

A Rare Encounter Compartment Syndrome after High Saphenous Vein Ligation and Multiple Stab Avulsion Surgery

Yüksek Safen Ven Ligasyonu ve Multiple Stab Avülsiyon Cerrahisi Sonrası Nadir Karşılaşılan Kompartman Sendromu

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ABSTRACT

High saphenous vein ligation (HSVL) with stripping and multiple stab avulsion (MSA) is usually a simple and straightforward technique used to treat the varicose vein. Recurrence, infection, hematoma, sural nerve injury are commonly seen complications. Here we report a rare presentation of compartment syndrome after HSVL and MSA. The diagnosis was a challenge initially as compartment syndrome following such procedure is extremely rare and have not been reported much. The patient was subsequently treated surgically with a four-compartment fasciotomy and recovered with partial foot drop. Regardless of its cause, compartment syndrome required prompt surgical treatment and a delay of more than 6 hours can lead to irreversible myoneural damage.

Keywords: Compartment syndrome, High Saphenous Vein Ligation (HSVL), Multiple Stab Avulsion (MSA), Fasciotomy, Varicose vein.

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ÖZET

Soyma ve çoklu bıçak avülsiyonu (MSA) ile yüksek safen ven ligasyonu (HSVL), genellikle varis tedavisinde kullanılan basit ve basit bir tekniktir. Nüks, enfeksiyon, hematoma, sural sinir yaralanması sık görülen komplikasyonlardır. Burada HSVL ve MSA'dan sonra nadir görülen bir kompartman sendromu sunumunu sunuyoruz. Böyle bir prosedürü takiben kompartman sendromu oldukça nadir olduğundan ve çok fazla bildirilmediği için tanı başlangıçta zordu. Hasta daha sonra cerrahi olarak dört kompartman fasyotomi ile tedavi edildi ve kısmi ayak düşüşü ile iyileşti. Sebebi ne olursa olsun, kompartman sendromu acil cerrahi tedavi gerektirir ve 6 saatten fazla bir gecikme, geri dönüşü olmayan miyonöral hasara yol açabilir.

Anahtar Sözcükler: Kompartman sendromu, Yüksek Safen Ven Ligasyonu (HSVL), Çoklu Bıçak Avülsiyonu (MSA), Fasyotomi, Varisli damar

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INTRODUCTION

Compartment syndrome is a limb-threatening emergency usually caused by significant trauma, particularly involving long bone fracture. Apart from trauma, surgical cases involving lower limb (e.g. saphenous vein harvesting in coronary artery bypass surgery) have been reported associated with acute compartment syndrome(1). High saphenous vein ligation (HSVL) with stripping and multiple stab avulsion (MSA) is usually a simple and straightforward technique used to treat the varicose vein. Here we report a case of rare encounter limb-threatening complication following such procedure.

CASE REPORT

A 28-year-old male was suffering from the right lower limb varicose vein for 6 years. On examination, dilated and tortuous superficial veins were seen along the course of the great saphenous vein (GSV). Pre-operative ultrasound assessment confirms the incompetence of the saphenofemoral junction and no sonographic evidence of deep vein thrombosis.



Figure 1. Tender and swollen right calf and foot with clinical evidence of compartment syndrome after HSVL and MSA.

DISCUSSION

Conventional surgical stripping includes HSVL flush at saphenofemoral junction and division of great saphenous vein, followed by stripping the great saphenous veins from groin to knee level. MSA is usually used as an adjunct to ligation and stripping of GSV(2). Recurrence wound infection, hematoma, nerve injury can occur after surgical procedure. An extremely rare limb-threatening complication following varicose vein surgery is compartment syndrome. An 8 years retrospective analysis by Critchley et al showed no compartment syndrome was detected in their 973 cases of varicose vein surgeries(3).

Increase pressure within a confined compartment compromises blood circulation, leading to reduce tissue perfusion and subsequent ischemia(4).

HSVL with stripping of GSV until knee level was performed and followed by MSA of dilated superficial vein over calf region. A compression dressing was applied from the ankle to the groin region after surgery.

The patient complain of worsening pain and swelling of the right lower limb eight hours post-op, associated with numbness. On examination, the distal limb was swollen, appear congested with bluish discoloration of the foot and toes. The peripheral vascular assessment showed both his dorsalis pedis artery (DPA) and posterior tibialis artery (PTA) non-palpable and no signal from the doppler. The calf muscle became swollen and tense with reduction of sensation below knee and loss of motor movement of the right big toe (Figure 1). Creatinine kinase was significantly raised to 53467U/L. Clinical judgment of compartment syndrome was made and decided for four-compartment open fasciotomy.

During fasciotomy presence of oedematous calf muscle in the lateral and posterior compartment, however, muscles are viable (Figure 2). Postoperatively both PTA and DPA pulses were palpable with biphasic doppler signal. The fasciotomy was wound managed with dressing and later closed with a split skin graft after two weeks. He had residual foot drop and ambulate with crutches.

Consent has been acquired from patient to publish their case details and images.



Figure 2. Swollen and oedematous but viable calf muscle postoperatively.

In our case, we hypothesize that surgery induces tissue trauma causing inflammation and tissue oedema within the leg compartment, and on top of that, the application of elastic bandages prevents expansion of the compartment, had led to an increase in compartment pressure. This vicious circle results in reduced blood flow and eventually tissue hypoperfusion and ischemia. A case series published in 1989 by Danner et al reported four patients suffering from compartment syndromes following varicose vein stripping, which were believed caused by constrictive bandages applied after surgery(5).

Clinical suspicion and accurate physical examination are sufficient in most cases to diagnose compartment syndrome. Intra-compartment pressure monitoring can serve as a helpful adjunct where the diagnosis is in doubt. The perfusion pressure of a compartment is known as delta pressure of less than 30mmHg has been used by most as the threshold to diagnose significant compartment syndrome and as a guide to decide for fasciotomy.

Definitive surgical four compartments fasciotomy is required on an emergency basis once the diagnosis is made. Delayed fasciotomy may lead to irreversible myoneural damage. It is seen in a case report of irreversible compartment syndrome in a 25-year-old male following venous stripping who had to undergo amputation as a lifesaving procedure(6). Foot drop seen in our patient may represent ischemic injury to the peroneal nerve during an increase of compartment pressure.

CONCLUSION

Compartment syndrome is an extremely rare complication following varicose vein surgery. Thus, this case report is to create awareness among operating surgeons regarding this possible limb-threatening condition following varicose vein surgery. A high index of clinical suspicion remains the cornerstone for diagnosis and timing for surgical fasciotomy is crucial as a delay of more than 6 hours can lead to irreversible myoneural damage.

Conflict of interest

No conflict of interest was declared by the authors.

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