Aneurysm of saphenous vein graft after arterial reconstruction: case report

Aneurisma de enxerto de veia safena após reconstrução arterial: relato de caso

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Abstract

The saphenous vein is usually used as a conduit in vascular bypass. Its degeneration and aneurysm are rare and have unknown causes. This report comes from a male patient 32 years old, healthy, evolving, 19 years later of an arterial reconstruction with venous graft with the aneurysm of this graft. He was treated with replacement of it by PTFE bypass, evolving without complications. Microscopy showed dissection area of the graft wall with deposition of foam cells.

Keywords: aneurysm; saphenous vein; vascular grafting.

Resumo

A veia safena magna é usualmente utilizada como conduto em derivações vasculares. Sua degeneração e dilatação aneurismática são raras e têm causas desconhecidas. Este relato trata-se de um paciente masculino de 32 anos, hígido, que evolui, 19 anos depois de uma reconstrução arterial com enxerto venoso, com o aneurisma do enxerto. Foi tratado com substituição do mesmo por prótese de PTFE, evoluindo sem intercorrências. A microscopia mostrou área de dissecção da parede do enxerto com deposição de células espumosas.

Palavras-chave: aneurisma; veia safena; enxerto vascular.

Introduction

The greater saphenous vein is usually used as a graft to reconstruct arteries, and most surgeons consider it the most effective and long-lasting infrainguinal graft. Degeneration and aneurysm formation related to this graft are extremely rare[1].

The cause of venous graft degeneration remains unknown[1,2], and some authors mistake it for atherosclerosis[3] or a process of blood vessel dilation[4]. Histopathological investigation has shown proliferative and fibrous lesions in the intima that lead to a significant weakening of the vein wall, favoring graft aneurysm formation[5].

Aneurysmal dilation of the greater saphenous vein when used in bypass surgery has been reported in literature[5,6]. However, there are reports on such occurrence with aorto-renal[7], iliac-femoral[8], carotid-carotid[9], and infrainguinal bypass grafts[1,2].

Most patients are asymptomatic, and may present a pulsatile mass when the graft is in a superficial position. Just as in the case of true arterial aneurysms, symptoms of compression on adjacent structures may be present. True graft aneurysms tend to rupture or to form fistulas with adjacent organs if not adequately treated, and these conditions are potentially fatal.

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Case report

We report the case of a 32-year-old male patient. He had a history of systemic arterial hypertension (SAH) under treatment, denied smoking and alcohol consumption, and did not have diabetes or dyslipidemia. Nineteen years earlier he had been subjected to left lower limb superficial femoro-femoral bypass with reversed contralateral saphenous vein graft because of a gunshot lesion of the superficial femoral artery. Three months earlier he noticed a pulsatile mass on the left thigh right underneath his surgical scar. The mass was painless and presented slow growth. He denied claudication or history of trauma. On physical examination, he had normal femoral, popliteal, posterior tibial and dorsalis pedis bilateral pulses, with good limb perfusion. A 3cm in diameter pulsatile mass of was identified at the anteromedial aspect of the left thigh along the course of the femoral vessels.

Doppler ultrasonography (Figure 1) showed an aneurysmal formation on the site of previous grafting measuring 3.78 cm in diameter, presenting blood flow and thrombus formation. Arteriography of the left lower limb (Figure 1) confirmed the graft aneurysm, without alterations suggesting atherosclerosis or aneurysm in other sites.

The patient was then submitted to aneurysm resection and arterial reconstruction with an 8-mm PTFE femoro-femoral graft (Figure 2). After the operation, pulses were present and the limb had good perfusion. The patient had an uneventful postoperative period and was discharged on the fifth day after the procedure.

Ten days after hospital discharge, the patient was examined at the outpatient clinic. The surgical wound was healing, so the skin sutures were removed. The patient returned to his daily activities 30 days after the procedure, without limitations. At 90 days, he was examined and had no complaints; all pulses were present and limb perfusion was good. Histological analysis of the surgical specimen (Figure 3) showed intimal graft dissection with foam cells identified as histiocytes, fibrin and collagen as the cause of the aneurysm.

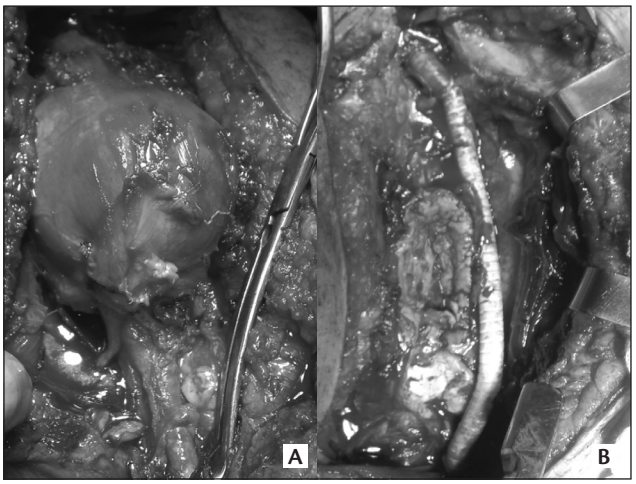

Figure 2. Intraoperative view. (A) Resected true vein graft aneurysm; (B) Vein reconstruction with PTFE after aneurysm resection.

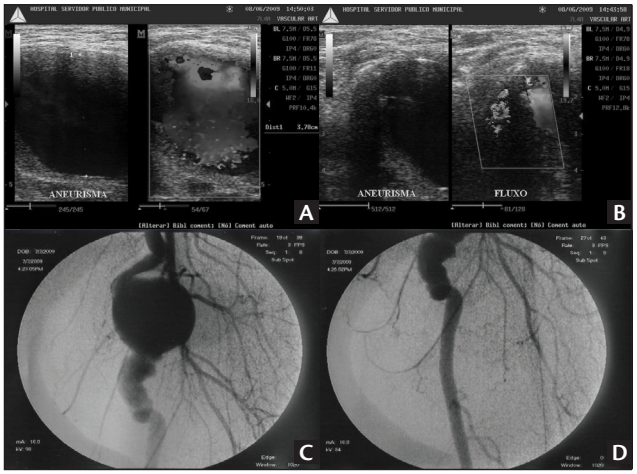

Figure 1. Diagnostic examinations. (A) Color Doppler ultrasound showing cross-sectional vein graft aneurysm; (B) Longitudinal view of the aneurysm proximal neck; (C) arteriography of the left lower limb showing true vein graft aneurysm at the left superficial femoral artery; (D) details of the true vein graft aneurysm distal neck.

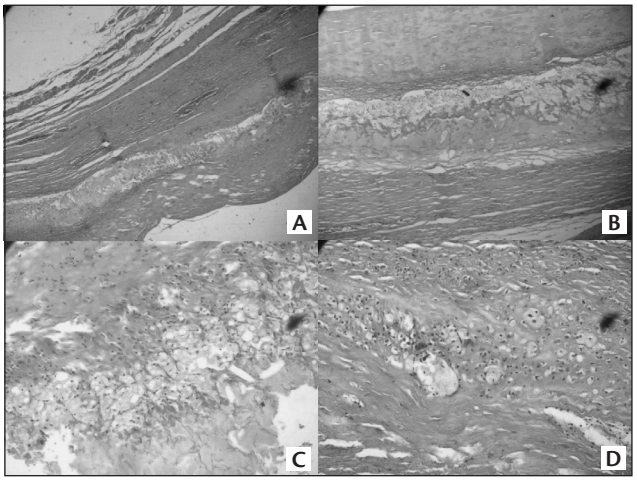

Figure 3. Microscopic analysis. (A) Graft wall between intima and media layers showing false lumen with foam histiocytes (40 X); (B) Dissection of the graft wall with foam histiocyte, fibrin, and collagen deposition (200 X); (C) and (D) foam histiocyte fibrin, and collagen deposition (400 X). Tissues stained with hematoxylin and eosin.

Discussion

Aneurysms of saphenous vein grafts are rare occurrences[1,2,6,9]. The literature on the subject is comprised only of case reports, so data on its etiology and clinical evolution are inconsistent. Cassina et al.[3] stated that vein graft aneurysms are caused by the progression of atherosclerosis, with subendothelial lipid deposits and foam cell formation, but other etiopathogenic factors and mechanisms could be involved. Corriere et al.[2] emphasized the rarity of this clinical picture and report the association of inflammatory processes and media-intimal degeneration on the graft wall. Recently, Bikk et al.[1] mentioned atherosclerosis as cause of a saphenous vein graft aneurysm in the femoro-popliteal position, and reinforced the importance of adequate treatment to prevent rupture. Nishibe et al.[4] reported a case of vein graft aneurysm considered as a part of a systemic disease. Analysis of the vein wall showed degenerative process only, with no evidence of atherosclerosis.

We reported the case of a patient who had a relatively simple diagnosis and slow growth aneurysm. Differential diagnosis should include anastomotic pseudoanerysm, which is a far more common entity compared to true vein graft aneurysm. The diagnosis is made by color Doppler ultrasound, and arteriography, which allows adequate surgical planning and provides important information on the arterial branches of the affected limb.

Replacement of the vein graft by a plastic prosthesis was the choice in this case, in order to avoid a new venous dilation on the same site. Special attention should be given to the technical difficulty of a reoperation with fibrosis and perigraft adherences. Care should be taken to prevent injury to adjacent structures and rupture during the procedure.

Microscopic analysis showed foam cells in the vessel wall starting from the dissection site. We believe that these events might have caused weakening of the vessel wall and thus led to graft dilation.

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