

CASE REPORT

Long Segment Coronary Endarterectomy from Left Anterior Descending Artery with Modified on-lay Patch Graft by Internal Thoracic Artery

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Abstract:

Despite the existence of controversial debates on the efficiency of coronary endarterectomy (CE), it is still used as an adjunct to coronary artery bypass grafting (CABG). This is particularly true in patients with diffuse calcified coronary artery disease. Given the improvements in cardiac surgery and postoperative care, as well as the rising number of elderly patients with numerous co-morbidities, re-evaluating the merits and demerits of this technique is needed. We present one such patient referred to us as a case of severe diffuse Left Anterior Descending Artery (LAD) lesion with Triple Vessel Disease (TVD) with chest pain in minimum daily activities. After evaluation surgical revascularization was done by coronary endarterectomy in addition to off pump CABG. A long segment (9cm) atheromatous plaque was removed from LAD and reconstruction was done by modified On-Lay patch with left internal mammary artery. His post-operative period was uneventful and patient was discharge from hospital on 10th post-operative day. Follow up on 30th post-operative day demonstrate improved LV systolic function. Complete myocardial revascularization is the main stays of treatment modalities for diffuse CAD and coronary endarterectomy can be perform safely.

Keywords: Coronary endarterectomy, Left Anterior Descending Artery, Modified On-lay Patch graft.

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Introduction:

Endarterectomy is the removal of the atheromatous plaque, dissecting and separating the external media and adventitia layers, thus restoring the lumen to the artery¹. In patients with diffuse coronary disease, characterized by long segments impaired by atherosclerosis, endarterectomy of the coronary arteries (ECA) is often necessary to perform complete coronary artery bypass grafting (CABG)². Coronary artery

endarterectomy with coronary artery bypass grafting for diffuse coronary artery disease has been associated with increased morbidity and mortality. We evaluated our experience to redefine the role of coronary endarterectomy for diffuse coronary artery disease^{1,2}.

Case Presentation:

On 12th May 2017 one patient came to us with the diagnosis of severe diffuse Left Anterior

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Descending Artery (LAD) lesion with Triple Vessel Disease (TVD) with Ejection fraction (EF) 23% with diabetes mellitus (DM) with ongoing chest pain with minimal exertion. Preoperative Echo findings: LVIDd-60mm, LVIDS-54mm, EF-23% and other laboratory investigation report for GA fitness was within normal range. Patient undergone OPCABG on 15th may 2017, at Al-Helal Specialized hospital, Mirpur-10. Under GA with all aseptic precautions with mid sternotomy LIMA (skeletonised) along with left great saphenous vein were harvested. Two proximal anastomosis of RSV to aorta were done with side biting clamp. With full heparinization 10mm arteriotomy in LAD was done and no blood flow was found due to presence of mature atheromatous plaque. Then arteriotomy extended about 15mm distally to the previous site which also revealed mature atheroma. So, we decide to perform endarterectomy and 9cm atheroma was extracted from LAD in open technique using ring tip forceps (Figure-1). After removal of the atheroma, there were good back flow of blood was seen. Then LIMA was splitted according to the arteriotomy size & anastomosed distally to LAD (2.5mm long intracoronary shunt was used) (Figure-2). Distal anastomosis of RSV was done distally to OM₂ (1.75 mm). Another RSV was anastomosed distally to RCA (1.75 mm) after atherectomy. All anastomosis was done on beating heart and Heart was stabilized with Starfish and Octopus Stabilizer during distal anastomosis. After achieving haemostasis chest was closed leaving with one RV epicardial pacing wire, two drain tube in situ attached with under water seal drainage. Postoperatively we gave Heparin subcutaneously for 72 hours with the aim of prevention of thrombus burden in native artery as well as graft site followed by Tab. Warfarin 2.5mg orally concurrently and advised to continue Tab. Warfarin for 6months postoperatively along with Clopidogrel and Ecosprin.

His postoperative period was uneventful and patient got discharged from Hospital on 10th Post-operative day. On day of discharge 2D-M mode ECHO Showed: LVIDd-58mm, LVIDS-56mm, EF-24%. On 1st follow-up visit, on 30th postoperative day 2D-M mode ECHO Showed: LVIDd-55mm, LVIDS-55mm, EF-25%. Patient was free from cardiac pain postoperatively to

till now and now he can walk up to 3km in 45minutes. Patient was advised to take next follow up visit after 3 months postoperatively.

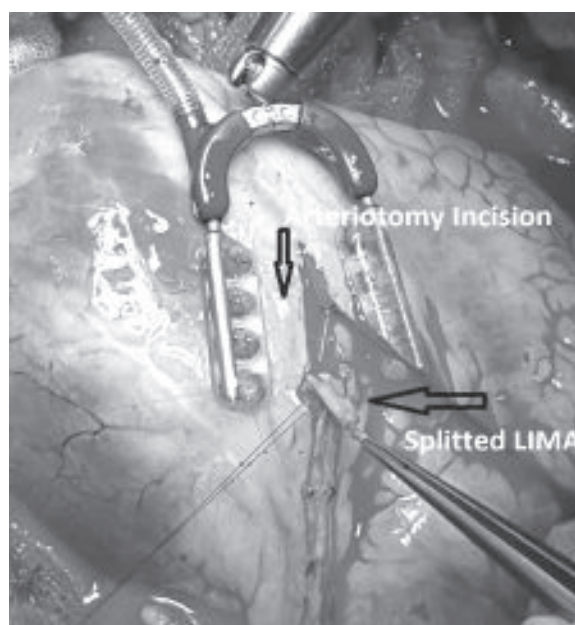


Fig.-1: Extended arteriotomy (25mm) involving diffuse calcified LAD artery with modified on-lay patch graft by Left internal mammary artery (LIMA) (Arrow marked).

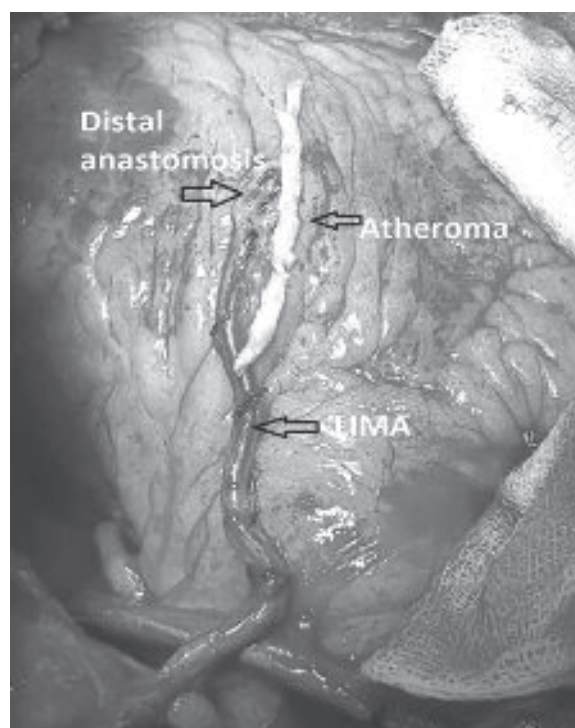


Fig.-2: LIMA to LAD distal anastomosis site with removed atheroma specimen (9cm).

Discussion:

Diffuse coronary disease can make adequate surgical treatment difficult or even prevent it totally. In these cases, conventional CABG does not supply an adequate flow through the entire vessel, resulting in incomplete CABG¹. Incomplete CABG does not affect the immediate mortality rate, but the incidence of arterial reoperations with significant obstructions in vessels, which irrigate the viable myocardium, negatively affects long-term cardiac events. These patients have greater recurrence of angina, worse performance in stress tests and a greater work absenteeism rate and require a greater number of re-interventions, besides the better survival rate of completely grafted patients^{2,3,4}. The preliminary results with ECA reflect the experience of the 60s and 70s and demonstrate a greater morbidity and mortality in the immediate post-operative period, making its merit controversial^{4,5,6,7,8}. With technical improvements and a greater operative indication for patients with diffuse coronary atherosclerotic impairment, the role of endarterectomy is being reassessed^{5,7,9}. In Bangladesh 14 cm long atherectomy done from RCA which is the longest atheroma recorded till date¹⁰.

Conclusions:

With the increasing incidence of diffuse coronary artery disease and improving results of coronary endarterectomy, it is vital for cardiac surgeons to have coronary endarterectomy in their armamentarium to achieve complete coronary revascularisation.

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