Case Report

CABG Surgery with Long Coronary Endarterectomy of the LAD

Jan D. Schmitto, MD, PhD,1 Philipp Kolat, MD,1 Philipp Ortmann, MD,1 Aron F. Popov, MD, PhD,1 Kasim O. Coskun, MD, PhD,1 Christian Sohns, MD, PhD,3 Jose Hinz, MD, PhD,2 and Friedrich A. Schoendube MD, PhD1

Diffuse atherosclerosis of the anterior descending artery may require unconventional surgical treatment to increase graft flow. A 74-year-old man with severe, diffuse 3-vessel-coronary artery disease was presented to our institution with progressive angina pectoris symptoms. Intraoperatively, the revascularization of the left anterior descending coronary artery (LAD) was technically challenging because of the extremely calcified coronary artery disease; therefore we performed the longest endarterectomy of the LAD that has thus far been described. (Ann Thorac Cardiovasc Surg 2010; 16: 445–447)

Key words: coronary endarterectomy, coronary artery bypass graft, thrombendarterectomy

Introduction

Diffuse atherosclerosis of the anterior descending artery may require unconventional surgical treatment, such as endarterectomy, to increase graft flow. A surgeon may choose from different techniques (local; closed endarterectomy with distal traction; or open, direct vision endarterectomy) and may combine it with vein patches or an implantation of bypass grafts, e.g., internal thoracic artery (ITA) or saphenous vein graft.1) Some literature does not describe an increase in perioperative risk from left anterior descending coronary artery (LAD) endarterectomy when compared to patients undergoing coronary artery grafting without it.2) In this paper, we describe the longest endarterectomy of the LAD that has until now been performed.

Case Report

We report on a case of a 74-year-old man with severe diffuse coronary artery disease (Fig. 1a) who was presented with progressive angina pectoris symptoms of two-month duration. Coronary angiography verified progressive coronary 3-vessel disease with significant stenoses of all main coronary branches (LAD, 99%; Cx, 80%; RCA, 90%), moderate decreased systolic left-ventricular function, and ST elevations in II, III, and aVF. For these reasons, an indication for surgical revascularization was given. The patient’s history revealed an existence of arterial hypertension, diabetes mellitus Type II, hypercholesterinemia, and in 1998 the performance of percutaneous transluminal coronary angioplasty (PTCA) of the left coronary artery.

In the Department of Thoracic, Cardiac, and Vascular Surgery at the University of Goettingen, Germany, we performed a coronary artery bypass graft (CABG) with three single-vein grafts to the diagonal branch (DB), right posterior descending artery (RPD), and left posterolateral circumflex artery (LPL). Furthermore, an arterial graft...
(left internal thoracic artery [LITA] to LAD) with a very long (11 cm) combined open and closed coronary endarterectomy (CE) (Fig. 1b) and an additional implantation of a venous patch graft was performed to guarantee safe anastomosis between the arterial graft and the calcified artery. Intra- and postoperative processes were uneventful and showed no complications. During intensive care (IC), hemodynamic conditions were stabilized, and the patient was moved to a normal ward on postoperative day 2. Following complete uneventful mobilization, he was discharged from the hospital after eight days and was sent to further rehabilitative therapy. Anticoagulation therapy was performed with a combination of aspirin and coumarin derivates, which the patient received for more than six months postoperatively.

Two years later, the patient was reevaluated by echocardiography, computed tomography (CT) scan (Fig. 2), and physical examination. He still showed a relief of symptoms, no clinical signs of further myocardial ischemia, and an increased diameter of the LAD verified by CT scan of the coronary arteries (Fig. 2).

This case describes the longest coronary endarterectomy (11 cm) that has been described in literature. A surgical procedure of such a long combined open and CE is rarely necessary, but in case of performance, it guarantees a significant increase of diameter at localization of the CE and therefore increases the long-term outcome of patients.

**Discussion:**

CABG is a routine procedure worldwide to revascularize ischemic myocardium of patients with severe coronary
artery disease. Because of technical and demographic development (including an increase of elderly and multi-morbid people), cardiac surgeons are often confronted with patients suffering from severe and diffuse calcified coronary artery disease. Although the total amount of operative interventions remains stable, the severity of procedures has risen. Elderly patients with diffuse calcified atherosclerosis of several coronary arteries, especially of the smaller branches, are not amenable to stenting and angioplasty; thus cardiological methods are limited. Therefore it is important to offer a valuable treatment methods (e.g. minimally-invasive surgical techniques or coronary endarterectomy (CE)) that starts where possibilities of conservative medicine end. Since Bailey’s first coronary endarterectomy in the late ‘50s, controversial debates on the efficiency of coronary CE were held. Higher rates of morbidity and mortality were the frequent points of criticism and forced CE to play a role of second importance. Thus it is important to focus on current results, to rethink this alternative, and to reevaluate the indication for this surgical technique. Indication for CE must still be handled restrictively.

Conclusion

Indication for CE must still be handled restrictively. It should be performed only on occluded, nearly occluded, and/or calcified vessels with long-range stenoses if regular anastomoses between graft and coronary artery seem to be technically impossible. The decision to perform this very long endarterectomy was therefore made intraoperatively, based on the local findings on this patient with extremely severe calcified atherosclerosis.

References