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Demonstration Of Entrapment In A Totally Occluded Popliteal Artery A Case Report

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Abstract

A case of intermittent claudication in a young male patient with short segment occlusion of popliteal artery is presented. Entrapment of the artery was recognised during attempted angioplasty by demonstration of extrinsic impression on the inflated balloon during forced plantar flexion. The importance of identifying this condition for definitive surgical management is stressed.

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Key words : - Popliteal artery, entrapment Thrombosis, Balloon angioplasty

Introduction

Popliteal artery entrapment syndrome is an uncommon entity resulting from an anomalous course of the artery in the popliteal fossa and/or an abnormal insertion of medial head of the gastrocnemius muscle or soft tissues of the knee joint. These cause transient, partial or complete occlusion of the popliteal artery during muscular activity of the lower extremity. The clinical presentation is of intermittent claudication, typically in a young male patient. Angiography plays a key role in the diagnosis of this condition and demonstrates entrapment by producing subtotal or total occlusion during flexion maneuveres of the foot (1,2). We present a case of popliteal artery thrombosis in which the diagnosis of entrapment in a totally occluded vessel could be established during balloon angioplasty.

CASE REPORT

An 18 year old, non smoking, sportsman presented with 4 year history of intermittent claudication in the right leg, accentuated sharply by physical activity and worsening in the last few months. Pedal pulses were diminished with low pressures (70 mm of Hg) on Doppler examination. There was no significant post exercise drop. Angiography performed at the referring hospital revealed total occlusion of a short segment of the middle third of the popliteal artery with reformation at the line of the knee joint (Fig.1). The distal runoff was good. Left popliteal artery and its branches were normal. Balloon angioplasty of the right popliteal artery was performed, using a 6mm x 4cm balloon catheter (Cordis Corporation, Miami, Florida). However, the post dilatation angiogram showed no change. Active plantar flexion and passive dorsiflexion of the foot with the balloon inflated in-situ revealed extrinsic impression on the lateral aspect of balloon, accentuated in plantar flexion, confirming popliteal artery entrapment (Fig.2). CT demonstrated a muscle mass widely separating the popliteal artery from the vein. The artery was close to the medial condyle in the intercondylar fossa and showed luminal thrombus. The left popliteal fossa, in contrast, was normal.

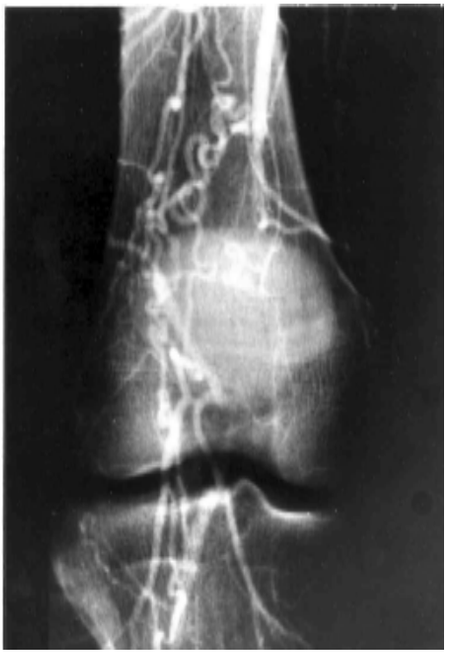

Fig.I. Femoral arteriogram showing occlusion of the middle third of popliteal artery

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The patient underwent surgical release of the entrapped, thrombosed popliteal artery. At surgery, multiple muscle slips from the lateral head of the gastrocnemius were seen crossing the popliteal artery on its posterior aspect. The muscle slips were excised. After thrombo endarterectomy of the occluded segment, vein patch closure of the arteriotomy was done. The post operative course was marked by improvement in pedal pulses and Doppler pressures returned to normal. Post operative angiogram showed a fully patent artery.

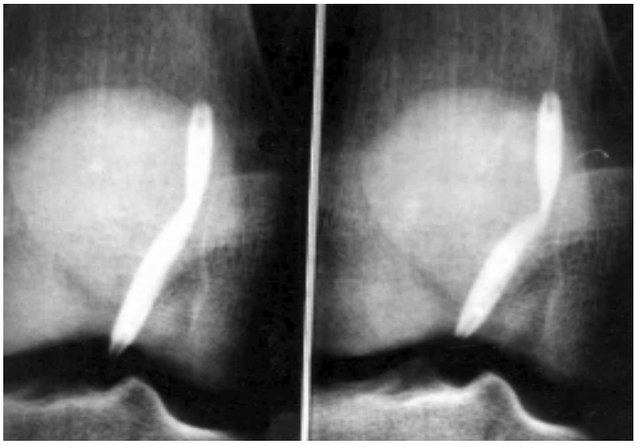

Fig.2. Inflated angioplasty balloon in the passive and forced plantar flexion positions Extrinsic lateral impression is accentuated in plantar flexion.

DISCUSSION

Popliteal artery entrapment is a rare but well known condition. Typically, the patients are young athletes given to muscular activity. The extrinsic compression of the vessel is caused by any one of the following; abnormal medial course of the vessel, abnormal insertion of the medial head of the gastrocnemius or accessory anomalous muscle or fibrous bundle encircling the artery. Recently popliteal vascular entrapment syndrome caused by a rare anomalous slip of the lateral head of the gastrocnemius muscle has also been described. (3) Angiography is the most reliable pre operative investigation for diagnosing the entrapment. The vessel may appear normal at rest but show a characteristic extrinsic indentation on the lateral wall when angiogram is done with the foot in active plantar flexion (1, 2). Occasionally, the vessel may be totally occluded due to repeated trauma produced by the entrapping muscle (4). Diagnosis in such cases may have to be clinical, with confirmation at surgery. Presently entrapment can also be demonstrated non invasively by CT and MRI (5).

In our patient, in spite of thrombosis of the artery, entrapment could be diagnosed pre operatively by demonstrating the tell tale impression on the inflated angioplasty balloon during the forced flexion maneuver. We, however, do not recommend this, as a routine test to diagnose popliteal entrapment. In our present case, if the CT examination had been performed beforehand, angioplasty would not have been attempted. Nevertheless, in cases where the CT or MRI findings are equivocal, this is a useful maneuver to perform particularly in younger patients subjected to angioplasty for isolated popliteal artery occlusion.

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