Case report

Proximal pseudoaneurysm of ascending-abdominal aortic bypass

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Abstract

Proximal pseudoaneurysm of ascending-abdominal aortic bypass is an uncommon surgical disease. We report a repair of complete detachment of proximal anastomosis of the ascending-abdominal aortic bypass in a 68-year-old man that underwent surgery in 1988 for chronic descending thoracic aortic aneurysm treated with thromboesclusion technique. The clinical, diagnostic, and operative aspects are discussed.

Keywords: Aortic aneurysm; Vascular surgery; Pseudoaneurysm; Aortic by-pass; Complication

1. Introduction

The pseudoaneurysm, or false aneurysm, is a typical complication of cardiovascular surgery that may occur at the site of any anastomosis. Treatment is usually surgical, although some localized aortic and peripheral vascular segments can be treated differently [1]. This report describes a repair of complete detachment of proximal anastomosis of ascending-abdominal aortic bypass. The clinical, diagnostic, and operative aspects are discussed.

2. Case report

A 68-year-old male patient with intermittent dysphagia and dyspnea was referred for suspected proximal pseudoaneurysm of ascending-infrarenal abdominal aortic 22 mm Dacron-graft bypass. He had been submitted on surgery 12 years before, in another hospital, for chronic descending thoracic aortic aneurysm treated with thromboesclusion Carpentier’s technique [2]. A CT scan performed 1 month before hospitalization showed a false aneurysm at the site of the ascending-to-graft anastomosis (Fig. 1). Cardiac and aortic catheterization confirmed the diagnosis (Fig. 2), with satisfactory left ventricle function and normal coronary arteries. Anti-hypertensive therapy was discontinuously protracted by 10 years; the echocardiogram showed moderate left ventricle hypertrophy with normal aortic valve function. Normal leukocytosis and apyrexia were documented.

Treatment consisted in a surgical repair of complete proximal graft detachment. Specimens of the partial removed graft and periaortic tissues were negative. The patient was discharged to home after 8 days. The 3 months CT-scan follow-up has shown a normal aortic-to-graft anastomosis and the clinical evaluation control has been negative for presence of dysphagia and dyspnea.

3. Surgical technique

The surgical approach consisted of primary double arterial cannulation using a 20 Fr cannula for right axillary artery and a 22 Fr one for right femoral artery. The right femoral vein was used as venous access. The CT-scan showed absence of adhesions between the internal chest wall and the pseudoaneurysm, so a re-do median sternotomy was performed. Vent was positioned in pulmonary artery and cardiopulmonary bypass was instituted with a 0.9 l/min and 2.1 l/min rate flow (body surface area was 1.49 and venous oxygen saturation >75%) through axillary and femoral cannulae, respectively, using two separated pumps. When 28°C in rectal temperature was reached, distal ascending aorta and supradiphragmatic graft were clamped. After ascending aortotomy, cold cristalloid cardioplegia was selectively infused into coronary ostii. A complete ascending-to-graft anastomosis detachment was revealed with no macroscopic signs of infections. After accurate removal of thrombus, we re-sutured the Dacron-graft to the ascending aorta, directly, using running 4/0 polypropylene suture. Cardiopulmonary bypass time and aortic cross-clamping time were 102 and 40 min, respectively.

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4. Discussion

The thromboesclusion technique with flow reversal is a surgical option initially described by Shumacker in 1959 [3] and revived by Carpentier [2] for the treatment of dissecting aneurysms. Successfully it has been indicated for different vascular diseases, like acute type B aortic dissections exclusively [4], complex aortic coarctation, aortoiliac occlusive disease [5], aortic graft infections and thoracic or thoracoabdominal aortic aneurysms [6]. Irrespective of type of lesion treated with this method, all these experiences are limited and present intraoperative mortality (20–35%) [4,6,7], paraplegia (10–25%) [7,8], recurrence of the aortic aneurysms [7] and late deaths related to rupture of the excluded aorta [6]. The perianastomotic pseudoaneurysms can be due to many different causes, as suture failure, graft infection, overtensed graft anastomosis and progressive disease of vascular wall-like aortic dissection, Marfan syndrome, degenerative aneurismal tissue, endoarterectomy of the vessels, medial wall degeneration, re-operation for graft infection and previous mycotic aneurysm history. In patients that are submitted on redo surgery for ascending-arch aortic lesions, reopening the chest always exists the risk of mediastinal rupture and patient’s exsanguination. For this reason, often, the sternotomy is performed first going down to deep hypothermia. In this case the surgical approach has included a re-do median sternotomy at moderate hypotermia and beating heart because the preoperative CT-scan showed presence of free space between internal chest wall and the pseudoaneurysm or the ascending aorta so to permit us to avoid, safely, deep hypothermic circulatory arrest. The separate double arterial way cannulation was used in order
to perfuse cerebral and visceral districts after ascending aortic and distal graft cross-clamping or, in case of rupture during surgical management. The routine treatment of the false aortic aneurysms is surgical, choosing in-situ re-do surgery with conservative techniques [9], or extra-anatomic graft bypass [10], depending on the presence of infective pathogenesis. We decided to perform a conservative procedure because the patient showed absence of leukocytosis, complete apirexia and no any other suspected clinical and intraoperative infective sign. In this case, in which results of the bacteriological surgical samples were negative, a broad spectrum antibiotic, as cefazoline, with high activity against Staphylococci, much involved in aortic graft infections, was postoperatively used. In case of absence of preoperative clinical and laboratory infective signs with graft specimen proved infected, a therapeutic option can be represented by a chronic specific antibiotic therapy, monitoring closely the patient with echocardiography, scintigraphy and CT scan, and adopting an extra-anatomic graft bypass in case of chronic medical therapy failure.

References