

## Deferred Stenting in a HIV Infected Patient with STEMI and Heparin Induced Thrombocytopenia

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### Abstract

Coronary artery disease is one of the major cause of death in human immunodeficiency virus (HIV) positive patients. It can be due to endothelial dysfunction, hypercoagulability and inflammatory changes associated with HIV and highly active antiretroviral therapy (HAART) induced metabolic complications. This is one of the first reported deferred stenting in a HIV infected STEMI case with history of heparin-induced thrombocytopenia (HIT) positivity.

Here we are reporting a 45-year-old Kuwaiti male who is known to be HIV positive as well as having heparin-induced thrombocytopenia presented to emergency room with acute ST elevation myocardial infarction (STEMI). We have opted for deferred stenting technique and performed angioplasty with drug eluting balloon (DEB) to the culprit vessel, the right coronary artery (RCA) under bivalirudin coverage. And on day 1 of the admission he underwent PCI to RCA with 2 drug-eluting stents (DES). Patient got discharged without any major complications on full anti ischemic treatment.

PCI in HIV STEMI patients with HIT are related to major complications like restenosis, in-stent thrombosis hence initial management of deferred stenting is ideal.

**Keywords:** Deferred stenting, HIV, coronary artery disease, STEMI, HAART, HIT

### Introduction

In 2006 Issaz et al first described the deferred stenting concept with minimalist immediate mechanical intervention in STEMI patients where direct stenting is contraindicated [1]. Usually with 24 hours to 48 hours its ideal to perform PCI with stent implantation in case of deferred stenting. Delayed stenting (DS) will prevent distal embolization and it is considered to be the treatment of choice when there is a high thrombus burden [2,3]. Increased myocardial salvage with markedly decreased incidence of no-reflow was seen more with deferred stenting in high risk STEMI patients [4].

### Case Report

A 45yr old, Kuwaiti male, chronic smoker, with morbid obesity with past history of Type II diabetes mellitus on Insulin, systemic hypertension, dyslipidemia, chronic kidney disease on hemodialysis since 2008, bronchial asthma, tertiary hyperparathyroidism, heparin induced thrombocytopenia (HIT), HIV positive on integrase inhibitor and protease inhibitor with history of IV drug abuse.

He had history of exertional chest pain since January 2018; Stress myoview done on 30/01/2018 showed moderate ischemic changes in infero-lateral wall with EF 54% on stress and 59% at rest. He presented to our emergency room (ER) on 7<sup>th</sup> February 2018 with complaints of typical cardiac chest pain lasting more than 30 minutes duration. ECG taken at the ER showed acute inferior wall STEMI.

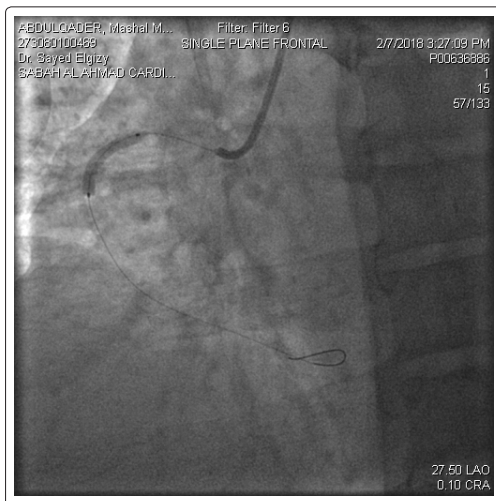
In the ER patient was loaded with antiplatelets and IV heparin 5000IU by the ER physician. They had failed to obtain the positive history of HIT prior to the administration of heparin. Patient was taken for primary PCI and had POBA with drug eluting balloon to proximal, mid and distal right coronary artery (RCA) under the coverage of intravenous (IV) bivalirudin. (Fig.1 & Fig.2) The option of revascularization with stenting was postponed due to his previous history of HIT. On 8<sup>th</sup> February 2018, PCI to RCA was done with 2 drug eluting stents (DES). (Fig.3, Fig.4 & Fig.5) Bed side echocardiography showed regional wall motion abnormalities in the RCA territory with ejection fraction (EF) 45-50%. Another major hurdle was to decide on statin therapy in the setting of HAART intake. We have kept him on low dose atorvastatin. On 10<sup>th</sup> February 2018 he underwent elective dialysis and got discharged on full anti ischemic medications.



**Figure 1:** Critical lesions starting from proximal RCA to distal



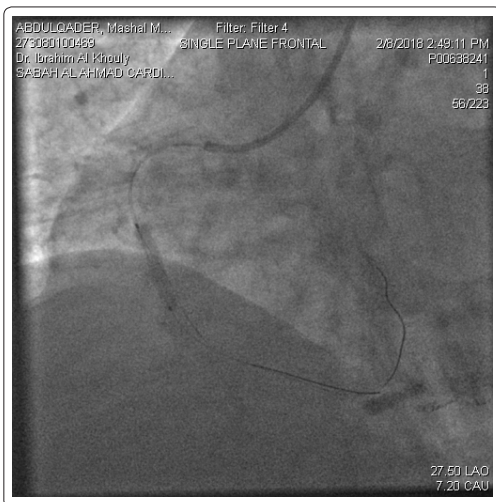
**Figure 4:** PCI to proximal RCA with 1 drug eluting stent



**Figure 2:** POBA to RCA with drug eluting balloon



**Figure 5:** TIMI 3 flow after PCI to proximal and distal RCA



**Figure 3:** PCI to mid RCA with 1 drug eluting stent

## Discussion

The etiology of STEMI in HIV infected patients are complex and can be mainly due to (a) increased incidence of traditional risk factors (b) HAART use (c) uncontrolled viral replication, all these promotes immune activation and inflammation which accelerate the process of atherosclerosis [5]. Heparin induced thrombocytopenia (HIT) with STEMI is considered to be a deadly combination [5]. Our patient was HIT positive, HIV on HAART and received loading heparin from the emergency room due to inadequate clinical history regarding HIT. Hence our patient was considered to be extremely high risk STEMI case. Option of deferred stenting was the only best possible treatment strategy in such high risk patients. We did elective PCI to RCA after 24 hours and patient was discharged on full anti-ischemic treatment without any complications.

Literature review shows that there is incidence of HIT 1 to 5% of all those who receive heparin. Direct thrombin inhibitor is the drug of choice in such cases [6-8]. A meta-analysis of 9 studies where majority of the patients taken from randomized clinical trial (RCT) (1456 patients) and only 719 patients were taken from observational studies showed a long term benefit of deferred stenting in terms of improvement in left ventricular EF [9]. DANAMI 3 –DEFER study

showed not much benefits with deferred stenting when compared to routine stenting [10]. Cardiac magnetic resonance sub-study of DANAMI 3 –DEFER showed routine deferred stenting have no role in salvaging the myocardium and in the reduction of microvascular obstruction or size of the infarct [11]. In another meta-analysis of 8 studies (3 RCT and 5 Non-RCT) with 2101 patients showed an improvement in outcome of the surrogate angiographic endpoints like myocardial blush grade less than 2 and TIMI flow less than 3 [12].

## Conclusion

Deferred stenting with the cover of a direct thrombin inhibitor should be the treatment of choice in HIT positive high risk STEMI patients who is prone for high thrombus burden. This may help during primary PCI to reduce the incidence of major complications like restenosis and in-stent thrombosis. In such patients elective PCI can be planned within 24 hours to 48 hours.

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MAJ participated in analysis and manuscript preparation. RR participated in data acquisition, data analysis and manuscript preparation. IEK participated in the data analysis. SS participated in data acquisition and manuscript preparation. RD participated in the data analysis and drafting of manuscript. All authors had access to data and take responsibility for the integrity of data and the accuracy of data analysis. All authors have read and approved the manuscript.

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