed by various authors, it is argued that compression of the inferior vena cava and the iliac veins by

the pregnant uterus during the third trimester produces venous hypertension in the legs and hence SVI; and 4) hormonal factors (estrogens and progesterones) (also disputed) cause venous dilation and stagnation.

The evidence is contradictory as to whether these predisposing factors associated with pregnancy disappear following pregnancy. Some studies suggest the risk of developing varicose veins increases with each pregnancy but in many of these studies no allowance was made for the age factor (itself an important risk factor). On the contrary, functional studies suggest that all hemodynamic abnormalities disappear within 3 months post-partum. It is interesting to note that the deep veins do not seem to undergo any anatomical or functional changes during pregnancy. In discussing these disparate findings, the author points out that while signs of SVI such as varicose veins regress considerably after pregnancy, the consensus is that this regression diminishes with each subsequent pregnancy. There is no solid evidence, however, to prove this consensus view.

Are there any prospective studies comparing long-term results and quality of life between women operated before or after their last pregnancy? The answer is no and, according to the author, it all comes down to personal opinion. However, there is a large consensus against operating on varicose veins during the pregnancy except in the presence of an ascending superficial thrombophlebitis when a saphenofemoral ligature under local anesthesia should be performed. Furthermore, it is justifiable, according to the author, to treat those women suffering from advanced SVI (class 4 to class 6) or a previous superficial thrombophlebitis between pregnancies.

COMMENTARY

This paper is a very thorough and balanced assessment of the situation. There is little to add to this objective review and we agree with the author that in face of the scant, uncertain, and even contradictory evidence, the answer to the original question depends on the personal choice of the surgeon. To this, in our opinion, the patient's personal choice should be added provided it is made clear that there is a possibility of recurrence at a subsequent pregnancy. §

A PROSPECTIVE STUDY OF ASYMPTOMATIC CARRIERS OF THE FACTOR V LEIDEN MUTATION TO DETERMINE THE INCIDENCE OF VENOUS THROMBOEMBOLISM

Middeldorp S, Meinardi JR, Koopman MMW, et al.
Ann Intern Med. 2001; 135:322-327

ABSTRACT AND COMMENTARY BY:
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The factor V Leiden mutation is a common genetic defect associated with an increased risk for venous thromboembolism (VTE). The clinical implications for asymptomatic carriers of this mutation, and consequently, the usefulness of screening families in which a proband has both the mutation and venous thromboembolism are still unclear. With this in mind, the authors carried out a prospective cohort study among the University hospitals in the Netherlands in order to determine the incidence of venous thromboembolism in asymptomatic carriers of the factor V Leiden mutation.

A total of 470 asymptomatic carriers of the factor V Leiden mutation (234 men, 236 women; mean age 43 years, range 15 to 88 years), 12 of whom were homozygous entered the study. Carriers were identified by screening first-degree relatives (> 15 years of age) of 247 symptomatic probands. Followup lasted 2 years. Participating relatives were instructed to seek immediate medical attention when clinically suspected signs and symptoms of VTE occurred so that objective diagnostic tests could be done. In this way, the authors were able to assess the number and type of objectively diagnosed episodes of venous thromboembolism and the relationship between incidence and exposure to high-risk situations.

A total of 9 venous thromboembolic events were observed in 1564 observations/year, resulting in an annual incidence of 0.58% (95% CI, 0.26 to 1.10%). The incidence of spontaneous venous thromboembolism was 0.26% (CI, 007 to 0.65%) per year; 3.5% (CI, 0.1 to 17.8%) per episode of surgery, trauma, or immobilization; 0.0% (CI, 0.0 to 19.5%) per pregnancy; 1.8% (CI, 0.4 to 5,2%) per year of oral contraceptive use; and 2.9% (CI, 0.8 to 15.3%) per year of use of hormone replacement therapy.

On the basis of their findings, the authors conclude that the absolute annual incidence of spontaneous venous thromboembolism in asymptomatic carriers of the factor V Leiden mutation is low and does not justify routine screening of the families of symptomatic patients.

COMMENTARY

To the best of my knowledge, this study is the largest prospectively followed cohort of asymptomatic carriers of activated protein C resistance (APCr), making it undoubtedly useful and interesting. The absolute annual incidence of

spontaneous VTE assessed by the authors seems too low to justify family screening of symptomatic APCr patients. This result is probably not surprising because the factor V Leiden gene is a very ancient mutation. In antiquity, it was probably useful for defending against hemorrhage in situations such as partum, minor wounds, etc. The mutation indicates a slight imbalance in the coagulation system that favors hemostasis without a significant thrombogenic risk.

The result of the present study confirms this thought because spontaneous VTE is really rare and factor V mutation becomes clinically significant only when an external factor is added to it such as surgery, trauma, postpartum period, pregnancy, and use of oral contraceptives. Probably, only when one or more of these situations is anticipated should factor V Leiden screening be done. Analyzing the findings of the present study, oral contraception and hormone replacement therapy should be discouraged in asymptomatic carriers. §

ULTRASONOGRAPHY OF RECURRENT VARICOSE VEINS IN THE AREA OF THE SHORT SAPHENOUS VEIN.

Vin F, Cleir F.

Ann Chir 2001; 126:320-4

ABSTRACT AND COMMENTARY BY:

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The aim of this study was to classify recurrent varicose veins in popliteal fossa. A retrospective ultrasound Doppler exploration was carried out in 60 patients (77 limbs) recruited as they were consulting for a systematic checkup for clinical signs of venous insufficiency or presence of varicose veins on the posterior aspect of the calf. The average interval after surgery of the short saphenous vein (SSV) was 9.2 years.

Five types of anatomical recurrences were defined: Long residual stump (part of the saphenopopliteal junction) 14.8%, intact SSV in its usual anatomical position 32.2%, perforators in the popliteal fossa 21% (one-third was a popliteal fossa vein and two-thirds were gastrocnemius perforators), complex varicose network around the deep veins (neovascularization) 3.7%, and varicose veins in the calf fed by the long saphenous vein 28.4%. The authors concluded that 47% of these patients had an insufficient excision of the short saphenous vein. They emphasized the lack of preoperative ultrasound scanning and mapping observed in this group.

COMMENTARY

Recurrence of popliteal fossa varicose veins has long been attributed to insufficient excision of an incompetent SSV. The authors reviewed ultrasound data of a group of patients previously operated on for incompetent SSV. The lack of precision concerning the method of recruitment can be criticized along with the scarcity of details about the primary preoperative observation. These factors may explain the high rate of intact SSV. However, the merit of this study has been to demonstrate the essential role of preoperative ultrasound Doppler scanning in decreasing the risk of insufficient excision.

A similar group of 125 patients showing recurrent popliteal varicose veins after excision of the SSV has been observed.[1] However, in this case, the study was carried out according to the anatomic presentation at reoperation. Those patients were selected for surgery because investigation demonstrated that the point of emptying of the incompetent vein into the deep vein was located in the popliteal fossa. Recurrences were classified into 5 types: 1) An intact SSV with an incompetent saphenopopliteal junction 13.6%; 2) a long residual stump due to a ligation of the saphenopopliteal junction too far away from the popliteal vein 42.4%; 3) a residual incompetent saphenous trunk associated with a long residual stump 19.2%; 4) perforators in the popliteal fossa in their usual anatomical pattern and location 23.2%; and 5) popliteal varicose veins connected by neovascularization with vasa nervorum of the sciatic nerve.

The difference in frequency between ultrasound and surgical classifications allows us to emphasize the difficulty of ultrasound scanning in varicose vein recurrences in the popliteal fossa. This anatomical study of repeat surgery shows

that roughly 75% of cases were due to insufficient excision of the SSV, more often upwards (saphenopopliteal junction) than downwards (saphenous trunk) and roughly 23% were unpredictable recurrences in the form of a perforator of the popliteal fossa.

Actually, some investigators[2,3] have indirectly studied the course of the residual long incompetent SSV (ligation made at a distance from the popliteal vein). These investigators reported a recurrence rate of between 13.5% and 31%. Development of such recurrences can be explained by the very high rate of collateral veins at the saphenopopliteal junction. In the general course of the recurrence, the pathological role of the long residual stump is easy to explain in much the same way as development of a perforator of the popliteal fossa is difficult to explain.

Recurrence represented by a perforator in the popliteal fossa seems to have a specific etiology. Indeed, there is nothing to explain why this type of recurrent popliteal varicose vein is significantly more common in men than in women ($p<0.05$) (specific mechanisms of increased venous pressure ?). The popliteal venous confluence is a system of junctions between many muscular collecting veins in the leg and the collecting venous trunks in the thigh. In addition, this area is subject to major movements of flexion/extension and sudden changes in pressure in the popliteal vein during contraction of the gastrocnemius veins. The saphenopopliteal junction, just as perforators of the popliteal fossa, is located just proximal to the inferior popliteal valve, the most effective valve.[4] Consequently, they are especially vulnerable to sudden, dynamic, intrapopliteal venous hypertensive variations. In the future, the physiology of the popliteal venous confluence will be in order to explain the great clinical difference between the SSV recurrences and GSV recurrences.

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ENDOVENOUS TREATMENT OF THE LONG SAPHENOUS VEIN WITH A 940 nm DIODE LASER: THROMBOTIC OCCLUSION AFTER ENDOLUMINAL THERMAL DAMAGE BY LASER-GENERATED STEAM BUBBLES

Proebstle TM, Lehr HA, Kargl A et al.

J Vasc Surg 2002; 35:729-36

COMMENTARY BY:
Mitchel P. Goldman, MD
La Jolla, California

The authors present a very preliminary one-month followup of 26 patients (31 limbs) treated with an endovenous laser ablation of the long saphenous vein using a 940 nm diode laser.

In short, the authors found that all but one of the veins were thrombotically occluded on days 1, 7, and 28. All patients developed ecchymosis. Two developed thrombophlebitis of a varicose tributary requiring oral treatment with diclofenac despite all patients receiving low-molecular-weight heparin (LMWH) for 5 days. Increasingly, the authors mention that the use of LMWH was without further rationale.

The authors also conducted an experiment on the mechanism of action for laser-induced thermal injury of the long saphenous vein. This was accomplished by firing the laser in a silicone tube filled with heparinized blood. The authors found that steam bubble formation occurred through heating of the blood and they surmised that approximately 6 cm of a 6 mm-diameter vein could be thermally denatured with this laser. This correlated well with the authors' use of the laser which was given in one-second pulses every 6 to 7 cm. One of the 32 short

saphenous veins was dissected and showed endothelial damage along the entire length which supports this conclusion.

Interestingly, in the one excised vein, the authors also found that punctate erosions occurred in the vein at the point of laser impact. This has been found by my study as well and therefore has led to our use of laser in a continuous mode to avoid punctate ulceration of the vein with resulting ecchymoses and pain.

It will be interesting to follow the authors' patients beyond 4 weeks to determine the relative efficacy of this technique over endoluminal radiofrequency closure and ligation and stripping. Two-year followup studies with endoluminal radiofrequency closure have now demonstrated 90% closure of the long saphenous vein.[1]

The authors misquote an article by Chandler et al.[2] This preliminary study on the initial use of VNUS Closure® showed skin paresthesias in 16% of patients. This occurred in patients who were not treated with tumescent anesthesia. Therefore, the alleged advantage of endovenous laser treatment (EVLT) over VNUS Closure® is due only to different methods of anesthesia. In my experience with both techniques, EVLT has been found to be more painful than radiofrequency closure. With endovenous radiofrequency closure, patients can usually return to full employment and/or activities within 24 hours without any pain in the area of treatment. EVLT patients usually take 3 to 5 days to return to normal and have tenderness for week or so in the treated area.

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COMPARISON OF CLINICAL OUTCOME OF STRIPPING AND CHIVA FOR TREATMENT OF VARICOSE VEINS IN THE LOWER EXTREMITIES

Maeso J, Juan J, Escribano JM, et al.

Ann Vasc Surg 2001; 15: 661-665

ABSTRACT AND COMMENTARY BY:

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This case-review study compares 85 strippings performed between 1991 and 1993 with 90 CHIVA procedures from 1994 by the same surgeons. CHIVA procedures were carried out under local anesthesia as an ambulatory procedure, strippings under peridural anesthesia with a mean hospitalization of 3 days. Outcomes were examined by independent physicians after 3 years. Evaluation of followup included presence of varicose veins, patient dissatisfaction, clinical symptoms, appearance of telangiectasias and injury to the saphenous nerves.

In all these criteria, CHIVA performed better. No improvement or worsening caused by the presence of varices was observed in 15.3% of the stripping group versus 1.1% in CHIVA patients. The corresponding rates for clinical symptoms were 21.2% versus 1.1% and 16.5% versus 3.3% for cosmetic dissatisfaction. Telangiectasia matting fell from an astonishing 66 to 5%, lesions of the saphenous nerve from 19 to 1%. As a consequence the authors left conventional surgery to switch completely to CHIVA with one last stripping in 1995.

COMMENTARY

CHIVA therapy (Cure Hémodynamique de l'Insuffisance Veineuse en Ambulatoire) consists of stopping reflux and diverting it back into competent deeper veins through a sophisticated system of precisely placed ligations. The varicose veins are usually left in situ as are the perforators, which play an important role as reentry points.

Ten years after first publication by Francheschi, CHIVA is still controversial. Many enthusiastic surgeons have noticed a high incidence of recurrent varices in their CHIVA patients. Moreover, conventional surgery has undergone important refinements during the last decade. Selective resection of incompetent saphenous segments, new stripping techniques and hook phlebectomy reduce surgical trauma substantially. Application of these principles results in a low complication rate with an incidence of sensory nerve lesions and telangiectasia (matting) in the range of Maeso's CHIVA patients. The control group of the conventionally operated patients reflects the complication rates of the classic ankle-to-groin stripping with a 19% incidence of lesions of the saphenous nerve. Hook phlebectomy enables atraumatic removal of all varices. Using this technique, a 15% quota of remaining varices as in Maeso's control group is no longer acceptable. I am also surprised by the fact that 2 of 3 patients of the stripping group developed telangiectatic matting. In my experience, this unwelcome side effect occurs in 5 to 10%.

Since varices and saphenous veins are left in situ, it is obvious that CHIVA is far less traumatic than conventional surgery. But does such a limited intervention really provide the same long-term results? This crucial question has never been adequately answered. Unfortunately, Maeso's retrospective publication does not fulfill scientific criteria of a prospective and randomized study. The conventionally operated patients were treated 1 to 2 years earlier than the CHIVA group, the dates of the followup controls are not documented, and there are no exact data on the extent of venous insufficiency. It is mentioned that the CHIVA group had lesser symptoms (pain and/or edema) than the stripping group (76% versus 95%) that possibly is another bias. I would like to know how many of the CHIVA patients had phlebectomies or other additional treatments.

Maeso's observations on CHIVA are very promising but they must be considered with some reservations. What about the report on high recurrence rates? There are three explanations: a) CHIVA depends strongly on an extensive and sophisticated duplex examination by an experienced investigator. It is possible that this time-consuming procedure has not been done correctly. b) Surgical localization of incompetent tributaries and perforators is probably not easy in every case. Moreover, following the CHIVA theory, ligation should be placed selectively at the beginning of the distal branch without impeding reentry circulation in the proximal tributaries. To place a ligation on the long saphenous vein directly below the epigastric tributaries without dividing the LSV could be rather tedious in an obese patient. c) The observation period is too short. In my experience, recurrent varices due to a suboptimal treatment may not become symptomatic or visible within 3 years.

It can be assumed that today's state-of-the-art vein surgery will be refined in the future. Maybe CHIVA is a step in the right direction. To prove it, we need prospective studies over a period of 5 years. §

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RESISTANCE TO ACTIVATED PROTEIN C DUE TO FACTOR V LEIDEN MUTATION: HIGH PREVALENCE IN PATIENTS WITH POSTTHROMBOTIC LEG ULCERS

Gaber Y, Siemens H-H, Schmeller W.
Br J Dermatol 2001; 144:546-48

COMMENTARY BY:
Mitchel P. Goldman, MD
La Jolla, California

The authors evaluated 100 consecutive patients with leg ulcerations over 2 years for factor V Leiden mutation. They also examined patients for underlying causes of venous insufficiency using Doppler ultrasound, duplex scanning, and light reflection rheography or phlebography. Therefore, they could make an exact differentiation between ulcers caused by postthrombotic syndrome or primary varicosis.

They found that APC resistance to factor V Leiden mutation occurred in 19/53 patients (36%) with postthrombotic leg ulcers and in 3/47 patients (6%) with ulcers caused by primary varicosis. A healthy control population had APC resistance due to factor V Leiden mutation in 5/96 (5%) volunteers. Therefore, it seems clear that patients with postthrombotic leg ulcers should be investigated for APC resistance. APC resistance is an important risk factor for leg ulcers caused by postthrombotic syndrome. §

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