

Description and results of a new technique for the treatment of the superficial and/or perforating venous insufficiency of the lower limbs

Alejandro Farmache*

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Introduction: During the XX Century, the surgical treatment of the superficial and/or perforating venous insufficiency of the lower limbs has been based on a resective and venous stripping concept with limited results and high levels of recurrence to 5 years follow up.

Objective: To present a new minimally invasive surgical procedure called AF Repairing for the treatment of the venous insufficiency of the lower limbs and to evaluate its long term results.

Material and methods: AF Repairing is a surgical procedure, minimally invasive, which eliminates varicose dilatations and vertical and/or transversal pathological refluxes corresponding to the superficial and/or perforating venous insufficiency of the lower limbs, detected by Scanning Duplex Color and treated with the application of extra-vascular Titanium

Clips through little skin incisions. All patients were included in class 2–6 CEAP clinical classification. Patients of different sex and ages were studied. Diabetic and obese patients were included as well as those with coagulation and/or lymphatic problems with concomitant venous pathology.

Results: There were 88 patients operated with AF Repairing technique, corresponding to 128 lower limbs affected with superficial and/or perforating Venous Insufficiency enclosed in CEAP clinical classification (2-6). The average age was of 54 ± 15 , the average 54 and varied from 19 to 81 years old.

The sex corresponded to 74 women (84%) and 14 men (16%). The clinical varicose recurrence to 5 year follow up was 10, 15%; low percentage of complications, fast recovery, and highly prescribed.

Conclusion: It is presented a new surgical technique, minimally invasive, which for its results and advantages, shows a new perspective in the treatment of the venous insufficiency.

Key Words: *Perforating venous insufficiency; Venous system; Ulcers*

INTRODUCTION

The venous insufficiency of the lower limbs constitutes a very frequent affection in society leading to disability in some extreme cases [1].

During the last fifty years, the surgical treatment of the venous insufficiency of the lower limbs has been based on a concept of resection with big incisions and venous stripping without taking into account the hemodynamic phenomenon and the asymmetrical property, anatomical and functional, presented by patients with venous disorders in their lower limbs [2].

Due to the limitations in the conventional venous surgery, since this presents traumatic characteristics, early recurrence proved by bibliography, complications and eliminates a vascular conduct most used as a graft in cardiovascular surgery, a minimal invasive procedure has been designed [3-6] This one solves phisiopathological bases of the venous insufficiency by eliminating reflux and hypertension.

The objective of this work is to describe a new technique, minimally invasive, called AF Repairing for the treatment of the venous insufficiency of the lower limbs and its significant long-term results.

MATERIALS AND METHODS

Descriptive, longitudinal and prospective study.

This new technique called AF Repairing described in this research determines, in a minimally invasive way, the elimination of varicose conducts in the surgery itself and of its respective refluxes through a hemodynamic, systematic, strategic, specific and complete evaluation of the venous system. Avoiding traumatic stripping, this procedure is widely

indicated in patients with other coexistent diseases. It is also prescribed in classes 4, 5, and 6 of the C.E.A.P with an improvement on trophic problems and the healing of ulcers.

Such mentioned technique, AF Repairing, consists in the elimination of the different levels of venous pathological refluxes caused by the parietal-valve insufficiency in different sectors of the venous system, through the application of Titanium clips in an extra-vascular way with a much more hermetic, regular and precise closure than surgical ligations, placed in the origin of the reflux through little incisions of approximately 1–2 cm. long in the skin surface of the lower limbs.

In this way, an isolation of compartments of the engaged sector is produced with the elimination of its hemodynamic consequences and with the disappearance of the varicose dilatations during the surgery itself which can be proved with Duplex Scanning Color and the post-surgery with Eco-follow up to detect recurrences since those clips function as markers in the scanning image.

The detection of the different levels of the pathological venous refluxes, in a vertical and/or transversal way, is based on a clinical evaluation and Duplex Scanning Color that lead to a tactical and strategical planning of the surgery [7,8].

This surgical procedure is done with local anesthesia, a fast recovery, with a maximum of 16 hours in patients of classes 4-5 CEAP clinical classification.

Patients of both sexes and different ages were studied and they were previously asked for their written agreement where it was clearly stated the possible surgical risks and eventual complications.

Alejandro Farmache*

Instituto de Flebología, Mendoza, Argentina

*Correspondence: Alejandro Farmache, Chairman of the Mendocinian, Instituto de Flebología, Mendoza, Argentina, E-mail: dr.farmache@hotmail.com

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In the research, patients with diabetes and obese people were included as well as those with coagulating problems, lymphatic illnesses with concomitant venous pathology.

All patients were within classes 2–6 of the clinical classification C.E.A.P. from the American Venous Forum [9,10].

The patient were operated with the depicted technique.

In the case of the patients with classes C.E.A.P 4 and 5, their transversal refluxes were eliminated through incisions of 2 cm long with the application of Titanium clips after having localized the engaged perforating sectors, taking into account all the involved vessels, according to the previous tactical planning.

To those patients with class 6, their ulcerated lesions were formerly reduced with medical treatment, then, operated with the mentioned technique, obtaining the healing of the ulcers in a period of about 40 days as from the day of the surgery [11].

The patients were evaluated to 6 months, to a year and to 5 years to control varicose recurrences.

RESULTS

There were 88 patients operated with AF Repairing technique and 128 treated lower limbs, affected with venous insufficiency-superficial and/or perforating, included in the clinical classification CEAP (classes 2-6). There were 24 women (84%) and 14 men (16%). The mean of the age was age 54 ± 15 years old, with a median of 54 years and a range of 19 and 81 years old. From the 128 operated lower limbs it was found the following distribution according to the clinical classification CEAP (Table 1).

TABLE 1: Number of patients according to the clinical classification CEAP.

Class	N° of lowers limbs
2	100(78.1%)
3	0(0%)
4	22(17.1%)
5	2(1.56%)
6	4(3.12%)

The clinical varicose recurrence of this new technique to a 5 year follow up was 10,15%, with control clinical and duplex scanning color.

The pos-surgical complications such as hematomas were 3 (2,34%), 1 infection (0,78%) and a residual edema (0,78%) and 1 (0.78%) with DVT. There were not pulmonary thrombo-embolism.

The esthetic results of the surgery determined by the absence of scars were very satisfactory in 85% cases, satisfactory in 10%, and little satisfactory in 5% of the operated limbs.

DISCUSSION

This new technique, AF Repairing depicted in this research, determines in a minimally invasive way the elimination of the varicose trunks during the surgery itself together with its refluxes as from a hemodynamic, systematic, strategic, specific, and complete evaluation of the venous system, avoiding traumatic stripping. Besides, this procedure is widely recommended in patients with other coexistent illnesses, also indicated in classes 4, 5 and 6 of the CEAP with an improvement in trophic problems and healing of ulcers.

The venous insufficiency of the lower limbs has received several medical and surgical treatments along the history. Within the first ones, elastic-compressing bandages, flebo-tonic medicine, ways to improve the venous return and exercises which were useful but limited in trying to stop the evolutionary process of the illness [12].

Concerning the surgeons' tendencies, there were two clear trends. On the one hand, the stripping ones, partial or total stripping of the great and/or small saphenous veins, called Saphenectomy and of its tributaries characterized for being traumatic and without getting expected results, its varicose recurrences are 25%-30% in 5 years-follow up [2-4]. On the other hand, the conservative ones, keeping the main venous trunks with ligation in the saphenous-femoral union, Crossectomy, or in different levels of the Saphena; resulting incomplete, inefficient and with frequent neo-angiogenesis [2-13,14].

Regarding chronic venous insufficiency, Cockett, Linton, and Felder 's surgeries with big incisions and dissections have occupied a privileged position for a long time [15,16]. However, its traumatic characteristics with big scars and long periods of recovery have led them to a minor application.

Since 1990, procedures that are less invasive than surgery have been enforced. Some examples are: EVA (ligation & stripping), (endovenous ablation) which includes EVLA (Laser ablation), RFA (Radiofrequency) and UGFS (Ultrasound Guided Foam Sclerotherapy) in less cases. All this experience has given as a result rich and varied research investigation showing advantage in relation to conventional surgery [17-19].

The SVS (Society for Vascular Surgery) and the American Venous Forum have recommended the use of EVA in their "clinical practice guidelines" because of their advantages as regards less pain in the post-surgery aftercare, less complications, faster recovery time, greater satisfaction and preference on the part of the patients in relation to surgery [20]. In relation to numerous comparative RCTs between EVA and surgery, it is necessary to consider that the different meta-analysis done between years 2000 and 2014, in 8 comparative RCTs between EVA and surgery, showed no difference in incidence between REVAS along a certain period of time, but it did in their causes.

It is also worth showing that 2 of the RCTs showed duplication of REVAS for EVA and surgery (ligation & stripping) with the passing of time [21].

Some European research suggests the strong need to do some meta-analysis of RCTs in long term to define recurrence rate and costs of EVA and UGFS [22]. New procedures, like EVSA (Endovenous Steam Ablation), MOCA (Mechanico-Chemical Ablation) and cyanoacrylate injection versus surgery, are procedures of recent application and they will need to be evaluated.

In the case of CHIVA (cure conservatrice et hémodynamique de l'insuffisance veineuse en ambulatoire) or Hemodynamic Conservative Outpatient Management of Varicose Veins, a concept developed by Claude Francheschi in 1988, the procedure has a hemodynamic view and it consists on the preservation of the internal saphenous vein and drainage through the deep venous system with specific closure under the insufficient perforant veins in the saphenous system, which generates an anterograde or upstream pressure achieving a reduction of hydrostatic pressure of the surface saphenous system, constituting different types of Shunts [23].

AF Repairing has a hemodynamic view as well as the CHIVA technique, but it has considerable differences.

AF Repairing avoids the generation of return in veins that have structural or hemodynamic alterations. This is because the interplay of different pressures between the deep and the surface venous system can cause certain conditions for the development of thrombus. On the other hand, in case of evident affection in the greater saphenous vein, the existence of structural damage is proved in a number of anatomo-pathological research and it is irreversible [24].

CONCLUSION

To conclude, there is a new technique minimally invasive called AF Repairing. This presents advantages over other procedures, its results show new perspectives in the treatment of the venous insufficiency of the lower limbs, with a minor varicose recurrence and widely prescribed in surgical indications.

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