Natural History of Recurrent Varices Undergoing Reintervention: A Retrospective Study

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BACKGROUND Recurrent varices after surgery are a complex problem. Many studies regarding the causes of recurrence and the best procedures that can be used to study them have been conducted but few studies on the natural history of the operations performed for recurrence.

OBJECTIVES To evaluate the efficiency of reintervention in controlling the varicose disease, its symptoms, and patient satisfaction.

MATERIALS AND METHODS Of 71 patients operated on for surgical recurrence related to an inguinal cavernoma between 1996 and 2004, 51 were reassessed in May 2006 with a clinical and Duplex examination. Surgical and anesthesiological data were collected.

RESULTS The average follow-up after reintervention for the 51 of the 71 treated patients who came to the examination was 5.8 years; 38 (74.5%) of the patients were very satisfied, and one patient (2%) was dissatisfied. Thirty-five (68.6%) of the patients still had varices, but only 17 of these had real varices at the original site; 18 patients showed persistent or residual varices (3 patients, 5.8%) or a progression (15 patients, 29.9%) of the varicose disease.

CONCLUSIONS Surgical intervention on an outpatient basis may have a significant role in controlling the varicose disease with few complications.

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Recurrent varices after surgery (REVAS) is a common, complex, and costly problem. The percentage of recurrences varies from 20% to 80% according to the definition of recurrence and to the length of the follow-up.

To standardize and classify surgical recurrences after intervention for venous insufficiency, an international group met in Paris in 1998 and developed a classification (REVAS) to be used in conjunction with the well-known Clinical, Etiology, Anatomy, and Pathophysiology (CEAP) classification.[1–3] However, data in literature often lack uniformity and are difficult to compare.[2,3] Recent data report a 52% rate of recurrence after 3 years despite improved pre-operational diagnostic and surgical techniques.[4]

The causes of recurrence are technical or tactical in approximately 29% of the cases, whereas neoangiogenesis is responsible for 29%.[5–7] On the other hand, 32% of recurrences seem to be varices in new sites, which can be considered to be the progression of the disease rather than a real recurrence.[2,8,9] Another cause of recurrence is the insufficiency of the deep venous system that may occur in postthrombotic syndromes or for congenital causes (aplasia or valvular agenesis).[8] In some studies, the cause of recurrence proved to be neoangiogenesis.[5–7]

Other factors that may contribute to the development of a recurrence[8] are pregnancy, being on one's feet all day long, and hormonal therapies; obesity plays an important role; for example, a body mass

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index of 30 or higher was associated with a significantly higher incidence of recurrence than in normal-weight people.[10]

One of the causes of recurrence due to a wrong crossectomy is the inguinal cavernoma associated with hypertrophy of the lympho-ganglionic lamina.[1]

Many past and recent studies have been performed regarding the causes of recurrence and the evaluation of the best procedures that can be used to study them,[9,11] whereas few studies have been performed on the natural history of the operations performed for recurrence.[12] A recent study found that the 5-year recurrence rate of an intervention for recurrence is 42%; 50% of such recurrences are due to neovessels or vessels with a diameter of at least 4 mm and with significant reflux, 40% to perforating veins, and 20% to abdominal and pelvic vessels.[12]

Materials and Methods

This was a retrospective study conducted at the Multidisciplinary Day Surgery Unit, University of Padua Hospital, in May 2006. Fifty-one of 71 patients (39 women and 12 men) operated on for surgical recurrence related to inguinal cavernoma from 1996 to 2004 were reassessed. We collected data about the surgical interventions performed for recurrence, the kind of anesthesia used, the postsurgical course, and any medical therapy (phlebotonic drugs) or sclerotherapy carried out after redo surgery.

The study included a homogeneous group of patients with recurrent varices originating from the saphenous-femoral junction bearing a cavernoma at the neo-junction and with a significant case history suitable for surgical treatment according to the REVAS Consensus.[1] All the patients included in the study had previously undergone crossectomy and stripping of the great saphenous vein, and all, when examined using Duplex, showed a cavernoma with residual GSV stump at the saphenous-femoral junction; all patients involved were treated on an outpatient basis, and lived no farther than 30 km from the hospital.

No patients showing recurrences related to neoangiogenesis (with vessels <4 mm in diameter), to pelvic and abdominal vessels, or to incompetent perforating veins of the thigh were included in the sample. The study aimed at evaluating the efficacy of re-intervention in controlling the varicose disease and its symptoms and preventing complications and of patient satisfaction. The latter is a particularly important aspect considering that a patient with recurrent varices might not be inclined to undergo further operations.

Cavernoma is described as a Medusa-headed web consisting of brittle-walled venules immersed in the scar tissue of the previous crossectomy. It occurs when saphenous femoral reflux affects collateral veins of the junction or of the residual saphenous stump and causes hypertrophy of the lympho-ganglionic lamina, which produces a cavernoma.

The same surgical team performed all of the surgeries for recurrence on an outpatient basis. Surgery consisted of controlling the saphenous-femoral junction with the interruption of the cavernoma according to the technique described by Li,[13] combined with phlebectomies and stripping of the remaining trunks if necessary. The surgical access was vertical on the arterial pulsation in 19 patients (37.3%) and horizontal, 2 cm above the previous scar tissue, in 32 patients (62.7%). Thirty-six patients (70.6%) underwent spinal anesthesia and 12 patients general laryngeal mask anesthesia, and for 3 patients, we used monitored anesthesia care (deep sedation together with local anesthesia).

Hospitalization was necessary in only one case because the distance from the hospital to the patient's home exceeded the international criteria for discharge after outpatient surgery.

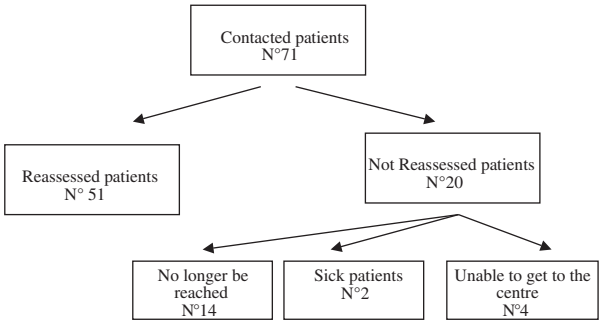

Figure 1. Population of the study.

As shown in Figure 1, in May 2006, we contacted all 71 patients; 51 of them were reassessed and underwent a thorough examination that included a historical anamnesis, a phlebological examination, and an Eco-Color-Doppler examination to create a CEAP and REVAS classification for any new recurrence. An external observer performed the follow-up examination (clinical examination and duplex scanning).

All patients were asked to complete a general questionnaire about their quality of life before surgery, the reasons that had led them to intervention, and the gaps between interventions. Then we recorded all of their personal and anthropometric data (weight, height, body mass index [BMI]) (Table 1).

The Eco-Doppler assessment was conducted using an Esaote Technos (Genova, Italy) device and with a 7.5- to 10-MHz linear probe. The patient underwent examination in orthostatism; the femoral-popliteal axis, the deep veins of the calf, the great and small saphenous vein and their junctions, and the presence of any incontinent perforating vein were evaluated. Venous insufficiency was assessed by performing the Valsalva and the compression/release maneuver. Reflux greater than 0.5 seconds was considered significant. Deep reflux was classified according to venographic criteria defined by Kistner and colleagues.[14]

TABLE 1. Personal and Anthropometric Data

Characteristic	*Mean*	*Range*
Age	61.63	40–78
Height (m)	1.66	1.50–1.86
Weight (kg)	71.7	53–100
Body mass index	25.85	19.83–33.83
Years since first surgery	23.91	6.35–50.33
Years since second surgery	5.78	0.94–12.33

Neovascularization was defined as the presence of small serpiginous vessels less than 4 mm in diameter, communicating with the common femoral vein at the site of the original saphenous femoral junction, and bearing a reflux noticed after the Valsalva or distal compression maneuver.

The REVAS model included six fields: T for T*opographic* REVAS sites; S for reflux S*ources*; R for R*eflux* entities; N for N*ature* of the reflux source, (Nss for s*ame site* and Nds for d*ifferent site*); P for the contribution from the P*ersistent* saphenous incontinent trunks, and F for contributing F*actors*.[1,2]

The simplified CEAP classification was used during examination to classify the varicose disease.[2] All data were collected and entered into a database. Because the surgical procedure was part of routine clinical practice, ethics committee approval was not needed. Complete informed consent about the surgical procedure was obtained from and signed by all enrolled patients.

Results

In May 2006, we contacted all 71 patients who underwent the procedure; 51 of them came to the control examination. Of the 20 patients who were not reassessed, 14 could not be reached, 2 elderly patients could not come because of illness, and 4 elderly patients were unable to get to the center (Figure 1).

We evaluated 51 patients aged 40 to 78 (mean 61.6). Personal and anthropometrical data are summarized in Table 1. Analysis of the questionnaire shows that the first intervention was carried out owing to the presence of symptoms in 80.5% of the cases, whereas 17.6% underwent surgery for esthetic reasons. Of symptomatic patients, 53.6% had

TABLE 2. Reasons That Led to the Second Surgery

Reason	*Patients*	*%*
Symptoms	49	96.0
Thrombophlebitis	11	22.5
Cutaneous sign of chronic venous insufficiency	8	16.3
Cutaneous sign + thrombophlebitis	5	10.2
Esthetic reasons	2	4.0
Total	51	100

complications of varicose disease (thrombophlebitis or cutaneous signs of a chronic venous insufficiency).

Symptoms led to the request for re-intervention in 96% of the cases, with only 4% asking for treatment for esthetic reasons. In patients with symptoms, 50% showed complications of varices (Table 2).

The average time between the original intervention and the recurrence operation was 18.1 years (range 1–42 years). The questionnaire showed that 49% of the patients had recurrent varices 2 to 5 years after the first intervention and that, in 82.4% of the cases, they were at the same site as the first operation.

Interventions for recurrence were all conducted on an outpatient basis, with only one hospitalization for nonmedical causes.

Even though it was a major vascular surgical intervention, the postoperational course was good, and there were few complications (Table 3).

The questionnaire showed that 34 patients (66.7%) did not follow any kind of therapy after re-intervention, 9 (17.6%) took phlebotonics, and 8 (15.7%) underwent sclerotherapy associated or not with medical therapy.

TABLE 3. Complications After Re-Surgery

Complications	*n*	*%*
None	46	90.2
Hematoma	2	3.9
Seroma	2	3.9
Wound infection	1	2.0

TABLE 4. Satisfaction After Re-Intervention

Satisfaction	*n*	*%*
Very satisfied	38	74.5
Quite satisfied	9	17.6
Very few satisfied	3	5.9
Dissatisfied	1	2.0
Total	51	100.0

The average follow-up after the intervention for recurrence was 5.8 years (0.9–12.3 years).

Patients were interviewed during our last examination, and 74.5% were very satisfied, whereas only one patient (2%) was dissatisfied; 78.4% considered the result of the intervention for recurrence to be excellent to good (Tables 4 and 5).

The questionnaire also showed that 70.5% of the patients had varices after the second intervention, and the clinical evaluation stated the presence of varices in 35 patients (68.6%). Varices were classified using the simplified CEAP classification and the REVAS model. Table 6 summarizes the CEAP classification of the varicose pictures found; Table 7 shows the topography and the reflux source according to the REVAS model.[3]

The analysis of the data showed that only 17 (33.3%) patients had real varices ($\geq$ C2 according to CEAP classification) at the original site, 5 patients (9.8%) had a cavernoma as a reflux source, and

TABLE 5. Judgment of the Patient on the Result After Re-Intervention

Judgment	*n*	*%*
Very good	20	39.2
Good	20	39.2
Sufficient	10	19.6
Insufficient	1	2.0
Total	51	100.0

TABLE 6. Clinical, Etiology, Anatomy, and Pathophysiology (CEAP) Classification After the Follow-Up Examination

CEAP Class	*n*	*%*
C_0	4	7.8
C_1	12	23.5
C_2	21	41.3
C_3	4	7.9
C_4	7	13.7
C_5	2	3.9
C_6	1	2.0
Total	51	100.0

12 (23.5%) had neoangiogenesis with significant reflux. The remaining 18 patients showed persistent or residual varices (3 patients, 5.8%) or progression of the varicose disease (15 patients, 29.9%) (Table 8).

No statistically significant relationship was found between recurrence and the BMI of the patients.

Discussion

Technical or tactical factors cause approximately 29% of recurrences, whereas neovascularization is responsible for 29%, and 32% seem to be progression of the disease.[2,8] Duplex evaluations and surgical re-exploration often show a residual saphenous stump with one or more tributaries, and this is usually classified as a mistake in the surgical technique.[2,8,9] The complexity of the saphenous femoral junction, as described by Royle,[8] and the lack of experience in young surgeons are often considered to be a cause of incomplete surgery and therefore of recurrence.

TABLE 7. Recurrent Varices After Surgery (REVAS) Classification After Re-Surgery

Site of Varicose Veins	*Patients*	*%*
None	16	31.4
Thigh	2	3.9
Leg, ankle, foot	9	17.6
Inguinal region, thigh, leg, foot	6	11.8
Thigh, leg, foot	17	33.3
Lateral aspect of thigh	1	2.0
Total	51	100.0

TABLE 8. Kind of Recurrences After Re-Surgery

Clinical, Etiology, Anatomy, and Pathophysiology Classification	*Kind of Recurrence*	*n*	*%*
C_0, C_1		16	31.4
$\geq C_2$	Same site	17	33.3
	Neoangiogenesis	12	23.5
	Cavernoma	5	9.8
	Different site	18	35.3
	Residual or persistent varices	3	5.8
	New site (progression of varicose disease)	15	29.9
Total		51	100.0

Some authors consider neoangiogenesis to be the cause of recurrence, and the presence of vessels lacking in intima, adventitia, and elastic tissue, which are typical characteristics of neovessels,[5,6] has been proved.

With regard to this, a recent immunohistochemical study did not find any neovessel markers and came to the conclusion that small vessels located in the area of the previous intervention are small preexisting collateral vessels remodelled by hemodynamic stimuli.[7]

However, some causes of recurrence go beyond the technical mistake and can be traced back to the evolutionary characteristic of the varicose disease.

Among the causes of recurrence due to a wrong crossectomy, there is inguinal cavernoma, which occurs when saphenous femoral reflux takes collateral veins of the junction or of the residual saphenous stump and causes hypertrophy of the lymphoganglionic lamina, which produces a cavernoma.[1]

Many past and recent studies on the causes of recurrence have tried to determine the best

procedures that can be used to study recurrences.[9,12] Conversely, few studies on the natural history of interventions have been carried out for recurrence.[12]

Recent studies have preferred evaluating the most suitable diagnostic methods that can be used to study recurrences, and nearly all of them have agreed on the use of Eco-Color-Doppler. It has 80% sensitivity, 90% to 100% specificity, and a positive predicted value of 100%.[9,11,12]

A recent study on surgical recurrences pointed out that the 5-year recurrence rate on an intervention for recurrence is 42%; 50% of such recurrences are due to neovessels or vessels with a diameter of at least 4 mm and with significant reflux, 40% to perforating veins, and 20% to abdominal and pelvic vessels.[13]

Indications of the best treatment for recurrent varices can be found in the document issued by the Consensus Conference on recurrences held in Paris in 1998.[1] It underlines the usefulness of re-intervention in cases of recurrence related to an inguinal cavernoma. The use of new endovascular techniques has been suggested recently (radiofrequency and the endovenous LASER), and they have achieved good initial results.[15] However, even though these techniques are suitable for treating residual trunks, they are not fit for tortuous recurrent vessels.

Sclerotherapy and ultrasound-guided sclerotherapy[16] have had good results in the treatment of primary varices, but there has been no agreement on techniques, concentrations, or sclerosing agents or any study with a long follow-up.[1,16–19]

Neither, in our opinion, can compression alone be suggested owing to poor adherence by patients and to the negative psychological effect it has on patients, who feel as though they are affected by a chronic disease; furthermore, this technique is not a real treatment but a symptomatic therapy.[1] Once again, the presence of recurrent varices fed by inguinal cavernoma with a tortuous course indicates the need for re-intervention, even though we know little about the natural history of patients re-operated on for varices and about the effect of this intervention on the reduction of complications and patient satisfaction.

As for reassessed patients, we noticed the presence of varices in 68.6% of the cases, but the study showed that, in 35.3% of them, varices were due to the progression of the varicose disease (appearance of varices in different locations) or to the persistence of some varicose branches that had not been treated during re-intervention. In 33.3% of the cases, varices originated from the site of re-intervention, and 23.5% of them were related to neovascularization. This stresses the importance of this phenomenon in the reappearance of varices[20] and, in 9.8% of the cases, in the reappearance of an inguinal cavernoma. In the latter group of patients, the re-evaluation of the surgical documents did not allow us to formulate a hypothesis that could justify the new clinical picture. One-third (31.4%) of the patients showed a CEAP classification of 0 or 1.

Talking about varices, it is surely true that no treatment guarantees the healing of the disease—it can only exert a certain control on it.[21]

One could wonder whether it makes sense to keep operating on a disease that cannot be cured. The answer is yes, if we focus on the patients' satisfaction and on the need for further treatments for the appearance of complications or symptoms rather than on the reappearance of varices. Our study highlights that 92.1% of re-operated patients (with an average follow-up of 5 years) were very or quite satisfied with the treatment. Only one patient was dissatisfied: a male patient with a family history of varices and a BMI of 30.9 whose job forced him to stand for long periods of time. One year after re-intervention performed according to the Li technique with wide exposure of the common femoral vein, he developed recurrent varices fed by a recurrent cavernoma. Moreover, 66.7% of the

patients did not follow any kind of therapy, and 17.6% took only phlebotonic drugs.

In conclusion, if we analyze the data obtained, in cases of recurrent varices with a wide channel and a relevant clinical impact, surgical intervention may play an important role in controlling varicose disease, giving the patient a better quality of life, especially if we consider the need for further treatment and the appearance of complications (thrombophlebitis and cutaneous sign of chronic venous insufficiency). Moreover recurrent varices are symptomatic (96% of our patients) and burdened with complications (50% in our series). Surgery for recurrent varicose veins is considered a major intervention, but trained surgeons can safely perform it on an outpatient basis in a well-organized day surgery center with few complications. Nevertheless, follow-up is instrumental in the ongoing evolution of this disease.

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