

Post CABG Stemi: A Clinical Challenge?

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Abstract

A Middle aged male a known case of hypertension, diabetes, triple vessel disease underwent CABG. On post op Day 2 he developed STEMI which was successfully managed by PTCA and Stenting to LIMA graft. Post CABG MI occurs in 2%-15% of the patients and early recognition, teamwork and timely treatment is important for best outcome of the patient.

Keywords: CABG (Coronary artery bypass), LIMA (Left internal mammary graft), PTCA (Percutaneous transluminal coronary angioplasty)

Introduction

Specific management of post coronary bypass graft ischemia in patients presenting with ST-Elevation Myocardial Infarction (STEMI) is not well defined. We present a case of Post CABG STEMI (anterior wall) successfully managed by PCI to LIMA graft.

Case Report

A 56 Years old male, Hypertensive, smoker presented with complaints of angina on exertion Class **III**. His biochemistry was within normal limits. His ECG showed normal sinus rhythm, no significant st-t changes and echo revealed mild concentric LVH, NO RWMA, LVEF 60%. Coronary angiography was done which revealed triple vessel disease with SYNTAX score 28 and CABG was planned. He underwent CABG with LIMA to LAD/diagonal and SVG to PDA and OM. Post CABG (day 0), there was excessive drainage from mediastinal drains, and re-exploration was done which showed-bleeding from LIMA-diagonal anastomosis and Redo-side to side parallel LIMA anastomosis on D1, LAD done. On post CABG day 1 patient developed hypotension with ECG showing ST elevation in anterior leads and ECHO revealed RWMA in LAD territory with LVEF 35%. Urgent cardiology consultation taken by CTVS team and after discussion with attendants of the patient coronary angiography was done which revealed subtotal occlusion in mid part of LIMA graft with thrombus. As native LAD was a CTO so revascularization with PTCA/Stenting o LIMA was planned. Successful PTCA and stenting to LIMA to LAD done using two drug eluting stents. Patient became hemodynamically stable and extubated the next day and discharged post op day 7 (Figure 1 and 2).

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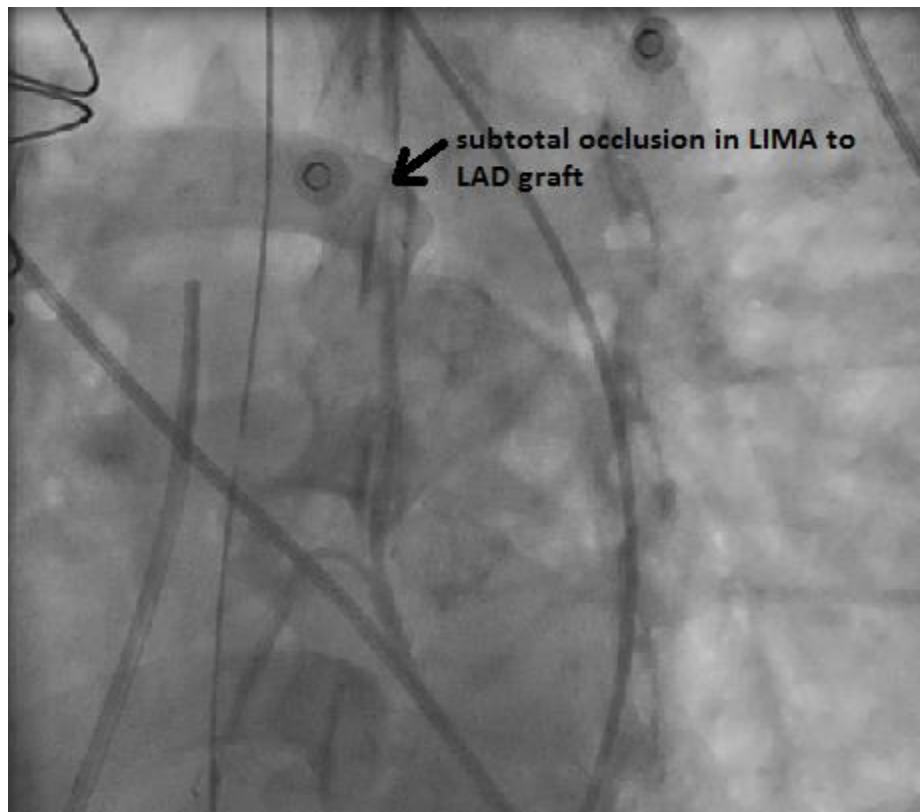


Figure 1: Subtotal occlusion in LIMA to LAD graft.

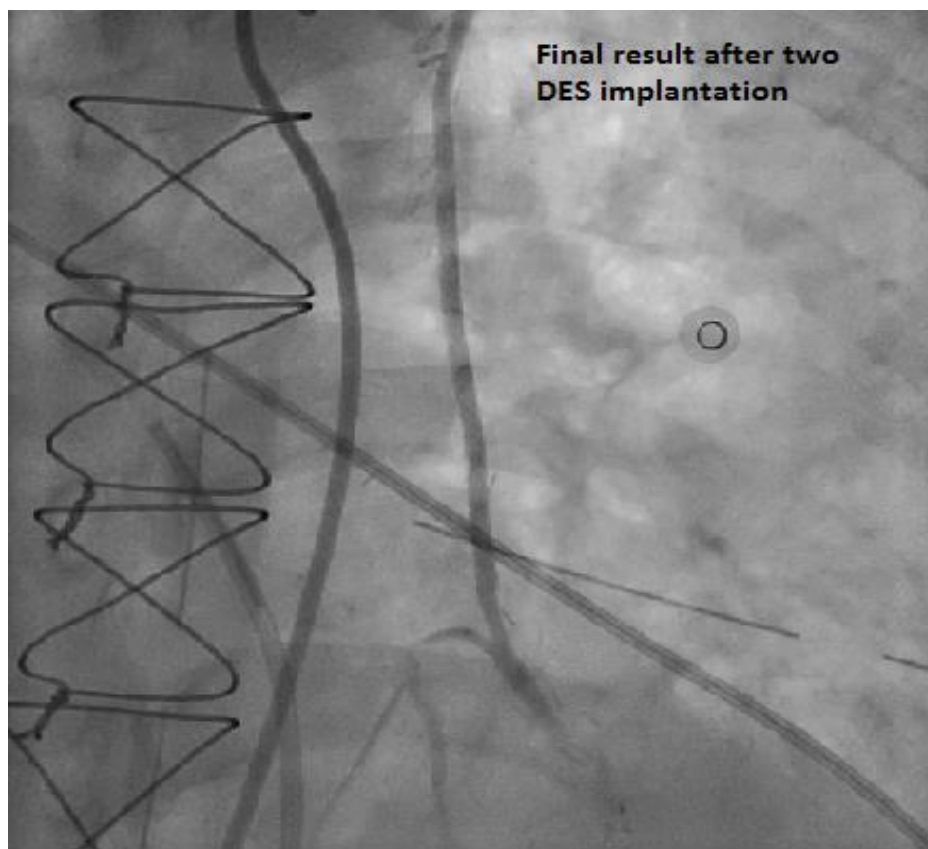


Figure 2: Final result after two DES implantation.

Discussion

Postoperative MI occurs in 2%-15% of patients following cardiac surgery. It leads to reduced survival both short and long term, longer hospital stays and results in a greater burden on hospital finances.

Establishing a definite diagnosis of postoperative MI is not an easy task. A wide range of lesions varying from transient myocardial ischemia to complete necrosis can occur. The classical clinical approach using elements such as chest pain, ECG changes and increased cardiac enzymes (CK-MB, troponin) can be misleading and inadequate, missing numerous coronary events albeit less severe but requiring intervention. Typical chest pain may be absent due to postoperative analgesia. Q waves are frequently absent and non-specific ECG modifications following cardiac surgery can blur clinical presentation. Finally, elevation of enzymes especially post-surgery CK-MB can further complicate the interpretation of biomarkers in the diagnosis of MI. Current recommendations suggest that biomarker values above ten times the 99th percentile of the normal reference range during the initial 72 hours following CABG, when associated with the appearance of new pathological Q-waves or new LBBB, or angiographically documented new graft or native coronary artery occlusion, or imaging evidence of new loss of viable myocardium, should be considered as diagnostic of CABG-related myocardial infarction. In general, Type 5 MI is mainly due to an ischemic event because of either new graft occlusion, new native artery occlusion or inadequate cardioprotection.

The causes are endothelial injury due to surgical manipulations and endothelial activation due to hemodynamic stress or transient ischemia leads to release of prothrombotic/proinflammatory molecules leading to graft occlusion.

Specific treatment of myocardial ischemia after CABG depends primarily on findings obtained by imaging techniques, namely, coronary angiography.

In symptomatic patients, early graft occlusion has been identified as the cause of ischemia in 75% of cases. There is around 8% occlusions of venous grafts following CABG in perioperative phase angiography. Emergency PCI with stenting is a viable option apart from emergency surgical reintervention and is associated with good results and less complications. It is advised that the PCI should be done for native vessels (if possible) as targeting the freshly occluded venous grafts or the anastomosis can lead to the risk of embolisation or perforation. Surgery should only be done if the graft or native artery appears nonamenable for PCI, or if several grafts are occluded.

In asymptomatic patients, re-operation or PCI should only be considered if the artery is a good size, severely narrowed and supplies a large territory of myocardium. Decision for Redo CABG or PCI should be taken after discussion by the Heart team.

Our case illustrates an uncommon complication of CABG i.e early LIMA occlusion. LIMA grafts are more resilient than vein grafts to surgical trauma, and endothelial as well as vascular wall functions are well preserved. Moreover, the diameter of LIMA grafts and LAD are nearly similar, therefore leading to less turbulent flow and less chances of shear stress induced endothelial damage. The most suitable explanation in our case was torsion/bend of LIMA and local vessel hematoma during reexploration leading to MI.

Successful PTCA with stenting to LIMA to LAD was done using 2 DES (Drug Eluting Stent) with good results.

In a study by Davierwala *et al.*, better outcomes were seen in patients who underwent emergency PCI than in the group who underwent reoperation following perioperative MI.

Conclusion

Perioperative MI is associated with a reduced short and long term survival and longer. Urgent angiography delineate various causes of perioperative MI and helps in guiding urgent treatment. Early PCI is associated may be associated with improved clinical outcome and low risk for in hospital mortality and limits the extent of myocardial damage vis a vis redo CABG.

References

1. [Chen JC, Kaul P, Levy JH, Haverich A, Menasché P, Smith PK, et al. Myocardial infarction following coronary artery bypass graft surgery increases healthcare resource utilization. Crit Care Med. 2007;35\(5\):1296-301.](#)
2. [Nalysnyk L, Fahrback K, Reynolds MW, Zhao SZ, Ross S. Adverse events in coronary artery bypass graft \(CABG\) trials: a systematic review and analysis. Heart. 2003;89\(7\):767-72.](#)
3. [Ramsay J, Shernan S, Fitch J, Finnegan P, Todaro T, Filloon T, et al. Increased creatine kinase MB level predicts postoperative mortality after cardiac surgery independent of new Q waves. J Thorac Cardiovasc Surg. 2005;129\(2\):300-6.](#)
4. [Thygesen K, Alpert JS, White HD: Joint ESC/ACCF/AHA/WHF task force for the redefinition of myocardial infarction. Universal definition of myocardial infarction. Eur Heart J. 2007;28\(20\):2525-38.](#)
5. [Wijns W, Kolh P, Danchin N, Mario CD, Falk V, Folliguet T, et al. Guidelines on myocardial revascularization. Eur Heart J. 2010;31\(20\):2501-55.](#)
6. [Harskamp RE, Alexander JH, Ferguson TB, Hager R, Mack MJ, Englum B, et al. Frequency and predictors of internal mammary artery graft failure and subsequent clinical outcomes: Insights from the project of ex-vivo vein graft Engineering via transfection \(PREVENT\) IV trial. Circulation. 2016;133\(2\):131-8.](#)
7. [Zhao DX, Leacche M, Balaguer JM, Boudoulas KD, Damp JA, Greelish JP, et al. Routine intraoperative completion angiography after coronary artery bypass grafting and 1-stop hybrid revascularization results from a fully integrated hybrid catheterization laboratory/operating room. J Am Coll Cardiol. 2009;53\(3\):232-41.](#)
8. [Windecker S, Kolh P, Alfonso F, Collet JP, Cremer J, Falk V, et al. 2014 ESC/EACTS guidelines on myocardial revascularization: The task force on myocardial revascularization of the European society of cardiology \(ESC\) and the European association for cardio-thoracic surgery \(EACTS\) developed with the special contribution of the European association of percutaneous cardiovascular interventions \(EAPCI\). Eur Heart J. 2014;35\(37\):2541-619.](#)