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MINIMALLY INVASIVE INTERVENTIONS IN THE SURGICAL TREATMENT OF CHRONIC LOWER LIMB VENOUS INSUFFICIENCY

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Abstract:

Despite significant progress in the treatment of varicose vein disease (VVD) and the resulting chronic venous insufficiency (CVI), the diagnosis and treatment of this disease remain pressing medical and social problems. This is due to the high prevalence of the pathology, frequent relapses, the presence of complicated forms of the disease, leading to long-term disability. The main purpose of VVLL and CVN treatment is to reduce or eliminate dynamic venous hypertension, which is achieved by application of surgical and conservative methods. Surgical method is considered to be a radical one. Its success largely depends on a correct assessment of the mechanisms of phlebogemodynamic disturbances. A characteristic tendency of the development of modern phlebosurgery is the introduction of less traumatic and cosmetic methods of surgical interventions, and also the perfection of the already existing ones. This tendency aims not only to increase effectiveness, but also to achieve safety and cosmetic effect of the intervention. Endoscopic subfascial dissection of the perforating veins (ESDPV) and miniphlebectomy are methods that reduce surgical trauma and improve the aesthetic outcome of the intervention.

Keywords: Chronic venous insufficiency, crossectomy, sclerotherapy

RELEVANCE. Recently, the number of patients suffering from chronic venous insufficiency of the lower extremities (CVI) has increased sharply at the expense of young people, who are extremely demanding to the cosmetic results of surgery [3, 6]. At the same time, trophic ulcers occur in 50-60% of geriatric patients in whom Linton surgery, due to its traumatic nature and high frequency of purulent complications, is extremely limited [1, 2, 3].

To date, the traditional surgical treatment of varicose vein disease has been dominated by wide-access surgery. These surgeries are highly traumatic, remain unsatisfactory in terms of aesthetic requirements, are accompanied by a high rate of purulent-inflammatory complications and a long period of postoperative rehabilitation [4, 5]. The recurrence rate is up to 50% within 5 years after surgery and can rise to 80% in the longer term [6].

PURPOSE OF THE STUDY: optimization of surgical treatment of patients with lower limb CVI by means of minimally invasive correction of venous hypertension.

MATERIALS AND METHODS. Currently clinicians use CEAP classification (Chronic Venous Insufficiency) (Clinic, Etiology, Anatomy, Pathophysiology). The clinical section consists of 7 types. Trophic changes occur in patients with type C - 4, C - 5 and C - 6.

In the period from 2010 to 2019, 867 patients with varicose vein disease of lower limbs were operated on in the surgical department of 1 SamMI clinic, of whom 71 (8.2%) had C- 4 (34), C- 5 (17) and C- 6 (20) types of CVI.

Colour duplex scanning was used to assess venous hemodynamics.

The indication for surgical correction of venous hypertension was:- Perforating vein insufficiency when its diameter, as determined by ultrasound, was more than 5 mm;

- Multi-perforating insufficiency at any stage of CVI;

- Severe trophic skin changes in the area of perforating veins.

The patients were divided into two groups depending on surgical tactics. In the main group (34) patients underwent minimally invasive interventions, in

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the comparison group (37) CVI with trophic changes was eliminated by conventional means (Table 1).

Table 1.
Distribution of patients according to surgical treatment (n=71)

Surgical tactics	Number of patients	
	Abs.	%
Main group, (n=34)		
Crossectomy+Coquette+sclerotherapy	22	64,7%
Crossectomy+sclerotherapy	12	35,3%
Comparison group, (n=37)		
Linton operation	14	37,8%
Linton operation + combined phlebectomy. Phlebectomy	18	48,6%
Linton surgery + crossectomy	5	13,6%

Table 2 presents the characteristics of the compared groups, in which age, sex, degree and cause of CVI were taken into account.

Table 2.
Characteristics of the compared groups

Parameters of the study groups	Main group, n=34	Comparison group, n=37
Age, years	44,5 ± 15,2	44,4 ± 12,2
Min	18	22
Max	73	68
Sex (male/female)	17/9	12/5
CVI (P-4 and P-5/C-6)	12/13	8/10
Cause of CVI: primary varicose veins/PTPS	9/25	25/12

In the main group of patients, crossectomy was performed through a mini incision and intradermal sutures were applied at the end of the operation with a satisfactory cosmetic effect in the long-term postoperative period. For non-healing trophic ulcers, phlebectomy was supplemented with sclerotherapy. Sclerotherapy was carried out using Ethoxysclerol 10 mg.

RESULTS OF THE STUDY. The duration of surgery in patients in the main group was shorter than in the comparison group and patients in the main group recovered earlier. In the comparison group, purulent-necrotic complications of the surgical zone were observed in 10 patients in the immediate postoperative period (Table 3).

Table 3.
Immediate results of surgical treatment

Indicator	Main group, n=34	Comparison group, n=37
Duration of intervention, min	53,2±4,7	102,6±7,6
Patient activation time, day	1,13±0,08	3,0±0
Bed-days	3,98±0,6	22,9±2,5
Time of ulcer epithelization, days	14,3±3,8	20,2±6,9
Purulent-necrotic complications of the intervention area	0	10 (27,0%)

At one month, 84.6% of the patients in the main group had a fully healed ulcer, while in the comparison group the figure was 70% (Table 4).

Table 4.
Healing dynamics of trophic ulcers

Group	Total number of patients	C-6	Complete healing of ulcers within 1 month.	
			абс.	%
Main group	34	13	11	84,6
Comparison group	37	10	7	70,0
Total	71	23	18	78,3%

In the long-term follow-up, 49 patients were observed. When examining patients, attention was paid to local clinical symptoms (Table 5). In the main group of patients one year after surgery, almost all patients had pain and swelling of the lower extremities, trophic ulcers were completely healed, and their quality of life improved (Fig. 2)

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Table 5.
Evaluation of long-term results of surgical treatment of CVI

Clinical symptomatology	Main group, n=29		Comparison group, n=20	
	Before surgery 1	year after surgery	Before surgery 1	year after surgery
Pain	2,06±0,11	0,35±0,23	1,75±0,40	0,40±0,26
Varicose veins	2,41±0,24	0,29±0,22	1,80±0,37	0,45±0,22
Venous oedema	1,06±0,49	0,41±0,29	1,35±0,50	0,30±0,21
Discolouration of the skin	0,35±0,37	0,18±0,19	1,00±0,40	0,75±0,31
Skin inflammation	-	-	0,35±0,31	-
Induration (thickening) of the skin	0,53±0,30	0,12±0,16	1,75±0,31	1,00±0,28
Number of open sores	0,47±0,24	0,12±0,15	0,60±0,33	0,05±0,098
Duration of open ulcer	0,47±0,24	0,29±0,40	1,55±0,59	0,10±1,196
Size of largest open ulcer	0,65±0,37	0,12±0,16	1,05±0,52	0,05±0,098
Compression therapy	1,9±0,12	1,65±0,29	2,80±0,23	0,40±0,298

a). b). c). d)

1. Fig. 1. Patient with CVI complicated with trophic ulcer before and after complex treatment: a) state of the lower extremity on admission; b) state of the lower extremity on the 10th day after phlebectomy combined with sclerotherapy; c) 3 months after complex treatment; d) 8 months after complex treatment.

CONCLUSIONS:

1. Sonographic assessment of venous hemodynamics of the lower extremities demonstrates that trophic disorders at CVI are caused not only by perforating insufficiency but also by reflux of the blood flow through the superficial veins. The severity and duration of trophic disorders of the lower limbs have a direct correlation with the severity of horizontal reflux.
2. Dissection of perforating veins and liquidation of pathological reflux in the subcutaneous veins should be regarded as a pathogenetically important component of surgical treatment of decompensated forms of CVI.
3. Crossectomy combined with sclerotherapy can be considered as rather effective arsenal of complex treatment of CVI, which permits to avoid more traumatic surgical interventions in more than 80% of cases..

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