COMPARATIVE STUDY OF OPERATIVE TRETMANT OF VARICOSE VEINS ACCORDING TO THE KLAPP AND SMETANA METHOD VERSUS MYERS METHOD

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Abstract

Venous abnormalities in lower extremities are among the most frequent disorders that affects general population with significant morbidity and mortality. Usually, the problem consists of a mild form of varicose veins and teleangiectasis. Treatment in this stage of disease is highly recommended since progression can lead to chronic venous insufficiency and chronic disability with very few effective treatment options. The most effective and popular treatment of varicose veins is operative treatment; specifically two different operative procedures: method according to Myers and method according to Klapp and Smetana. We designed this study in order to determine which method is superior based on clinical parameters and patients satisfaction. Our evidence strongly support clinical superiority, as well as patient satisfaction, of Klapp and Smetana method.

KEY WORDS: Venous insufficiency , treatment, comparative study, methods.

Introduction

Twenty seven percent of general population has some form of venous abnormality in lower extremities (1), usually superficial varicosities and/or telenagiectasis. Up to 1,5 % of European adults develop venous stasis ulceration at some point (2). Symptoms of venous insufficiency include leg fatigue, discomfort and heaviness. Signs include (according to gradual progression of disease) venous teleangiectasis, varicose veins, lipodermatosclerosis and venous ulceration. Risk factors associated with varicose veins may include prolonged standing, heredity, female sex, parity and history of phlebitis (1,2,3,4). With progression of the disease, and ignorance in terms of treatment, final stage is chronic venous insufficiency and venous ulcers. Estimated incidence of venous ulcers in patients over 45 years is 3,5 per thousand per year (5). Multivariant analysis suggests, in addition to aforementioned and age, the primary risk factors for venous ulceration are a history of deep vein thrombosis, a history of severe lower extremity trauma, male sex, and obesity (4). Patients with venous ulceration have a severely impaired quality of life. Feeling of anger, depression, isolation and/or diminished self image are present in nearly 70%, and 80% have decreased mobility (6). As many as 40% of employed patients with venous ulceration have decreased earning capacity directly attributable to the presence of venous ulcer (7). As many as 2 million work days are lost per year in US secondary to venous ulceration, and 5% of patients lose job as a result of their venous ulcer (7). Quite enough evidence to strive to stop the disease in early stages since it can prevent progression and chronicity. The most effective therapy in this stage is surgical therapy. Those not suitable for surgery, due to associated comorbidities, would benefit from conservative treatment, that is compression therapy and pharmacological therapy. Surgical procedures are classified as ablative and reconstructive. Ablative procedures are sclerotherapy and different forms of varicectomias and vein stripping. Sclerotherapy is most widespread method for treatment of teleangiectasis and small varicose veins (less than 2 mm in diameter). Since most of the patients visiting our clinic suffer from later stages of varicose veins, they are not suitable for sclerotherapy. That is why most of our patients are treated by some form of vein striping and varicectomias. We apply two different methods, method according to the Klapp and Smetana, and method according to the Myers (8,9). Both methods include stripping of greater saphenous vein through two small incisions at the ankle and inguinal crease. The main difference is the varicectomia part. In Myers method it is accomplished through lots of small, 2 cm incisions directly over branch of varicosities, and varicosities are teased away from surrounding subcutaneous tissue so far proximally and distally as possible through the small incision. Than incisions are closed by subcuticular suture or simple skin suture. On the other hand, in Klapp end Smetana procedure varicosities are approached through puncture wounds. With specially designed instruments by Klapp and Smetana, we enter the subcutaneous space and perform destruction and extraction of varicosities with concomitant release of tissue thromboplastin from destructed surrounding fat tissue. Due to the release of tissue thromboplastin, hemostasis is secured and it is not necessary to ligate the avulsed vessels. In order to deliver best quality of care to our patients, we wanted to objectively estimate superiority of one operative procedure over another. We were not able to find any study in the available literature (internet and publications) that would offer some kind of answer. Thus, we designed and performed this study.

Patients and Methods

During the period of 3 years, from May 2004 to June 2007, we performed surgery on 403 patients suffering from varicose veins using Myers or Klapp and Smetana method. In other to establish, as objectively as possible, conditions for the study, we divided patients in two comparable groups. Than, we matched patients from one group to patients from the other according to the stage of disease, age, gender, comorbidities and body mass index. Only 97 patients were eligible according to the mentioned criteria. Patients from one group (49 patients) received operative treatment according to Klapp and Smetana, and patients from the other group (48 patients) received operative treatment according to Myers. Other than the operative procedure performed, there were no differences between groups, meaning that the other parameters of applied medical care were the same in both groups (medications applied, topical care, etc.). We monitored the following parameters of operative outcome (postoperative complications):

- Subcutaneous hemathoma formation of the operated lower extremity,
- Infection of the operative wound,
- Deep vein thrombosis,
- Duration of hospitalization and
- Patient satisfaction.

Each monitored parameter was expressed as the number of patients with complication occurrence and percentage of total number of patients in the group. Duration of hospitalization was expressed in number of days in postoperative period. On the other hand, patient satisfaction is expressed as the number of satisfied patients and percentage of total (this time higher number means positive value in chart).

Results

The results of our study are listed in Tables 1-5.

Method	Klapp and Smetana - 17 patients	Myers– 15 patients
Hemathoma	3 (17%)	2 (13%)
Infection	0 (0%)	1(6%)
Deep vein thrombosis	0 (0%)	1(6%)
Duration of hospitalization (days)	2	4
Patient satisfaction	16 (94%)	13(86%)

TABLE 1. Male – non-diabetics

Men, between 35 and 45 years of age; stage II of disease; without associated comorbidities; BMI between 25 and 30. There were 17 patients in Klapp and Smetana group, and 15 patients in Myers group.

Method	Klap and Smetana - 21 patients	Myers – 19 patients
Hemathoma	6 (28%)	4 (21%)
Infection	0 (0%)	5 (26%)
Deep vein thrombosis	0 (0%)	1 (5%)
Duration of hospitalization (days)	2	5
Patient satisfaction	20 (95%)	17 (89%)

TABLE 2. Female – non diabetics

Female, between 20 and 35 years of age; stage II of disease; without associated comorbidities; BMI between 23 and 30. There were 21 patients in Klapp and Smetana group, and 19 patients in Myers group.

Method	Klap and Smetana - 6 patients	Myers – 7 patients
Hemathoma	3 (50%)	2 (28%)
Infection	1 (16%)	3 (42%)
Deep vein thrombosis	0 (0%)	1 (14%)
Duration of hospitalization (days)	3	6
Patient satisfaction	6 (100%)	6 (85%)

TABLE 3. Men – diabetics

Men, between 40 and 55 years of age; stage III of disease; diabetics; BMI between 27 and 30. There were 6 patients in Klapp and Smetana group, and 7 patients in Myers group.

Method	Klap and Smetana - 5 patients	Myers - 7 patients
Hemathoma	2 (40%)	2 (28%)
Infection	1 (20%)	4 (57%)
Deep vein thrombosis	0 (0%)	1 (14%)
Duration of hospitalization(days)	3	7
Patient satisfaction	5 (100%)	6 (85%)

TABLE 4. Female – diabetics

Method	Klap and Smetana – 49 patients	Myers – 48 patients
Hemathoma	14 (28%)	10 (21%)
Infection	2 (4%)	13(27%)
Deep vein thrombosis	0 (0%)	4 (8%)
Duration of hospitalization(days)	2,5	5,5
Patient satisfaction	47 (96%)	42 (87%)

TABLE 5. General view

Female, between 45 and 55 years of age; stage II/III of disease; diabetics; BMI between 25 and 30. There were 5 patients in Klapp and Smetana group, and 7 patients in Myers group. Following chart intends to provide us with total number/percentage of monitored parameters in patients in both groups. The duration of hospitalization is expressed as average number of postoperative days in hospital in each group. Gathered data are not as accurate as in the charts above, since patients are not matched strictly according to the criteria (here, they are viewed as a homogeneous group that they actually are not, but offer simplified view of overall results.

Discussion

Comparison of the data from the tables above clearly indicate the following: Patients are more satisfied with Klapp and Smetana procedure than with Myers – 96 % versus 87 % - Table 5. When we asked patients to explain what they assume as satisfied, they mostly pointed out cosmetic result, postoperative pain and duration of hospitalization. Most of them never supposed that operation of varicose veins could be done without operative scars, or that they could leave hospital the day after surgery. Also, most of satisfied patients expected that postoperative pain would be harder. Higher frequency of postoperative wound infections

is associated with Myers procedure – 27 % versus 4 % - Table 5. These are mostly totally harmless incision infections that affect skin and surrounding subcutaneous tissue, averagely spreading not more than 1 cm from the age of the wound and with discrete secretion. This result of the study is understandable since Klap and Smetana procedure is not associated with significant disruption of skin integrity (access to the subcutaneous tissue through puncture wounds). Deep vein thrombosis is also more frequent in Myers procedure. As shown from the study, we did not report DVT in Klapp and Smetana group. Actually, we had no DVT in patients operated according to Klapp and Smetana at all, since we perform this procedure in our Clinic. There is no sound evidence for having DVT in Myers group but the results are in accordance with world statistics (3,1,6). Most of patients complained of swelling and feeling of discomfort in the calf on second or third postoperative day. We examined them using Doppler US and found incipient thrombosis of deep calf veins. That prolonged hospitalization of affected patients for additional 10 days with application of medications according to international guidelines. Subcutaneous hemathoma formation is more common in Klapp and Smetana procedure than Myers procedure – 28 % versus 21 % - Table 5. These hemathomas are mostly blood suffusion of subcutaneous tissue (not collections of blood in subcutis!) and none of them required surgical drainage. This result is also understandable from the nature of procedure itself. While in Myers procedure we tend to ligate bigger proximal and distal tributaries of the extracted varicosities, in Klapp and Smetana procedure we rely on tissue thromboplastin to initiate hemostasis in disrupted varicosities and their tributaries. Klapp and Smetana procedure is associated with shorter postoperative hospital stay – 2,5 versus 5,5 – Table 5. Averagely, this means reduced hospital stay by half and significantly lower health insurance cost. Also, it means decreased absenteeism for two days and lower loss in working days. Diabetic patients fared a lot worse than general population. It is specially related to infections and deep vein thrombosis - Tables 3 and 4. That caused prolonged hospitalization (averagely for two days) in this patient population. Women are more susceptible to infection and hemathoma formation than men – Tables 2 and 4. We assume this to be the result of higher percentage of subcutaneous fat in women since fat tissue is inert and has low resistance to infection. Also, fat tissue creates weak mechanical barrier that prevents hemathoma formation.

Conclusion

Before articulating the conclusion itself we wish to emphasis that we weighed all the available evidence according to the data above and their medical consequences. This means we graded all complications in a way they threaten patient's life and abilities, like deep vein thrombosis weighed more in comparison than infection, and infection more than hemathoma formation. Also, total associated costs are indisputably higher in Myers method.

We can conclude that Klapp and Smetana method of treatment of varicose veins is superior to Myers method and no attempts should be made to perform Myers procedure in future unless medically indicated – very large varicosities with need for individual communicating veins ligation (of course, and in case of limited instrumentation preventing performance of Klapp and Smetana procedure).

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