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Total arterial anaortic off-pump coronary artery bypass grafting in a patient with heart failure – Case report

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ABSTRACT

A 69-year-old male diabetic patient of heart failure underwent successful off-pump coronary artery bypass grafting (CABG) using both internal thoracic arteries and left radial artery. There was improvement of left ventricular ejection fraction within 4 days. This is the first ever case report of off-pump CABG in a heart failure patient.

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1. Introduction

Coronary artery bypass grafting (CABG) in patients with heart failure and reduced left ventricular ejection fraction (LVEF) carries high risk. Off-pump CABG (OPCAB) techniques in such patients are undefined. Low LVEF with dilated heart is often considered a contraindication of OPCAB in medical literature because of risk of conversion to cardiopulmonary bypass. We present here a patient admitted with heart failure and LVEF of 10% which after intensive medical therapy improved to 15%. He underwent successful OPCAB with aortic-no-touch technique using both internal thoracic arteries (ITAs) and left radial artery (RA).

2. Case report

A 69-year-old male diabetic patient was admitted with acute left ventricular (LV) failure and was treated with intensive decongestive therapy. He had severe peripheral edema and bilateral basal crepitations. Initial workup revealed normal levels of troponine (<0.01 ng/ml) and CPK-MB (4.6 ng/ml), thereby ruling out acute coronary syndrome. The level of BNP was 1230 pg/ml confirming the diagnosis of heart failure. Echocardiographic assessment revealed LVEF of 10% with dilated cardiac chambers, and estimated pulmonary artery systolic pressure (PASP) was 70 mm of Hg with features of raised LV diastolic pressure. Angiography was performed after

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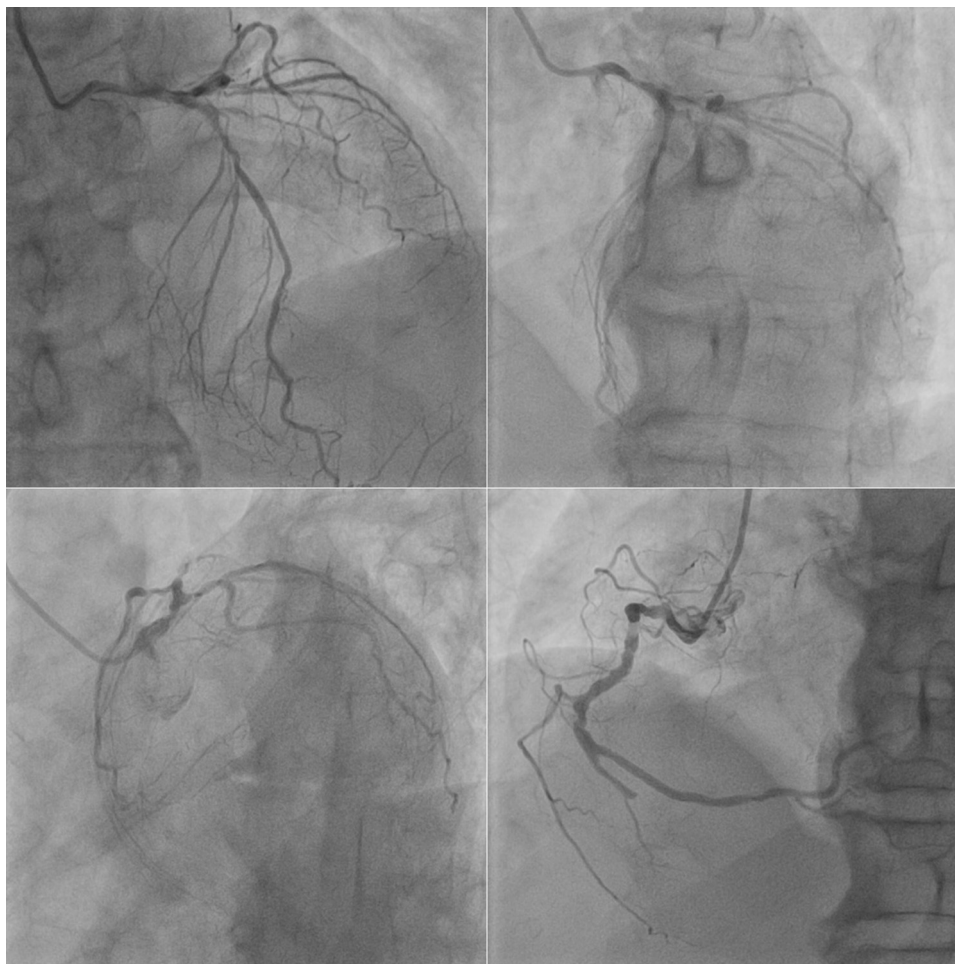


Fig. 1 – Coronary angiography of the patient showing left main disease with right coronary disease and total cutoff of a large posterior descending artery.

3 days of decongestive therapy which revealed critical triple vessel disease with left main coronary artery disease (Fig. 1). He was referred for CABG.

2.1. Preoperative preparation

The patient was put on frusemide infusion with oral ramipril and aldactone. He was taken up for elective OPCAB 1 week after angiography. Renal function was monitored regularly to adjust diuretic dose. There was no feature of end organ dysfunction. STS risk of mortality was 2.4%. Repeat echocardiographic assessment revealed improvement of LVEF to 15% and decrease in PASP to 30 mm Hg and decrease in LV filling pressure.

2.2. Surgical technique

OPCAB was performed through median sternotomy. Left ITA was used for grafting left anterior descending artery (LAD). After revascularizing LAD, right ITA (RITA) and RA composite graft was prepared. The distal end of RITA was used for revascularizing the diagonal artery. There was significant

improvement in systolic blood pressure after this distal anastomosis. After these two grafts, heart was lifted for lateral and posterior wall vessels. We make a longer skin incision, open the sternum widely, and release pericardium on the right side to displace the heart gradually. This was supplemented with headlow and lateral tilt position. Liberal doses of inotropic support were used. RA was used for sequential grafting of obtuse marginal, posterior LV branch, and posterior descending artery. All these five distal anastomoses were performed uneventfully.

2.3. Postoperative course

The patient was electively ventilated for 2 days. Echocardiography on 1st POD revealed improvement in LVEF to 20%. He was started on low dose beta blockers after inotropic supports were weaned off. He had slow and uneventful recovery. Echocardiography on 4th POD revealed improvement in LVEF to 30% (Table 1). He had persistent pleural drainage requiring prolonged intensive care unit stay. After pleural drainage subsided and drains were removed, he was discharged on diuretics, low dose beta blocker, and ramipril.

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