

Mini Off-Pump Coronary Artery Bypass Surgery Plus Medical Treatment: An Option for High Risk Coronary Patients

In high-risk patients with multiple vessel disease who are not candidates for conventional surgery with extracorporeal circulation or for percutaneous procedures as a single treatment, the alternative of left mammary artery to left internal descending artery bypass graft surgery without extracorporeal circulation offers advantages over medical treatment. (1) The MIDCAB operation (2) is effective to treat high risk patients with multiple vessel disease. Greater long-term follow-up is necessary to clarify the indications and validate the procedure for this type of patients. (3)

MINI OPCAB surgery (Xiphoid Approach) is a surgical technique in which the left internal mammary artery is bypassed to the anterior descending artery (ADA) by a medial inferior sternotomy approach in the 3rd or 4th intercostal space, leaving intact the sternal manubrium (Figures 1 & 2). Long-term results have already been published, reaching 82% survival at 12 years (Kaplan-Meier). (4) This presentation describes the experience with this surgical technique in our institution.

Fourteen high risk patients with multiple vessel coronary artery disease with mean age of 71.07 years (± 9.051 , 95% CI), 21% women and mean preoperative Logistic EuroSCORE of 10.68 (± 5.407 , 95% CI), were operated-on in the last 7 years and followed up in our institution with strict medical treatment and control of risk factors.

Operative mortality in this series was 0%, the incidence of perioperative infarction was 0%, the average duration of surgery was 2 hours and 20 minutes; 10 (71%) patients were extubated in the operating room and average hospital stay was 2 days and 11 hours. Following the intervention, one patient received a stent in the right coronary artery and another in the circumflex artery for presenting large arteries with severe lesions. In this group of patients, major adverse cardiovascular events were 0% at 80 months. Survival rate was 82% at 7 years (Kaplan-Meier); an 85-year-old woman died 5 years after surgery due to stroke.

The combination of a MINI-OPCAB surgery for bypass of the left internal mammary artery to the left anterior descending artery (5, 6) together with an adequate medical treatment and a hybrid treatment when the right coronary artery or circumflex artery are of high caliber, is a viable option for elderly and high-risk patients. More experience is needed to confirm these initial results.

Conflicts of interest

None declared.

(See authors' conflicts of interest forms on the website/Supplementary material).

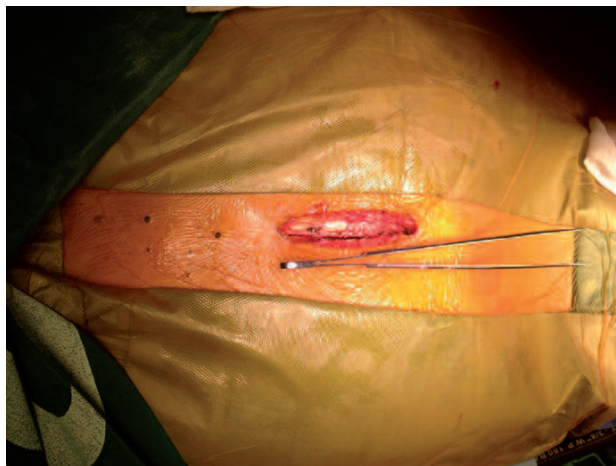


Fig. 1. Medial inferior sternotomy.

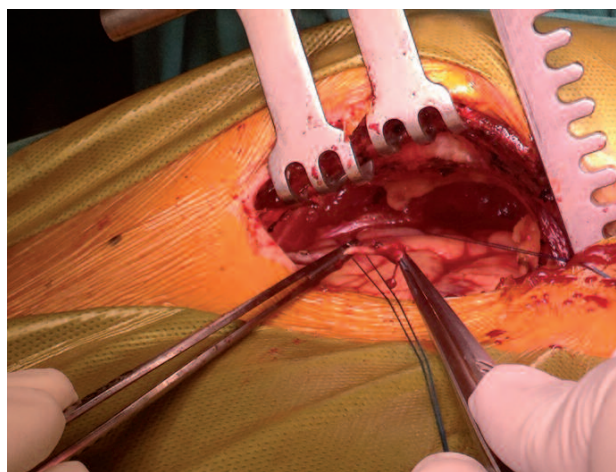


Fig. 2. Left internal mammary artery and anterior descending coronary artery exposed through mini-sternotomy.

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Post-Infarction Lipomatous Metaplasia and Ventricular Arrhythmia

We report the case of a 58-year-old man with the following cardiovascular risk factors: hypertension, dyslipidemia, type 1 diabetes, ex-smoker, and history of myocardial infarction in 2003. Since then, the patient had given up treatment and had undergone few medical controls. The patient was admitted to the Emergency Department (ED) of our clinic for two syncope episodes preceded by trepidation. At the ED, the patient had cardiopulmonary arrest with ventricular fibrillation. Cardiopulmonary resuscitation (CPR) and defibrillation with 300 J was performed, recovering pulse and consciousness. The ECG showed sinus rhythm, left anterior hemiblock, and septal sequelae, without dynamic changes in repolarization.

A Doppler echocardiography revealed mild left ventricular enlargement (LVDD: 62 mm) with severe impairment of systolic function (LVEF: 30%), secondary to anterior akinesia and anterior and septal apical aneurysm, grade-II diastolic dysfunction, mild to moderate left atrial enlargement and no significant valve diseases. During hospitalization, a new coronary angiography (CAG) showed a patent stent in the mid segment of the ADA with mild, diffuse restenosis and good distal bed.

An implantable cardioverter defibrillator (ICD) was used as secondary prevention of sudden death. A cardiac magnetic resonance imaging scan with gadolinium (Magnetom Essenza, Siemens; Erlangen, Germany) was previously performed (See videos 1 and 2) showing severe systolic function impairment (LVEF: 31%), secondary to transmural anteromedial, septal-apical, anterior apical, mid-septal and cardiac apex infarction. It also showed a linear image in the akinetic segments, hyperintense in T1-weighted sequences (Figure 1), and hypointense in those acquired with fat suppressed sequences (Figure 2), consistent with adipose tissue. The cine-sequences showed the so-called india ink artifact (See videos 1 and 2), consistent with adipose tissue and water in that region. (1) These findings were consistent with lipomatous metaplasia.

Adipose metaplasia was first described in 1997 by Baroldi et al. in excised hearts, and it is a common histopathological finding in myocardial scarring tissue observed in ischemic, heart valve and dilated cardiomyopathies (68%, 37% and 26%, respectively). (2) However, in recent years it has also been identified in vivo as a result of the development of new diagnostic

imaging techniques such as computed tomography and, particularly, cardiac magnetic resonance imaging, which can differentiate tissues (myocardium, fat, fibrosis) in the infarcted site. The etiology of lipomatous metaplasia is unknown and its presence is associated with greater infarct age and larger transmural extent. (1) Recent studies have associated lipomatous metaplasia with ventricular arrhythmia and death. (3, 4)

Pharmacological treatment was adjusted and ICD was implanted prior to hospital discharge. The patient has been asymptomatic on the 6-month control and has not presented with further episodes of ventricular arrhythmia.

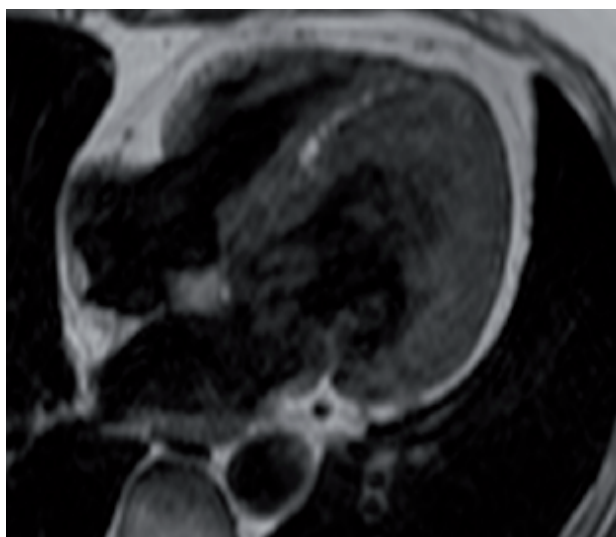


Fig. 1. Cardiac magnetic resonance imaging, T1-weighted sequences. See explanation in the text.

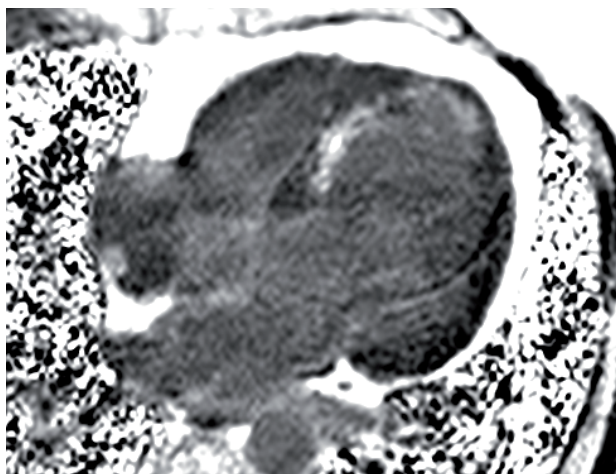


Fig. 2. Cardiac magnetic resonance imaging. Image obtained with fat suppression. See explanation in the text.

See videos 1 and 2 on the website