

A rare case of acute compartment syndrome after saphenectomy

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Abstract

Saphenectomy is one of the most validated criteria to treat varicose veins of the lower legs. Although many complications were well described, little is known about compartment syndrome due to muscle ischemia caused by constrictive bandages applied after stripping of varicose veins. We presented a case of successful conservative treatment of compartment syndrome after saphenectomy. Rehabilitation was found effective in improving fatigue, stiffness and tenderness showing the effectiveness of the combined conservative-rehabilitative treatment. However conservative treatment could not be considered the treatment of choice in daily practice. A severity score assessment of compartment syndrome should be useful to assess to which patients is allowed to not perform fasciotomy.

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Key words: Compartment; Saphenectomy; Varicose veins; Muscle ischemia; Rehabilitation

Core tip: A case of successful conservative treatment

of compartment syndrome after saphenectomy. Rehabilitation was found effective in improving fatigue, stiffness and tenderness showing the effectiveness of the combined conservative-rehabilitative treatment.

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INTRODUCTION

Saphenectomy is one of the most validated criteria to treat varicose veins of the lower legs.

Although many complications were well described^[1], little is known about compartment syndrome due to muscle ischemia caused by constrictive bandages applied after stripping of varicose veins^[2]. We presented, in our best knowledge, the first case of a successful conservative treatment of compartment syndrome after saphenectomy.

CASE REPORT

A 51-year-old man underwent saphenectomy because of chronic varicose veins of the lower right leg. His past medical history was unremarkable. The stripping technique involved the interruption of the femoral-saphenous junction, stripping of the great saphenous vein, multiple removals of the tributary veins of the saphena and ligation of the extrafascial perforating veins. No intra-operative complications occurred.

In the immediate post-operative period (6 h from the surgery), pain and tension in the operated leg appeared. Moreover, a complete function impairment of the leg was evident. The dressing was removed when the patients started complaining of these symptoms.

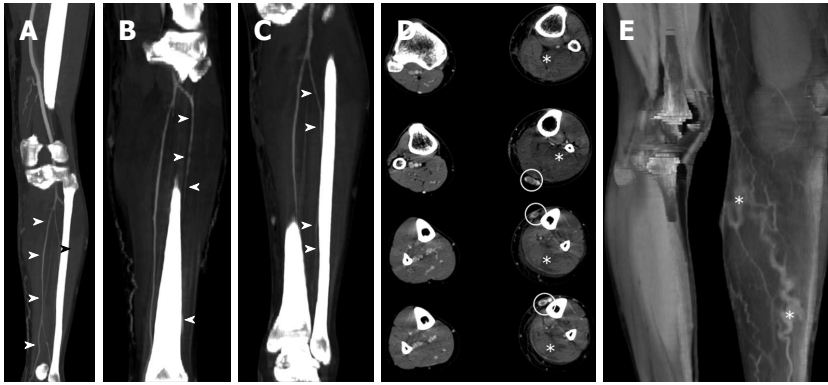


Figure 1 A computed tomography of the lower leg revealed a swollen compartment without vascular lesions and hypertension at the venous end of the capillary beds. A, B, C: The reconstruction MIP/3D that showed the viability of posterior tibial (A), anterior tibial (B) and interosseal artery (C) (marked by headarrows); D: The swollen muscle compartment (marked by *); E: The presence of hypertension at the venous end of the capillary beds (marked by *).

In the first post-operative day the physical examination demonstrated in the operated leg pain on passive stretching of the muscle, tense, swelling, sensory loss and paralysis. His blood analysis revealed a very elevated creatin kinase activity (50200 U/mL).

A computed tomography of the lower leg revealed a swollen compartment without vascular lesions and hypertension at the venous end of the capillary beds (Figure 1). The color-duplex sonography confirmed the absence of artery or vein thrombosis.

The patient was presumed to a compartment syndrome and the measurement of intracompartmental pressure was not performed for the clinical evidence according to validated criteria^[3]. Decompression by fasciotomy was indicated as the primary treatment but the patient denied his consent to the procedure. Elevation of the limb was used in an attempt to reduce pressure. Two weeks later, a conservative rehabilitative treatment was started.

The patient underwent a 2 mo-lasting twice/daily comprehensive rehabilitation, defined as systematic multidisciplinary treatment given by physician, occupational therapist and exercise physiologists. The rehabilitation program included physical therapy with exercise aiming at improves aerobic fitness, muscle strength and mobility and occupational therapy. This 2-mo treatment brought to a satisfactory functional recovery. Outpatient rehabilitation program continued for 3 mo thereafter. Complete function recovery was obtained after 6 mo.

DISCUSSION

Varicose veins in the lower extremities are a sign of chronic venous disorder due to valvular incompetence of the superficial venous system. This problem has a high prevalence (a third of the population) and generates an important number of surgical interventions (one of the most frequently performed operation in the world), as shown in the Edinburgh Study^[4,5]. Surgical treatment provides symptomatic relief and significant improvements in quality of life in patients with uncomplicated varicose veins. Stripping is one of the validated methods to treat varicose veins. It is a good procedure in terms of

simplicity, speed safety, and because the technique is well standardized^[6-9].

Although many complications were well described after stripping including the most frequently wound infection, nerve injury, vascular injury and venous thromboembolism^[1], little is known about compartment syndrome due to muscle ischemia caused by constrictive bandages applied after stripping of varicose veins^[2].

Acute compartment syndrome is a condition in which raised pressure within a closed fascial space reduces capillary perfusion below a level necessary for tissue viability. The initial injury leads to swelling within a compartment. This causes an increase in intracompartmental pressure with compressive closure of the thin-walled venules resulting in hypertension at the venous end of the capillary beds. Eventually arteriolar compression occurs, leading to muscle and nerve ischaemia with muscle infarction and nerve damage. Measuring intracompartmental pressure is only necessary when the clinical signs of compartment syndrome are unclear, in an unconsciousness or uncooperative patient, in a young child or when the clinical symptoms and signs are equivocal. The primary treatment should be decompression by fasciotomy as soon as possible. Elevation of the limb is sometimes used as a temporary measure in an attempt to reduce pressure^[3].

Danner *et al*^[2] describe four patients suffering from lower limb compartment syndromes, which were caused by constrictive bandages applied after stripping of varicose veins. The dressing was erroneously only partially removed, when the patients started complaining of severe pain and tension in the operated legs. The damages varied from extended irreversible neuromuscular defects to lesser functional handicaps. Three patients had corrective surgery. The clinical follow up over several years showed little improvement and secondary complaints were frequent.

At variance with this previous experience we have described the first case of conservative treatment without secondary complaints and a complete recovery.

Although, in our report, rehabilitation was found effective in improving fatigue, stiffness and tenderness showing the effectiveness of the combined conservative-

rehabilitative treatment, further studies are needed to evaluate the role of rehabilitation program in such disease.

However conservative treatment could not be considered the treatment of choice in daily practice. A severity score assessment of compartment syndrome should be useful to assess to which patients is allowed to not perform fasciotomy. More in details it would be important to know when a conservative treatment could be performed safely. Further more representative research are needed to assess this issue.

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