A Successful External Valvuloplasty By Banding Application

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Citation

Abstract
External valvuloplasty is a safe procedure with low morbidity. This technique improved the hemodynamic status of the lower limbs. In this study we present a successful transmural and transcommissural external valvuloplasty application.

INTRODUCTION
The use of external banding during transcommissural external valvuloplasty has the theoretical advantage of increasing the durability of surgical procedure[1].

CASE PRESENTATION
Our case was a 45-year-old male. He owned severe superficial varicosities in his right lower extremity. His right calf was larger in circumference (Figure 1).

Color- Doppler venous ultrasound of the lower extremities revealed a moderate reflux flow pattern within deep veins of the right limb and severe reflux flow from right common
femoral vein into the right great saphenous vein (saphenofemoral insufficiency). Our case was taken to the operating room with possible diagnoses of moderate deep venous and severe saphenofemoral insufficiency of his right lower limb. He was operated on under spinal anesthesia.

During the operation, transcommissural zone and supragenicular segment of the great saphenous vein were explored (Figures 2&3).

**Figure 2**
Figure 2

Following this procedure, pieces of expanded polytetrafluoroethylene patches (IMPRA e-PTFE Cardiovascular Patch 0.6 mm) were inserted encircling both venous segments. Thus, the diameters of the venous segments were restored by using external venous cuff procedure (Figures 4&5).

**Figure 4**
Figure 4

**Figure 5**
Figure 5

Postoperative period of our case was event-free. He was discharged on 3rd postoperative day. Early and late period (first week and in 1st, 3rd and 6th month) follow-up visits identified pronounced improvement in subjective complaints and as an objective criterion, swelling of his leg dissolved almost completely. Shrinkage of the varicose veins was also prominent (Figure 6).

**Figure 3**
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Late-term Color-Doppler ultrasound investigation revealed that deep venous insufficiency decreased significantly to the mild degree. Besides, reflux flow in the great saphenous vein diminished significantly after application of veno-cuff (Figure 7).

**DISCUSSION**

Importance and frequency of venous reflux in chronic venous disease and particularly in chronic venous insufficiency (CVI) has been fully identified only in the last 20 Years, thanks to the development of duplex-scanning. Despite its effectiveness, deep reconstructive surgery remains controversial which probably explains why this specific surgery is performed by few units worldwide. In patients with severe CVI, venous valvular reflux involves deep vein as an isolated abnormality in less than 10%, but is associated with superficial reflux or/and perforator incompetence in 46%.[1]

External valvuloplasty procedure is an acceptable technique that can be used in patients with deep venous reflux. The addition of external banding provides more durable results with a lesser incidences of ulcer recurrence and valve incompetence.[1]

Reflux in the superficial veins is seen in 88% of limbs with venous ulcers (CEAP classes 5 and 6). Isolated superficial vein incompetence is detected in 45%. These data have significant clinical implications, since reflux in the superficial system can be easily eliminated[3].

In the study of Raju et al., a total of 179 successfully repaired valve sites of 141 limbs in 129 patients were followed up 1 to 42 months through clinical observation and with duplex Doppler ultrasound scan. Postoperative complications (≤ 30 days) occurred in 12 (9%) of 141 limbs: superficial [1] and deep [1] wound infection, large wound hematoma [1], seroma [1], and deep vein thrombosis [5], with associated pulmonary embolus in one patient. The cumulative ulcer recurrence-free interval was 63% at 30 months. The pain score and swelling grade substantially improved[4].

Duplex scanning is the best method for detecting venous reflux[3,5]. Duplex scanning provides both hemodynamic and anatomic information[3]. The complex anatomy of this system and the great variation in the patterns of reflux warrant the use of color flow duplex scanning before planning treatment[3].

Transcommissural valvuloplasty is relatively rapid and simple to perform, and its competency rates are comparable to those of internal valvuloplasty. Advantages over the internal repair are that venotomy is not required, repair can be extended to small-caliber veins, and multiple valve stations can be repaired in a single stage[4].
References

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