Case Report

Emergency Coronary Artery Bypass Graft Surgery for Iatrogenic Left Main Coronary Artery Dissection

Masoud Tarbiat, MD, FSCA, Gholamreza Safarpoor, MD

Ekbatan Heart Hospital, Hamedan University of Medical Sciences, Hamedan, Iran.

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Abstract

Iatrogenic coronary artery dissection during coronary angiography with or without rupture is a rare but feared complication. We herein report a case of iatrogenic left main coronary artery dissection in a 49-year-old female. Admitted to our hospital with a recent history of severe hypotension, she developed apnea during angiography. She was intubated and resuscitated with an Epinephrine infusion in the Cath-Lab. The diagnosis was iatrogenic left main coronary artery dissection based on angiography. Immediately, the patient was transferred to the operating room in a lethargic state with an Epinephrine infusion and prepared for emergency coronary artery bypass graft surgery. In the ICU, she was completely alert with no hemodynamic complications and finally was discharged in a good overall condition. At 18 months’ follow-up, the patient was in a stable situation with good daily function.


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Introduction

Iatrogenic left main coronary artery (LMCA) dissection, induced by catheter insertion, is one of the most feared complications, albeit with a reported incidence rate of less than 0.1%. Its occurrence can have devastating consequences, if not promptly treated with immediate revascularization. The LMCA dissection often leads to abrupt vessel closure and cessation of the blood flow toward a large portion of the myocardium, resulting in acute pump failure and hemodynamic collapse. Conservative treatment may be adequate for limited dissections, but extensive dissections with pericardial extravasation require immediate treatment. Both emergency coronary artery bypass graft surgery (CABG) and use of covered stents constitute effective in treatment for the LMCA dissection.

Here we present a case of iatrogenic LMCA dissection following angiography, which was treated successfully with emergency CABG.

Case Report

A 49-year-old obese opium-addicted female patient with a history of mild hypertension, asthma, and chest pain of 3 months’ duration was admitted for coronary angiography in July 2012. In the Cath-Lab during angiography, she developed severe hypotension and apnea. Therefore, she was intubated and resuscitated with an Epinephrine infusion without delay. The intubated patient was subsequently referred to our
hospital for emergency coronary artery bypass graft surgery (CABG). Coronary angiography reported the dissection of the left main coronary artery (LMCA) (Type B), extending to the immediate distal portion of the left anterior descending artery (LAD) and the mid portion of the left circumflex artery (LCX) (Figures 1 and 2). Echocardiography revealed ejection fraction of 55%.

![Figure 1. left anterior descending (LAD) artery dissection (arrow) in a coronary angiogram (right anterior oblique view)](image1)

![Figure 2. Left main coronary artery dissection, extending to the left anterior descending (LAD) and left circumflex (LCX) arteries (Type B) in the right anterior oblique view (arrows)](image2)

On admission, the patient was still intubated and was in a stable hemodynamic state with an Epinephrine infusion. Without delay, she was transported to the operating room in a lethargic state and was prepared for the induction of anesthesia. In the operating room, the patient was monitored via standard electrocardiography and pulse oximeter. The veins on both arms were cannulated with 16-G catheters under local anesthesia with Lidocaine (1%). The catheter was inserted in the left radial artery to monitor blood pressure. The patient was induced with Sufentanil (50 μg), Etomidate (14 mg), and Cisatracurium (14 mg). Anesthesia was maintained using an infusion of Propofol (50-75 μg/kg/min), Sufentanil (2 μg/kg/h), Cisatracurium (2 μg/kg/min) and Dexamethasone (8 mg). Additionally, a vitamin C infusion (500 mg) was administered. Subsequently, a tri-lumen catheter was inserted in the right subclavian vein.

Under general anesthesia, median sternotomy was performed, followed by the harvesting of the left internal mammary artery (LIMA) and the greater saphenous vein from left lower extremity. Operative findings confirmed the dissection and that it extended up to the immediate distal portion of the LAD and the mid portion of the LCX (Figure 3). Systemic Heparinization (300 IU/kg) was commenced, and aortic and atrial purse sutures were applied with 2/0 Prolene. Thereafter, the ascending aorta and the right atrium were cannulated (two-stage cannulae), cardio-pulmonary bypass was established, and systemic cooling was continued to reach 33 °C. Next, aortic cross-clamping was performed, followed by the infusion of an antegrade cold cardioplegic solution into the aortic root, achieving complete cardiac arrest (cold blood). Using 8/0 Prolene, the LIMA and saphenous vein graft (SVG) were anastomosed to the distal portions of the LAD and the LCX, respectively. All the grafts were positioned and checked successfully. Return of normal sinus rhythm was uncomplicated following rewarming. Weaning from cardiopulmonary bypass was performed with a low-dose Epinephrine infusion (0.05 μg/kg/min).

![Figure 3. Intraoperative view of the left anterior descending (LAD) artery dissection (arrow)](image3)

The operation was uneventful, and the patient was transferred to the Open Heart Intensive Care Unit, where she was extubated after 6 hours in complete alertness and without any hemodynamic complications. She was finally...
Iatrogenic LMCA dissection is a rare complication of coronary angiography procedures with favorable early and long-term outcomes when recognized timely and managed properly. Furthermore, emergency CABG is still an acceptable option for the treatment of this complication.
References


