Page 256 to 259

Volume 2 • Issue 2 • 2019

Case Report

Therapeutic Advances in Cardiology

ISSN: 2575-5161

Emergency Coronary Artery Bypass Grafting with Coronary Endarterectomy in a Case of Acute Anterior Wall Myocardial Infarction with Pulmonary Oedema

Shyam Krishnan Ashok*, Mohammed Ashique and Amal Abraham

KIMS Hospital, Ongole, Andhra Pradesh, India

***Corresponding Author:** Dr. Shyam Krishnan Ashok, Godrej Woodsman estate apartments, tower 1, A 1204, Bellary road, Hebbal, Bangalore.

Received: November 26, 2018; **Published:** February 27, 2019

Abstract

We report a case of a 62 year old man, who was diagnosed to have acute pulmonary oedema following acute anterior wall Myocardial Infarction (MI), who successfully underwent coronary artery bypass grafting (CABG) with coronary endarterectomy (CE), with the help of intra-aortic balloon pump (IABP).

Keywords: *Coronary artery bypass grafting; Coronary Endarterectomy; Intra-aortic balloon pump; Left internal mammary artery; Myocardial infarction*

Volume 2 Issue 2 February 2019

Background

62yr old man presented with acute onset of chest pain and was diagnosed to have acute anterior wall MI (by virtue of raised cardiac enzymes and ST segment elevation in anterior leads of ECG). He also developed pulmonary oedema as he was requiring non-invasive ventilation to maintain saturation. He underwent coronary angiogram immediately which revealed critical left main disease with 100% occlusion of right coronary artery (RCA). IABP was inserted to stabilise him and he was immediately taken up for emergency Coronary Artery Bypass Grafting (CABG). CABG was done on cardiopulmonary bypass and left internal mammary artery (LIMA) was anastamosed to left anterior descending artery (LAD), saphenous veins anastamosed to the ramus and posterior descending artery (PDA) with PDA Endarterectomy. Post-operatively, he was ventilated for 12 hours and then extubated. Balloon pump was removed after 24 hours and patient had a smooth recovery and was discharged on the 7th day.

Discussion

Optimal timing for CABG after acute MI has not been defined and is still having lots of controversies. From available data, range of deferral from immediate intervention to surgery is 4 weeks after infarction. As per the data compiled from the study done on 1168 patients by Assmann., *et al* [1], CABG after acute MI (<10 days) was accompanied by significantly higher mortality, especially in elderly patients or in patients with a severely impaired left ventricular ejection fraction. So, from this study, it is prudent that at least the critical time period of 3 days should be avoided for any intervention whenever the hemodynamics is stable enough.

Citation: Shyam Krishnan Ashok., *et al.* "Emergency Coronary Artery Bypass Grafting with Coronary Endarterectomy in a Case of Acute Anterior Wall Myocardial Infarction with Pulmonary Oedema". *Therapeutic Advances in Cardiology* 2.2 (2019): 256-259.

In the study done by Weiss ES., *et al.* [2], 40159 patients with acute MI were reviewed. Among the 9476 patients eligible to be included for analysis, it was observed that mortality rates were higher for patients undergoing CABG within 2 days of hospitalization for acute MI when compared to those undergoing CABG, 3 or more days after acute MI.

To optimise the treatment of patients with STEMI, timely reperfusion of the occluded coronary artery is essential. Though primary per-cutaneous intervention (PCI) is now the preferred treatment modality in patients with coronary anatomy unsuitable for PCI, CABG is used as the primary reperfusion modality. Because of the hypothesized risk of haemorrhagic transformation, it had been common practice to wait for four to six weeks after MI. Recently, improvements in surgical and perioperative management, as well as an increase in pre-CABG in-hospital waiting times and excess burden on health care resources, have pushed surgeons to operate earlier.

Deterioration of the hemodynamics, as well as development of complications like pulmonary oedema also calls for an earlier intervention. The optimal timing for a stable patient to undergo CABG after MI is unclear as there are no randomised trials to answer this question.

It is still a challenge for the cardiac surgeons to achieve complete revascularisation in the setting of diffuse coronary artery disease. CE offers an alternate choice of coronary artery reconstruction and revascularisation. The main indication for CE is the presence of diffusely diseased coronary arteries where distal grafting is not an option. [3] According to the study done by Sirivella S., *et al*. [4], in which, 1,478 patients underwent CE with CABG for diffuse coronary artery disease consecutively, it was proven that, in selected patients with diffuse coronary artery disease, CE can be used as a tool for myocardial revascularization and the operative mortality and major morbidity were comparable or similar to CABG, and short-term and long-term results were favourable.

There is evidence to suggest that endarterectomy of the LAD may be particularly perilous, although CE has been performed on all coronary arteries safely. [5] This might be because the LAD atherosclerotic plaque is hard and delicate as compared to Right Coronary Artery (RCA), thereby the danger of disruption is very high.

LAD endarterectomy is therefore performed in a highly selective manner by most surgeons when no other alternatives exist. [6] There is risk of shearing-off of diagonal and septal branches that arise from LAD in two different planes, when plaque is pulled in either direction. [7] When plaque extraction is incomplete through a limited arteriotomy or when the plaque is fractured, open CE is done. Since the basic principle of CA is to extract the plaque completely, the open technique is preferred in such circumstances since it provides an adequate exposure, in order to extract the atherosclerotic core.

It has been established that patients undergoing CABG with CE have comparable operative mortality, major complication rates and long term survival, compared to isolated CABG. In the study done by Tiruvoipati R., *et al*. [8], it was observed that CE when combined with CABG seemed to be associated with a higher mortality than isolated CABG in the study groups, which might be related to comorbidities of the patients rather than the CE.

In the case done by us, the distal RCA was diseased with disease extending to the PDA, with no clean area to graft. That is the reason why CE was done, on-table, for the PDA. The CE specimen of our case is shown in Figure 1.

CABG done within the first three days of MI has been reported to have higher mortality rates due to bleeding, low cardiac output and inflamed myocardial tissues, though the long term outcomes have been really impressive. IABP has been shown to be extremely beneficial in the setting of acute MI with hemodynamic instability.

The onset of complications or worsening of existing hemodynamics definitely calls for an emergency CABG and the use of IABP is extremely useful in the smooth recovery of the patient as we have reported in our case.

Figure 1: *Coronary Endarterectomy specimen.*

Approval by local institutional Ethics Committee: This study has been approved by the local institutional ethics committee. Compliance with ethical standards has been met.

Informed consent: Informed consent has been obtained from the person before he underwent the procedure. Consent has also been obtained from all concerned people before giving this case-report for publication.

References

1. Assmann A., *et al*. "Appropriate timing of coronary artery bypass grafting after acute myocardial infarction". *The Journal of Thoracic and Cardiovascular Surgery* 60.7 (2012): 446-451.
2. Weiss ES., *et al*. "Optimal timing of coronary artery bypass after acute myocardial infarction: a review of California discharge data". *The Journal of Thoracic and Cardiovascular Surgery* 135.3 (2008): 503-511.
3. Asimakopoulos G., *et al*. "Outcome of coronary endarterectomy: a case-control study". *The Annals of Thoracic Surgery* 67.4 (1999): 989-993.
4. Sirivella S., *et al*. "Results of coronary artery endarterectomy and coronary artery bypass grafting for diffuse coronary artery disease". *The Annals of Thoracic Surgery* 80.5 (2005): 1738-1744.
5. Sundt TM., *et al*. "Reappraisal of coronary endarterectomy for the treatment of diffuse coronary artery disease". *The Annals of Thoracic Surgery* 68.4 (1999): 1272-1277.
6. Livesay JJ., *et al*. "Early and late results of coronary endarterectomy. Analysis of 3,369 patients". *The Journal of Thoracic and Cardiovascular Surgery* 92.4 (1986): 649-660.
7. Shapira N., *et al*. "Adjunct endarterectomy of the left anterior descending coronary artery". *The Annals of Thoracic Surgery* 46 (1988): 289-296.
8. Tiruvoipati R., *et al*. "Coronary endarterectomy: impact on morbidity and mortality when combined with coronary artery bypass surgery". *The Annals of Thoracic Surgery* 79.6 (2005): 1999-2003.