



ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/ihj

Case Report

Left main reconstruction as an alternative method to CABG after primary PCI complication



Konstantinos Lampropoulos^{a,*}, Charalampos Kavouras^a,
Christos Charitos^b

^a Department of Cardiology, Catheterization Laboratory, Evaggelismos General Hospital of Athens, Greece

^b Department of Cardiothoracic Surgery, Evaggelismos General Hospital of Athens, Greece

ARTICLE INFO

Article history:

Received 13 December 2014

Accepted 29 March 2015

Available online 15 April 2015

Keywords:

Left main reconstruction

Coronary artery bypass grafting

Percutaneous coronary intervention
complication

Acute coronary syndrome

ABSTRACT

Left main coronary artery disease is rare, accounting for 1% of all coronary artery disease and traditionally, is treated by coronary artery bypass grafting. We report our experience and five years follow up, after a coronary ostial surgical plasty in a young man who referred to our center with an anterior myocardial infarction.

Copyright © 2015, Cardiological Society of India. All rights reserved.

1. Introduction

Left main coronary artery (LMCA) disease is defined as >50% stenosis, it is well known that this is a critical lesion with a poor prognosis. The majority of the left ventricle is supplied by the LMCA stem and any ischemic insult may lead to hemodynamic compromise. Isolated LMCA stenosis accounts for less than 1% of all cases of coronary artery disease.¹ Improvements in stent technology and antiplatelet therapy have broadened the indications for percutaneous coronary intervention (PCI), and results from the SYNTAX trial have recognizing PCI as at least equivalent results to coronary artery bypass grafting (CABG) for lower-severity LM lesions at up to five years of follow-up. However, concerns over unprotected

left main stem PCI continue to be raised, particularly regarding stent restenosis and higher long-term rates of repeat revascularization.²

Coronary ostial plasty has been described as an alternative surgical technique in proximal obstructive coronary artery disease without calcifications.³

We review our experience after a coronary ostia plasty in a young man who referred to our center with an anterior myocardial infarction.

2. Case presentation

A 50 years old patient underwent a primary PCI within one hour after his admission suffering from anterior myocardial

* Corresponding author. Department of Cardiology, Catheterization Laboratory, Evaggelismos General Hospital, 31, L. Porfyra Str., 16673 Athens, Greece. Tel./fax: +30 2108950863.

E-mail address: konlampropoulos@yahoo.gr (K. Lampropoulos).

<http://dx.doi.org/10.1016/j.ihj.2015.03.018>

0019-4832/Copyright © 2015, Cardiological Society of India. All rights reserved.

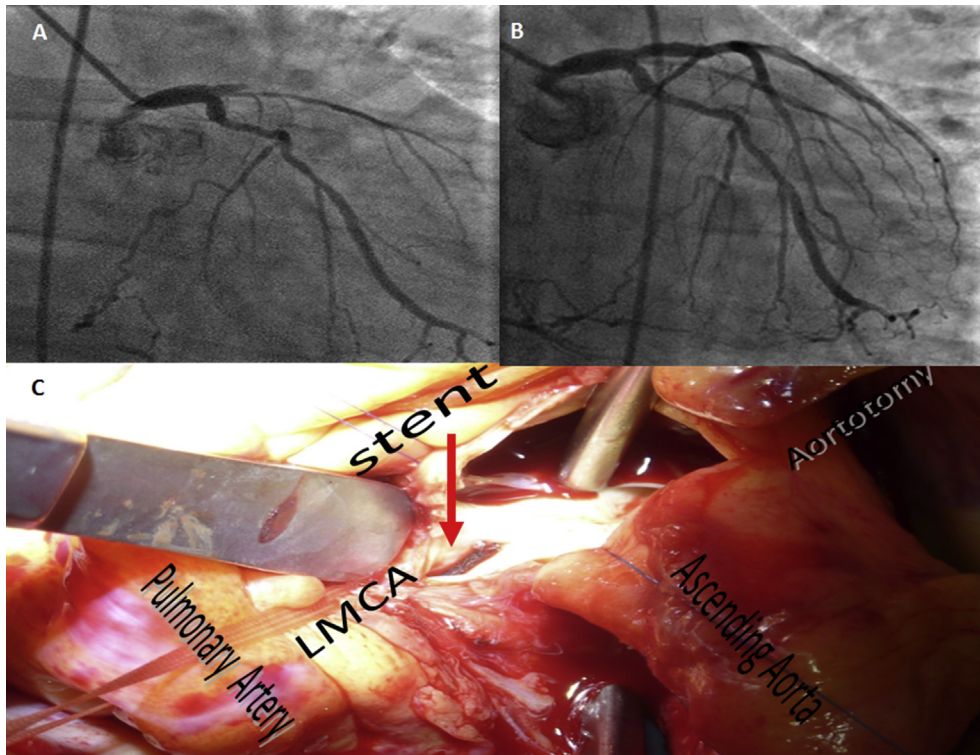


Fig. 1 – A. The coronary angiography revealed a total occlusion at the distal part of LMCA. **B.** The coronary angiography shown the left coronary artery after thrombus aspiration and balloon dilatation in order to prepare the vessel but during the stenting, failure of the stent deployment occurred, resulting in stent loss. The stent got stuck in the LMCA and it couldn't be retrieved. **C.** After placing the patient on cardiopulmonary bypass and aortic cross clamping, the main pulmonary trunk was retracted laterally. The LMCA was approached anteriorly through a curved aortotomy, extending along the LMCA. The stent was removed with a small traction.

infraction. The patient was loaded with double antiplatelet therapy and was admitted to Cath lab. The coronary angiography revealed total occlusion at the distal part of LMCA [Fig. 1A].

During the primary PCI at distal part LMCA occlusion, thrombus aspiration was decided, after which revealed significant stenosis. Initially we used a balloon to prepare the vessel but during the stenting, failure of the stent deployment occurred, resulting in stent loss [Fig. 1B]. The stent got stuck in

the LMCA and couldn't be retrieved. After this complication, the patient was immediately transferred for coronary surgery and an ostial angioplasty was decided to be the further appropriate procedure.

After placing the patient on cardiopulmonary bypass and aortic cross clamping, the main pulmonary trunk was retracted laterally. The LMCA was approached anteriorly through a curved aortotomy, extending along the LMCA. The stent was removed with a small traction [Fig. 1C].

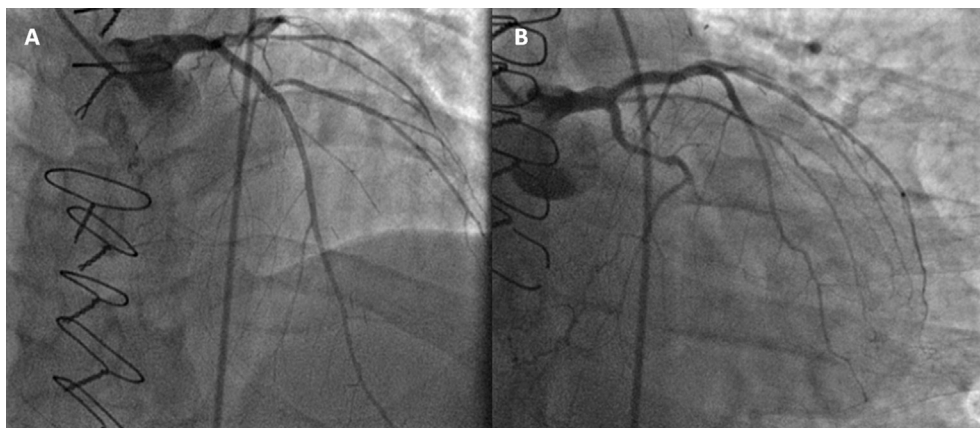


Fig. 2 – A, B. Five years later the coronary angiography revealed patient LM without any stenosis.

Reconstruction was performed using an autologous saphenous vein patch.

There were no complications during or after the procedure. The patient followed-up with transesophageal echocardiography at six months which demonstrated a wide opened LM coronary artery with normal flow pattern by pulsed-wave Doppler, and no aneurysmal dilatation or calcification of the patch. Five years later the patient underwent follow-up coronary angiography. The coronary angiography revealed patient LM without any stenosis [Fig. 2 A,B].

3. Discussion

Surgical reconstruction of the LMCA is a safe and effective procedure for the treatment of isolated stenosis of the LMCA, in selected cases. The use of autologous pericardium appears to be as safe as saphenous vein patch. The most widely used patch materials are saphenous vein (239 cases) and pericardium (169 cases), although the internal mammary artery (IMA) and the pulmonary artery (PA) have also been utilized as graft materials (66 and four cases, respectively).¹ The saphenous vein is used by a number of surgeons because of its size and character allowing simple creation of a funnel-shaped ostium.⁴ Due to high elastic properties with a tendency to dilate easily,⁵ and the smooth muscle cell migration and an accelerated intimal hyperplasia may result to long-term restenosis.⁴ The IMA patch graft closely mimic the characteristics of the native coronary artery,⁵ but may be limited by the requirement for conduit harvest, thus negating a potential benefit of surgical patch angioplasty (SPA). The pericardium is easily harvested, readily available and allows for the preservation of future conduit material. However, its lack of fibrinolytic properties may theoretically promote calcification and subsequent restenosis.

SPA is an alternative to CABG in the surgical management of isolated ostial LMCA stenosis especially, in young patient cohort. In our patient we take decision to proceed for SPA because SPA restores the patency of the occluded coronary artery segment and provided a physiological antegrade coronary blood flow without the need of CABG. An alternative treatment to our case report could be off-pump CABG with grafts to LAD and OM and leave the stent alone. The

advantages of the off-pump option will be less consumption of blood product and avoiding cardiopulmonary bypass (CPB). But has the problem of competitive flow between graft and coronary artery.

SPA is a technically demanding procedure which is currently utilized by a selected number of skilled surgeons and certain limitations must be carefully taken into consideration in selecting the appropriate surgical candidate. While age and poor ventricular function do not preclude patients from SPA, angiographically evident calcification and stenosis extending beyond the ostium may not only lead to intra-operative difficulties but also negatively influence both short- and long-term morbidity and mortality.

Conflicts of interest

All authors have none to declare.

REFERENCES

1. Harling L, Sepehripour AH, Ashrafiyan H, et al. Surgical patch angioplasty of the left main coronary artery. *Eur J Cardiothorac Surg.* 2012;42:719–727.
2. Windecker S, Kolh P, Alfonso F, et al. 2014 ESC/EACTS guidelines on myocardial revascularization: the Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic surgery (EACTS). Developed with the special contribution of the European Association of Percutaneous Cardiovascular Interventions (EAPCI). *Eur Heart J.* 2014;35:2541–2619.
3. Martinovic I, Greve H. Surgical reconstruction of the left main coronary artery with patch-angioplasty. *J Cardiothorac Surg.* 2011;6:24.
4. Raanani E, Kogan A, Shapira Y, Sagie A, Kornowsky R, Bernardo A. Surgical reconstruction of the left main coronary artery: fresh autologous pericardium or saphenous vein patch. *Ann Thorac Surg.* 2004;78:1610–1613.
5. Suma H, Amano A, Nabuchi A. Left main coronary artery patch plasty with internal mammary artery. *Cardiovasc Surg.* 1994;2:223–225.