Introduction

Recurrent varicose veins of the legs (RVL) is an important health problem. The reported incidence ranges between 20 and 25% (1-3), although recent studies based on prospective evaluations and/or specific research have revealed a higher incidence (1,4).

In the 1950s, the principles of efficacious treatment were defined but the risk of recurrence has since undermined the faith not only of patients but also of doctors indirectly involved in this problem, leading to a common view that all types of treatment are really useless. To study this phenomenon we decided to review all cases at a single surgical center where varicose vein surgery is among the major activities. A retrospective study was made of all cases of legs varices (LV) surgically treated in the operating room, considering all cases of recurrence. In this way, only surgically relevant cases of recurrence were identified, excluding all outpatient treatments. However, up to the end of the study period (2008), due to organizational problems no true outpatient treatment of this disease was available and even minor cases treated under local anesthesia were taken to the operating room. For this reason, we believe that our sample reflects the true bearing of this clinical issue of varicose veins (VV) recurrence.

Patients and methods

A retrospective analysis was made of all RVL observed in our Unit in the period 1993-2008, subdivided into primary or (a much smaller group) secondary varices of the legs. Because this disease has a strong esthetic impact, it is difficult to make an objective definition of "re-
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In general, this may be regarded as the "presence of evident venous ectasia of the legs, of trunk-like or reticular type, appearing sometime after the first treatment procedure and not present immediately after the conclusion of the latter" (otherwise they would be defined as "residual varicose veins").

A total number of 846 procedures were performed during the study period, consisting of:

- uni- or bilateral saphenectomy: 600 cases (70.9%);
- hemodynamic procedures preserving the saphenous vein: 74 cases (8.7%);
- isolated crossectomy: 25 cases (2.9%);
- short great saphenous vein stripping: 45 cases (5.3%);
- phlebectomy according to Müller not associated with other types of procedure: 19 cases (2.2%);
- stripping of the small saphenous vein: 1 case (0.1%);
- ligation of the sapheno-popliteal ostium: 8 cases (0.9%);
- redo surgery: 74 procedures (8.7%).

The data on each redo procedure for recurrence were closely reviewed and the causes specified, and finally the treatment performed in each patient were detailed.

Results

In 61 out of 74 redo procedures for recurrent varicose veins (82.4%), the cause of recurrence was defined as "classic"; namely:

- insufficient crossectomy: 13 cases (17.6%);
- incompetent perforating veins: 13 cases (17.6%);
- reticular phlebectomy: 22 cases (29.7%);
- small saphenous vein insufficiency: 5 cases (6.8%);
- dilated accessory saphenous vein: 4 cases (5.4%);
- recurrence of a small saphenous vein insufficiency after previous ligation: 4 cases (5.4%).

In the remaining 13 patients (17.6%) a "particular situation was observed that required specific attention. These cases were subdivided as follows:

- recurrence after hemodynamic treatment: 5 patients (6.8%);
- incomplete previous stripping: 1 patient (1.4%);
- sapheno-femoral junction neo-vascularisation (SFJNV), distal to the previous one: 3 patients (4.1%);
- SFJNV with inguinal cavernoma: 2 patients (2.7%);
- complete recurrence after endoluminal laser treatment: 2 patients (2.7%).

In 13 cases of insufficient crossectomy (all previously operated at other centres) the treatment consisted of completing the femoral crossectomy, in some cases associated with distal phlebectomy.

In 13 cases in which incompetent perforating veins developed, they were sutured at the fascia level. The small saphenous vein was ligated at its outlet in 4 of the 5 cases in which venous insufficiency developed after the first procedure on the great saphenous vein; in the other case, stripping was judged necessary. In recurrences due to ectasia of an accessory saphenous vein, this vein was stripped.

Discussion

It should be pointed out that complete crossectomy of the small saphenous vein (SSV) is apparently a simple procedure but in practice it can be quite delicate, both because of the great variability of the level of junction with the popliteal vein and of the presence of important branches of ischiatic (medial sural cutaneous nerve), and gluteal nerves (satellite nerve of the small saphenous vein itself).

Some further considerations need to be made about the 13 cases in which the recurrence was due to particular situations unlike the classic cases. In 1 case we found incomplete stripping due to the previous therapeutic choice to perform short stripping above the knee. This was treated by completing the stripping down to the malleolus. Since the end of the 1990s, we have also opted for short stripping (generally below the knee), when the distal saphenous was not in a very impaired condition (45/846: 5.3% of cases). The fact that in only a single case, in our experience, did recurrence occur due to incomplete stripping does not, in our opinion, sound a "warning bell" when choosing this procedure as a first treatment.

The case of hemodynamic treatment is quite different. Like other surgeons, despite initial doubts, we have also undertaken this type of treatment, that first appeared around the beginning of the 1990s. Our experience consists of 74 cases out of 846 (8.7%), since we limited the indications to less severe cases (5). The 5 cases of recurrence of this type are all referred to previous procedures performed by our group. In the overall follow-up, we also noticed about other patients not entirely satisfied with the long term results, and presented to other Centers for further treatment. Moreover, in the context of the postoperative sclerotherapy treatment that most patients operated for varices of the legs have to undergo (6,7), we have observed that patients who received hemodynamic treatment, in general, required more cycles and more sessions than patients undergoing other types of treatments.

For all these reasons, over the years we have reserved this type of treatment to a progressively smaller number of patients. This is in line with the general trend for "hemodynamic" treatment, that has gradually been abandoned even by the early proponents, as the long term results became more evident.

The appearance of a SFJNV and complete recurrence after laser-photocoagulation is a particularly interesting point, although the figures in our series (7 of a total of 74 recurrences: 9.4%) are not particularly significant. The
Recurrent varicose veins is a common part of the natural history of the disease evolution and there is at least an 8.7% rate of redo surgery after a variable period of follow-up (13-15). An analysis of the time between the first surgery and recurrence was outside the scope of this study, since an accurate scientific follow-up of such a large group of patients would be difficult to achieve. In any case, such patients come to the surgeon’s attention only when they have already decided to undergo further treatment; this may be some time after the real appearance of the “new” varicocities.

It is very important to comply with the treatment guidelines that were formulated long ago, in the 1950s, especially thanks to the assessments made by the Mayo Clinic, that have surely limited the incidence of recurrence. Nevertheless, the patient should be warned, right from the first course of treatment, about the risk of development of reticular phlebectasia, at least, with a greater or lesser tendency to evolve.

Apart from this aspect, but again related to the presence in these patients of greater or lesser degrees of etiopathogenic factors that predispose to varicose veins (13), other forms of evolution must also be expected, that may be absent or masked at early controls, such as new incompetence of the perforating veins, or small saphenous vein or other veins of the pudendal or gluteal districts.

As stated above, one aspect that has not yet been clari-
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...is the neoangiogenetic capacity of the venous circulation of the legs. The opinion that the flow of saphenous vein is restored via a neovascularization mechanism was first described by Sheppard in 1978 (16) on the basis of histological studies. Later, Glass demonstrated the possibility of reconnection of an interrupted venous system thanks to the development and growth of new interposed vessels (8). This was further studied by other Authors, who performed histological studies showing that this phenomenon is implicated in the formation of many cases of SFJ reflux (1,17,18). Some researchers have claimed that the tortuous veins that recreate the saphenofemoral junction are not actually of neoangiogenetic origin, but rather are small preexisting veins that in some way suffer from the venous hypertension situation at that level, become hypertrophic and thus give rise to new varicose veins (9-19). Other Authors, although they do not deny the possibility of neovascularization at the SFJ level, do not regard this as essential in the genesis of varicose vein recurrence (2). In fact, even granting the scientific basis for the possibility of neo-revascularization of the SFJ, in individual cases it is difficult to establish whether this was the underlying mechanism or else it was venous branches, even very small, in direct connection with the femoral vein, left in situ during the first procedure (3,20).

In our experience we have observed a lower incidence of varicose vein recurrence (8.7%) than is generally reported in the literature. This may be because our local referral center for VV treatment and a greater number of primary cases have come to our attention. On a total of 74 cases of recurrences, 17 were caused by insufficiency of the saphenofemoral junction, and 4 by incompetent perforating veins, accounting together for 28.4% of the total. This figure is lower than the one reported by other Authors (1,2,4-20); this may also be due to a methodological problem, in the sense that among the cases undergoing redo surgery we have also included simple phlebectomy treated in the outpatients clinic.

All the cases of recurrence for insufficiency of the SFJ had undergone the first treatment in another center. We cannot therefore establish how complete these first procedures were. Nevertheless, in 15 of these cases we gained the impression, later corroborated by surgical re-exploration, that this was in fact the problem. In 5 patients it may have been due to neovascularization, although we nearly always found a NSFV directly on the femoral vein, below (up to 2.5 cm) the previous, correct ligation. In only 1 patient, that we treated with a noninvasive technique (5), we found a large inguinal cavernoma, with the typical tortuous, saphenous vein after treatment of the GSV); III: a new insufficiency at the saphenofemoral (or saphenopopliteal) level.

As regards the scheme we propose, it can be said that a later appearance of further reticular phlebectasia could be included in Darke type I, even if this is independent of the presence of incompetent perforating veins (ex-novo or left during the first procedure). This type of situation belongs to the evolution of the natural history of varicose veins, that comes under the heading of the disease of a system not just a single vein. Therefore, the most important thing is to recognize the situation and explain it clearly to the patient, illustrating the available treatment so that the idea that the treatment of varicose veins is useless is not further perpetuated.

By affinity, we would include the long term appearance of an accessory great saphenous vein in Darke type II; this will ultimately prevail, during recurrence, as the main incompetent collector vein from which other varicocities will develop.

As regards this Darke classification, our experience indicates that a type IV recurrence of varicose veins should also be included, linked to an incomplete planning of the original procedure. Recurrence after an isolated phlebectomy belongs to this category, but we believe that Darke did not take this possibility into account because in 1992 it seemed to be clear that the gold standard treatment for varicose veins of the legs included stripping of the GSV, even if it cannot be evinced from his work whether all patients with recurrence had undergone primary stripping. Nowadays recurrences are observed that are linked to “new” treatments that have been proposed or reposed: we refer to recurrences after noninvasive treatment, after incomplete previous stripping and after endoluminal treatment (21).

Are there any certain elements that need to be taken into account when planning the first procedure for LV, in order to avoid or at least limit the onset of recurrence?
It cannot be denied, not only on the basis of the early results reported (10) but also of later comparative assessments (9,22,23), that stripping of the GSV provides a better guarantee of success, making a later recurrence less likely. This probably applies to all complete long stripping procedures as compared to the shorter procedure.

It is not known whether taking a greater care of the saphenofemoral stump, as proposed by various Authors using protective devices of various natures, is the best way to prevent the growing of incompetent neo-vessels. In our view, a "flat" ligation of the femoral vein, to prevent either a slight restriction of the lumen or a cul-de-sac, is the best technical solution to achieve a stable resolution of the SFJ. This also allows a greater exposure of the femoral vein, extending for a couple of cm, making it possible to perform further ligations of veins originating directly from the femoral vein at this level, which in our experience are those most likely to induce a recurrence of LV.

In any case, whatever the care and attention paid, and the procedures adopted in the first procedure, it must be remembered that varicose veins are an evolutionary disease. It is surely better to point this out to the patient right from the start, and ensure close follow-up so as to be ready to act as soon as there are clear signs of a recurrence. A delay in the later correction procedure can lead to a very serious situation and ultimately to the patient's loss of faith in any form of treatment.

References


