In Situ Coronary-Coronary Bypass Grafting for a Huge Left Coronary Aneurysm

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Surgical treatment for an atherosclerotic huge coronary aneurysm is very rare. We have reported 58 years old male who had a huge growing aneurysm in left circumflex coronary artery and underwent aneurysmectomy and coronary-coronary bypass grafting with saphenous vein.

Keywords: coronary aneurysm, coronary-coronary bypass grafting, saphenous vein graft

Introduction

Coronary artery aneurysms except Kawasaki disease are extremely rare without fistula. We report a rare atherosclerotic coronary aneurysm undergone in situ repair of left circumflex coronary artery (LCX) system utilizing saphenous vein graft.

Case Report

A 58-year-old man was admitted to a district hospital at the age of 53 for evaluation of progressive chest pain, diagnosed as acute myocardial infarction (right coronary artery [RCA] region) and recovered from direct percutaneous coronary intervention (PCI) for RCA.

Follow-up coronary arteriography (CAG) after 1 year revealed a large coronary artery aneurysm in LCX (30 mm in diameter) and which was followed up.

CAG after 3 years (57 years old) showed a huge growing coronary artery aneurysm in LCX containing thrombus inside examined by intravascular ultrasound (IVUS). Cardiac computed tomography (CT) also showed a huge LCX aneurysm with rich thrombus (53 × 47 mm; Fig. 1a). Echocardiography showed the compression of left ventricle from outside at the inferior wall by this huge aneurysm.

We decided to operate this patient due to progressive enlargement of the aneurysm and compression of left ventricle.

Our surgical strategy involved the exclusion of the aneurysm and revascularization with saphenous vein bypass in direct end to end anastomosis because of the size matching.

On June 2009, the patient underwent resecting and grafting the coronary artery aneurysm under aortic clamp on cardiopulmonary bypass (CPB). A large aneurysm measuring approximately 53 × 47 mm in diameter was located in the atrio-ventricular groove along the course of LCX (Fig. 1b).

Aneurysm was heavily adhered to the epicardium. Complete resection of the aneurysm was found to be impossible, then, the aneurysm was opened. Fresh and old thrombus was loosely and heavily adhered to the wall like abdominal aneurysm.

A reversed autologous saphenous vein was interposed between the both ends of circumflex coronary artery and anastomosed with continuous 7.5–0 polypropylene suture (Fig. 2a).

The histology showed the atherosclerotic aneurysm formation without congenital malformation.

Four years after operation, Cardiac CT (Fig. 2b) and CAG showed no recurrent aneurysm formation of LCX without ischemic sign.
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Discussion

The majority of reported aneurysms seen in childhood have been secondary to the existence of congenital arterio-venous fistulae with shunt and probably not true aneurysm, but aneurysmal dilatation.

Localized aneurysm could be due to atherosclerosis or other inflammatory disease such as Kawasaki disease. In our case, no arterio-venous fistula was detected. Histology revealed atherosclerotic alteration of the vessel without any sign of specific inflammation, resulting in an atherosclerotic etiology.

The technique of end to end anastomosis is commonly employed for the other type of vascular surgery, and the dilated proximal aspect of the coronary artery was quite similar in size of the autologous saphenous vein, thus in situ end to end anastomosis was preferably chosen.

Coronary aneurysm occurs most frequently in the right

Fig. 1 (a) Preoperative Cardiac computed tomography (CT) showed a huge left circumflex coronary artery (LCX) aneurysm (53 × 47 mm) with severe calcification. (b) Operative picture of opened LCX aneurysm.

Fig. 2 (a) Operative picture of coronary-coronary artery bypass grafting with saphenous vein (saphenous vein was just fit for the size of native calcified coronary artery). (b) Postoperative Cardiac computed tomography (CT) showed smooth bypass grafting for the calcified vessel.
coronary artery, approximately 50%. In 1971, Ebert, et al.\(^1\) excised a solitary large aneurysm of the LCX and interposed a reversed segment of saphenous vein autograft. In 2004, Bruhin, et al.\(^2\) reported repair of left main trunk (LMT) aneurysm by saphenous venous graft (SVG). In 1999, Harandi, et al.\(^3\) presented an overview about the so far published techniques; apart from above mentioned principals of surgical treatment thrombectomy and aneurysmorrhectomy.

We reported the extremely rare atherosclerotic coronary aneurysm in LCX and which was successfully repaired with in situ coronary-coronary bypass grafting with SVG.

**Disclosure Statement**

Authors have no conflict of interest nor anything to disclose.

**References**