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CASE REPORT

SUCCESSFUL REVASCULARIZATION WITH BALOON CATHETERIZATION OF A SIX MONTH OLD THROMBUS: A CASE REPORT

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ABSTRACT

Thrombus is a recognized cause for limb ischaemia with success rates for revascularization decreasing with increasing time. This article describes a case of a successful femoropopliteal embolectomy for a patient with a 6 month history of claudication in right leg. The authors want to emphasize that physical nature of thrombus should be routinely checked during revascularization as a soft, friable thrombus can be successfully removed using a Fogarty balloon catheter obviating the need for a bypass procedure.

Key words:

Chronic thrombus, Balloon catheterization, Bypass, Embolectomy.

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INTRODUCTION

Embolectomy is the emergency surgical removal of emboli which are blocking blood circulation. It usually involves removal of thrombi (blood clots), and is then referred to as thrombectomy. Embolectomy is often the last resort because permanent occlusion of a significant blood flow to an organ leads to necrosis. Other involved therapeutic options are anticoagulation and thrombolysis. The most common type of emboli are blood clots generated by thrombosis which has then broken off and is then transported in the blood stream (www.nlm.nih.gov/medlineplus/ency/article/001102.html, 2015). Embolectomies are performed for arterial embolisms in acute limb ischemia. However there are also other options, such as catheter-directed thrombolysis and anticoagulation with observation (Rutherford and Robert, 2009). It can also be used for other ischemias due to embolism for example mesenteric ischemia and stroke. Acute non-traumatic limb ischaemia is due to either an embolism or thrombosis. Thrombosis is usually caused by peripheral vascular disease (atherosclerotic disease that leads to blood vessel blockage), while an embolism can be due to air, trauma, fat, amniotic fluid, or a tumor. In the United States, it is estimated to occur in 14 out of every 100,000 people per year (Dormandy *et al.*, 1999). The major cause of acute limb ischaemia is arterial thrombosis (85%), while embolic occlusion makes up 15% of causes. Arterial aneurysm of

the popliteal artery has been found to create a thrombosis or embolism resulting in ischaemia (Gregory Walker, 1999). With proper surgical care, acute limb ischaemia is a highly treatable condition; however, prolonged or delayed treatment can result in morbidity, amputation, and/or death. Amputation results from the buildup of toxins from cell death distal to the blockage (Gregory Walker, 1999). Critical limb ischaemia (CLI), an advanced stage, is defined as the combination of evidence of ischaemia together with any of ischaemic rest pain, non-healing ulcers, or gangrene (Rutherford and Robert, 2009). This condition has a bad prognosis within a year after the initial diagnosis, an amputation rate of 14-20% and a death rate of 25% within the first year and 50% within five years (Rutherford and Robert, 2009). Outcome of embolectomy varies with size, duration and location of the embolus. This case report briefs a successful management of an embolus of long duration.

CASE REPORT

A 20 year old non diabetic and non smoker female, presented with complaints of intermittent claudication in right lower limb for the last 6 months with dry gangrene right foot extending up to the ankle. Right superficial femoral was present but popliteal, posterior tibial, anterior tibial as well as dorsalis pedis were absent on manual palpation as well as on Doppler. On workup her ECHO and lipid profile were normal. She had no hypercoagulable state. MR Angiography was suggestive of occlusion right femoral and popliteal artery with collateral channels from superficial femoral perfusing distal leg and foot

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(Figure 1). Working diagnosis of chronic idiopathic embolus was made and femoropopliteal bypass with autogenous saphaenous vein as conduit was planned. Femoral artery was approached by the standard method. A soft, friable thrombus was found in popliteal artery extending to the superficial

femoral vessel (Figure 2). Plan was changed and embolectomy was done using fogarty 4F balloon catheter. Below knee amputation was done at the same setting. Postoperatively, triphasic flow in femoral, popliteal, anterior tibial and posterior tibial artery was achieved. Patient was discharged 10th postoperative day.



Figure 2.

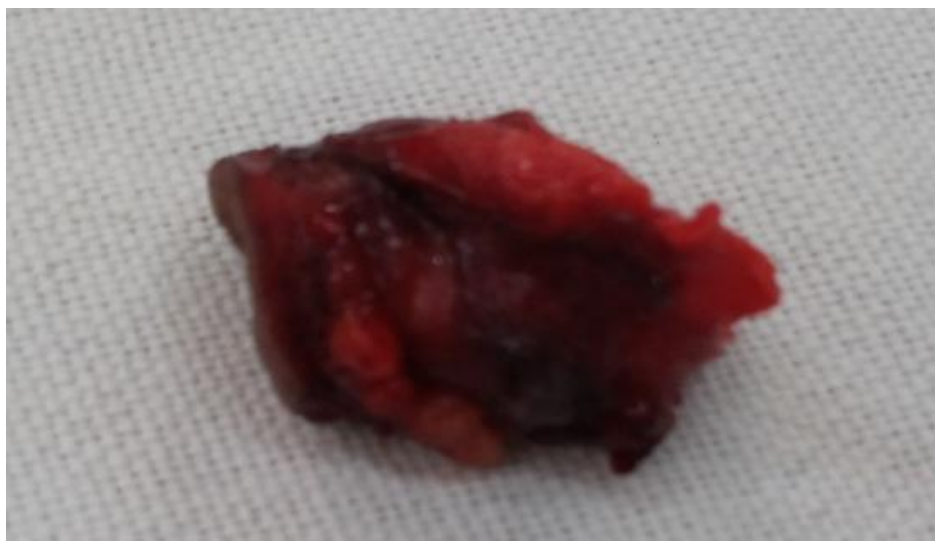


Figure 2.

DISCUSSION

Chronic limb ischaemia is a limb that is not vascularised for more than 14 days (Ken Callum and Andrew Bradbury, 2000). The incidence of chronic peripheral arterial thromboembolism is 23.3 persons per 100000 population (Korabathina *et al.*, 2013). Since Labey described first successful embolectomy in 1911 it has been well recognized that the time elapsing between arterial embolization is the main factor in the operative outcome. Embolectomy has long been the gold standard for treating limbs acutely threatened by arterial occlusion. Delayed embolectomy has not been investigated adequately due to the belief that accompanying mortality and morbidity render the case futile. Reviewing the literature, prolonged duration of ischemia prior to surgical intervention (around 24 hours), presence of calf tenderness, sensory and motor disturbances, all were associated with poor outcomes (Wolosker *et al.*, 2004).

So far, the common approach for ischemic limbs after the golden time has elapsed (6- 8 hours), has been anticoagulation and amputation (Abbott *et al.*, 1982; Elliot *et al.*, 1980; Fogarty *et al.*, 1971). Previous studies have shown that, the interval before surgical intervention, calf tenderness, and presence of sensory and motor deficits have been associated with poor prognosis (Wolosker *et al.*, 2004). The most common etiologies for embolization are cardiac diseases (80-90%), among which atherosclerosis has replaced rheumatic diseases (60-70%) (Panetta *et al.*, 1986; Sharma *et al.*, 1996; Dale, 1984). AF (Atrial Fibrillation) is diagnosed in one-half to three-fourths of the patients (Elliot *et al.*, 1980; Panetta *et al.*, 1986).

In some studies up to 45% of emboli were iatrogenic (85% during angiography and 15% due to surgical approaches) (Sharma *et al.*, 1996) Axial vessels are the most common destination for the emboli (70-80%), among which the femoral bifurcation is the most prevalent (35-50%) (Dale, 1984). There are sporadic successful results with late embolectomy (70.9% salvage rate) but they have not been reviewed enthusiastically in the literature (Shifrin *et al.*, 1986). W.T.Morris in a old study reported two such cases of successful embolectomy done in a two and eight month old embolus (Morris, 1972). Earlier diagnosis with improvement in radiodiagnosis has reduced the incidence of chronic arterial embolus. This article shows another successful embolectomy of a chronic arterial thrombus.

Conclusion

Chronic thromboembolism has a poor prognosis. This article suggests its readers to deal with chronic embolus peroperatively on a patient to patient basis keeping in mind that a soft, friable thrombus even when it is as chronic as 6 months old can be treated successfully with a simple fogarty embolectomy.

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