Deep Vein Thrombosis Through Remnant Great Saphenous Vein Following Vein Harvest

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Introduction. Great saphenous vein (GSV) harvest is common practice in vascular and cardiothoracic surgery. Thrombosis of the proximal remnant of vein with propagation into the femoral vein has not been reported before.

Case report. The distal half of the GSV was harvested for remote grafting of an axillary artery injury. Three months later the patient presented with thrombosis of the proximal remnant with extension of the thrombus into the femoral vein. This was successfully treated by high ligation and extraction of thrombus.

Discussion. Leaving a proximal remnant of the GSV in the thigh can lead to thrombosis, and the potential lethal complication of thrombus extension through the sapheno-femoral junction with the possibility of pulmonary embolism. We suggest that if the great saphenous vein is harvested in the distal thigh, the sapheno-femoral junction should be flush-ligated to prevent this complication.

Keywords: Great saphenous vein; Vein harvest; Thrombosis; High ligation.

Introduction

Thrombosis or thrombophlebitis of the superficial venous system is common and can cause significant symptoms. Occasionally, when affecting the greater saphenous vein, thrombus can progress through the sapheno-femoral junction into the femoral vein with subsequent risk of pulmonary embolism.1

When harvesting the great saphenous vein for remote vein grafting it is common practice to remove the vein from its distal end, leaving the proximal great saphenous vein in situ. Thrombosis of this proximal remnant has not previously been reported. We present a case of superficial venous thrombosis in the remnant great saphenous vein following vein harvest for bypass propagating into the femoral vein.

Case Report

A 55 year old man sustained fracture dislocation of his left shoulder following a fall down a flight of stairs. This was complicated by traction injury to his left axillary artery which required a bypass graft. A segment of great saphenous vein in the mid and upper thigh of the right lower limb was used as the graft. At least 15 centimetres of proximal GSV remained in situ with a large anterior thigh branch intact. The patient was in hospital for over 5 weeks.

Two months after the accident he presented with swelling of the right calf, on the side of the great saphenous vein harvest. Duplex scan of the right lower limb veins showed thrombosis of the remnant great saphenous vein and its side branch with a tongue of thrombus extending 5 cms beyond the sapheno-femoral junction into the common femoral vein. The right sapheno-femoral junction was explored and the remnant great saphenous vein along with its anterior tributary was removed. The sapheno-femoral junction was

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opened and the thrombus was carefully extracted from the femoral vein (Fig. 1). The patient recovered uneventfully and was anticoagulated with warfarin on discharge.

Discussion

Superficial venous thrombosis of the lower extremities is a common ailment seen in General practice and surgery practices. For superficial venous thrombosis of the lower limbs, varicose veins represent the principal cause but underlying conditions (e.g.: autoimmune diseases, malignancy or thrombophilia) must be sought in idiopathic, migrant or recurrent superficial venous thrombosis and in the absence of varicose veins. Concomitant DVT and pulmonary embolism can occur in approximately 15% and 5% respectively. In a study from the American peripheral vascular society following saphenous vein harvest for CABG, a large number of patients were screened by duplex scanning of their lower limb veins. A quarter of patients were found to have DVT and one third had superficial vein thrombosis. Superficial vein thrombosis was found in the stump of proximal saphenous vein which was seen to propagate into the deep vein through the saphenofemoral junction in several cases. Superficial venous thrombophlebitis of the great saphenous vein has been shown to be associated with thrombus propagation into the common femoral vein in up to 44% of cases. Conservative management can thus result in deep vein thrombosis, chronic venous insufficiency or fatal pulmonary embolism. It has been shown that emergency division of the saphenofemoral junction is a safe and effective way of preventing serious complications caused by thrombus in above knee great saphenous vein thrombosis. Saphenofemoral ligation for thrombosis involving the saphenofemoral junction is a safe procedure and has been performed on an outpatient basis.

Duplex imaging is recommended for superficial thrombophlebitis involving the greater saphenous vein in the thigh to rule out occult deep venous thrombosis. Superficial thrombophlebitis is not always benign and self-limiting as previously described.

The most common site of deep vein involvement was progression of disease from the greater saphenous vein in the thigh into the common femoral vein and some having a free-floating component. Proximal great saphenous vein thrombosis should be treated with anticoagulation or at least followed by serial duplex ultrasound evaluation so that definitive therapy may be initiated, if progression is noted. More distal superficial venous thrombosis should be carefully followed clinically and repeat duplex ultrasound scans performed, if progression is noted or patient symptoms worsen.

The incidence of the hypercoagulable state in patients with superficial venous thrombosis is high. Patients with superficial venous thrombosis may be prone to the development of DVT or saphenofemoral junction thrombophlebitis and should be closely followed after the initial diagnosis of hypercoagulability. The thrombophilia screen was negative in our patient. However, he may have been in a hypercoagulable state because of prolonged confinement in the bed following a major trauma with multiple injuries.

Our case is unusual because the superficial vein thrombosis occurred in a remnant great saphenous vein following vein harvest. We think this may be more common than previously thought rather than ours being a unique case. This case was also interesting in the fact that an anterior tributary of the great saphenous vein which should have preserved flow in the proximal great saphenous vein was also thrombosed associated with propagation of thrombus into the deep femoral vein.

This case highlights the potential serious complication of thrombosis of remnant great saphenous vein segment in the thigh which could propagate into the deep vein causing fatal pulmonary embolism. Superficial thrombosis therefore requires investigation with duplex to exclude DVT and propagation of thrombus. Ligation of the saphenofemoral junction in patients with high saphenous vein harvest should be
considered in all cases to prevent thrombus propagation into the deep system.

References


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