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(Dnipro, Ukraine)****DIFFERENTIATED APPROACH TO CORRECTION OF POST-SURGICAL
RECURRENCE OF DECOMPENSATED FORMS OF VARICOSE VEINS
OF THE LOWER EXTREMITIES**

Keywords: *varicose veins, radiofrequency ablation, venous hemodynamics, venous ulcers, recurrence*

Ключевые слова: *варикозное расширение вен, радиочастотная абляция, венозная гемодинамика, венозные язвы, рецидивы*

Introduction. Although the immediate outcomes of surgical treatment for varicose veins of lower limb are generally successful, relapses can be as high as 20% over a five-year period and increase to 80% with an increase in postoperative follow-up [1]. M. Perrin identified post-surgical relapse (REVAS) as a recurrence of varicose veins in patients who had previously undergone surgical treatment of varicose veins regardless of the use of adjunctive therapy [4]. It is customary to single out anatomic relapse, determined by duplex ultrasound (US), which is often asymptomatic, and clinical, symptomatic relapse [4, 5]. Its manifestations, especially in patients suffering from venous trophic ulcer, significantly impair the quality of life [6]. There are currently no reliable data on the epidemiology and socio-economic impact of relapses of varicose veins [2]. The average time difference between primary surgery and surgical correction may be from 6 to 20 years [3]. Surgical treatment of relapses is more technically complicated than primary surgery, and patients' satisfaction with repeated interventions is lower [9].

Recurrence of manifestations of varicose veins after classic surgery is related, first of all, to the phenomena of neovascularization, inclusion in the pathological process of previously sufficient additional venous vessels, due to the progression of the disease, as well as tactical and technical imperfections in the diagnostic and treatment process are the cause of 80% recurrent cases [7]. A specific cause of relapse is the presence of pelvic venous plethora syndrome [8]. Further relapses may occur, which presents even greater difficulties for the physician and the patient. Correction methods should be repeated to facilitate recurrence of relapses. The decision to prefer one or another method in the treatment of varicose veins remains opened and requires further study.

The aim of the work. Optimization of the choice of the method of treatment of recurrences of varicose veins of the lower extremities with trophic ulcers on the basis of comparative evaluation of direct and long-term results of recurrence treatment using endovenous techniques and classical surgery.

Materials and methods. We included 23 patients with recurrences of varicose veins of the lower extremities in the stage of decompensation (stage C6 according to the CEAP classification) after crossectomy, re-surgical treatment of which took place at the Department of Vascular Surgery of State Institution "Regional Clinical Hospital named after I. I. Mechnikov" (Dnipro), State Institution

“City Hospital №16” and Medical Center “JMC”. The total number of men was 10 (43.5%), women - 13 (56.5%). The age of patients ranged from 44 to 76 years (mean age 56.5 ± 7.9 years). The time difference between the primary and corrective surgery ranged from 1 to 12 years, the average was 6.2 ± 2.3 years. The average time of recurrence of trophic ulcers was 4.6 ± 1.8 years. At the same time, the recurrence of pathological reflux detected on ultrasound was 5.9 ± 1.7 years, the clinical recurrence with the appearance of symptoms of post-surgical recurrence of varicose veins - 6.1 ± 1.9 years.

Patients were divided into two groups. Group I included 12 patients who underwent recurrence correction by repeated crosssectomy and surgical removal of pathological veins by stripping and / or miniphlebectomy. Group II included 11 patients who underwent recurrence correction by a combination of endovenous interventions using radiofrequency ablation of the left stump and the unremoved part of the saphenous trunks, sclerotherapy of neovascularization zones and miniphlebectomy of varicose deformities. At the beginning of the survey, groups of patients were comparable according to the main criteria.

Standard preoperative examination included complaints and anamnesis, physical examination, photofixation of pathological changes, assessment of the severity of chronic venous disease on the VCSS scale (Venous Clinical Severity Score). The severity of edema was recorded by measuring the size of the circumference of the tibia at the level directly above the medial bone. Each patient underwent screening ultrasound scan (US) in vertical and horizontal positions. The number and parameters of reflux sources in the superficial venous system, ways of its distribution and points included in the scheme of venous hemodynamics were detected. The presence of venous reflux was recorded by the duration of retrograde blood flow under the terminal valve lasting more than 1 sec. Additionally, the diameter of the sapheno-femoral joint and the length of the residual stump of the great saphenous vein were measured in the vertical position of the patient.

A surgery due to recurrence was performed on only one limb. The presence of complications during operations and in the postoperative period, the duration of healing of trophic ulcers after operations, the number of recurrences of varicose veins and ulcers were assessed. The severity of chronic venous insufficiency was also assessed on the VCSS scale (Venous Clinical Severity Score). The intensity of pain in the first postoperative day was measured using a 10-point analog visual scale. Patient satisfaction was determined by questionnaires in the postoperative period.

Criteria for inclusion in the study were: recurrence of venous trophic ulcers after surgery. Exclusion criteria were: deep vein thrombosis at the time of examination or in the anamnesis; violation of arterial blood flow with the disappearance of the pulse in more than one of the arteries of the foot; recurrent erysipelas; malignant ulcers.

To all patients were prescribed standard conservative treatment, which included compression therapy (II compression class - UlcerKit golfs), MOFF 1000 mg per day for the entire period of treatment, change of dressings for postoperative wounds and ulcers (if any), recommendations on lifestyle and regimen activity, in accordance with current clinical and practical recommendations [10].

Ultrasound screening and intraoperative monitoring were performed using

General Electric Logiq E scanners with a 5-7 MHz linear sensor and General Electric Voluson with a 5-7 MHz linear sensor.

Statistical processing of the results was performed using Microsoft Excel software packages (License: Microsoft Office 365 subscription, ID 02984-001-00000), StatPlus: mac (AnalystSoft Inc., StatPlus: mac. Version 6, License: # 12083386).

The mean values $[M \pm m]$, the reliability of the mean values according to the Student's t test (t) were determined. The difference between the indicators at $p < 0.05$ was considered statistically significant.

Results and discussion

The preoperative ultrasound examination revealed the causes of recurrence in patients of both groups. The results are presented in table 1.

Table 1. Causes of recurrence of varicose veins, identified at the stage of preoperative examination.

Reflux on a failed intact trunk of a small saphenous vein		(9,1%)
Reflux on the long (more than 1 cm) stump of the saphenous and on the anterior accessory saphenous vein	(25,0%)	(36,4%)
Reflux on a long (more than 1 cm) saphenous stump and through the neovascularization zone on too long left incapacitated saphenous trunk	(33,3)	(18,2%)
Reflux in the anterior arch vein		(9,1%)
Horizontal reflux through perforator veins	(25,0%)	(18,2%)

The time of repeated surgery in group I was 2.1 ± 0.3 hours, while in group II the average was 1.2 ± 0.4 hours.

In the analysis of complications: in group I during operations there were 2 episodes (16.6%) of damage to the stump of saphena and neovascularization zone in the scar coupling, resulting in bleeding, which was stopped. In the early postoperative period, 1 (8.3%) case of formation of a significant hematoma in the groin area and 1 case of postoperative thrombosis of the inflow on the leg were recorded. Among patients in group II there was only 1 complication (9.0%) - a case of reaction to a local anesthetic, which is similar to an allergic one and is stopped by the administration of dexamethasone.

Two months after the interventions, venous trophic ulcers healed in 10 patients (83.3%) of group I and 11 patients (100.0%) of group II. The time to complete epithelialization of ulcers in patients of both groups was comparable and amounted to 42.1 ± 6.4 days (group I) and 39.2 ± 6.1 days (group II) $p > 0.05$. The

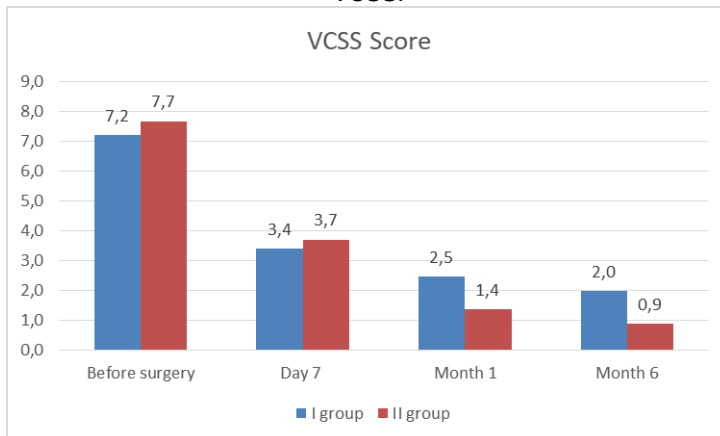
rate of epithelialization was also comparable. Thus, during the first month, the decrease in the area of the ulcer, in relation to its condition before surgery, among patients of group I was 2.3 ± 0.5 times ($p > 0.005$), in patients of group II in 2.1 ± 0.4 times ($p > 0.005$).

Secondary recurrence of ulcers during the two-year follow-up period occurred in 3 (25.0%) patients of group I. Ultrasound examination revealed significant horizontal reflux in the incapable perforating veins in the subulcer area. Recurrence of ulcers in group II was not observed.

The average intensity of postoperative pain on the first day was slightly higher in patients of group I and was 4.2 ± 1.2 against 0.7 ± 0.2 in group II ($p > 0.05$). This fully determined the absence of the need for analgesics after endovenous interventions.

The dynamics of the severity of chronic venous disease VCSS is presented in Fig.1. Despite the slight difference in favor of patients of group I before surgery (7.3 ± 3.2 vs. 7.4 ± 4.0 in group II), which persisted in the first week of the postoperative period (3.4 ± 1.2 vs. 3.7 ± 2.1 in the II group), already in the I month its reversion in favor of patients of the II group was noted (2.5 ± 0.7 in the I group against 1.4 ± 0.3 in the II group). The difference in the observation period up to 6 months in patients of groups I and II differed significantly in favor of the latter compared to the condition before surgery and amounted to 2.0 ± 0.3 in group I against 1.4 ± 0.3 in group II, which is a difference of 37,3% in favor of patients of group II. It should be noted that in both groups there was a uniform decrease in the rate over 6 months. The difference between the condition before surgery and after 6 months was 5.2 ± 1.9 in the first group against 6.8 ± 1.9 ($p > 0.05$), which indicates a faster rate of recovery after surgery.

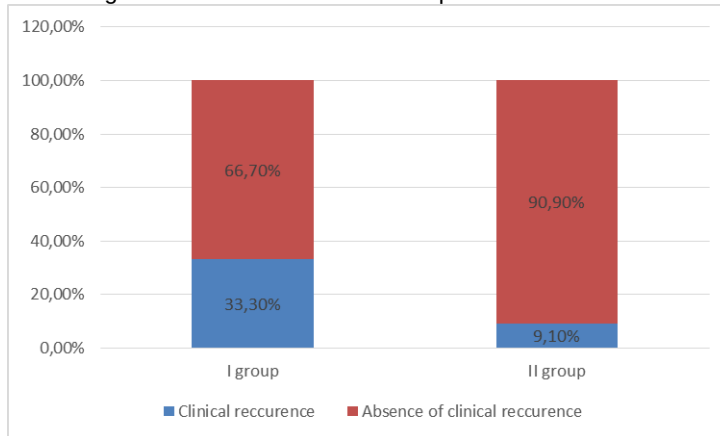
Fig. 1. Quality of life and severity of chronic venous insufficiency - dynamics of VCSS.



The number of clinical recurrences of varicose veins of the lower extremities without ulcers during the observation period was observed in 4 patients (33.3%) of

group I. It should be noted that they all had a body mass index of more than 35. In group II, clinical recurrence of varicose veins occurred in 1 patient (9%), and in 2 cases (18.0%) after 2 years on ultrasound revealed anatomical asymptomatic recurrence due to post-stabilization recanalization of the saphenous trunk and veins of the ulcer area. The data are presented in Fig. 2. These patients are additionally prescribed continued use of compression stockings and planned staged corrective interventions.

Fig.2 Clinical recurrences after repeated interventions



In the survey, patients of group II noted significantly higher satisfaction with the outcome of treatment than patients of group I, primarily due to rapid rehabilitation and recovery, which is probably a consequence of mini-invasive interventions.

Conclusions

Careful examination before surgery, the use of intraoperative ultrasound control and monitoring in the postoperative period can reduce the number of tactical errors in the treatment of recurrence of varicose veins.

The use of endovenous methods in the treatment of post-surgical recurrences of varicose veins of the lower extremities allows to achieve comparable effectiveness of treatment results and fewer complications.

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