Case Report

STENT BALLOON DEFLATION FAILURE DURING PERCUTANEOUS CORONARY INTERVENTION – A DREADFUL COMPLICATION

Khurshid Ali[a*], Ahmad Noeman[a], Sajjad Ahmad[a], M Hasan Iqbal[a], M Amad Abbasi[a], Rasheed Ahmad[a]

[a]Department of Cardiology,
Punjab Institute of Cardiology,
Lahore - Pakistan.
* Corresponding author:
khurshid_52x@yahoo.com

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ABSTRACT: Percutaneous coronary intervention (PCI) is an important modality in the treatment of coronary artery disease. Usually these procedures are completed successfully but some rare and serious complications are encountered. Here, we report a case of failure to deflate stent balloon following its inflation during percutaneous coronary intervention (PCI) which is extremely rare complication.

KEYWORDS: Percutaneous coronary intervention, stent balloon, complications

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INTRODUCTION

Percutaneous coronary intervention (PCI) is considered as an invasive modality for the treatment of coronary artery disease. PCI can be usually performed successfully without any complication but few predictable as well as unpredictable complications can be encountered. Although these complications occur in 1-2% of patients but can be fatal. We report a rare and unanticipated complication of an un-deflatable stent balloon in a 6o year old male who underwent PCI for left anterior descending (LAD) artery.

CASE REPORT:

A 60 year old male patient was referred to our hospital for elective PCI to Left Anterior Descending Artery for Canadian cardiovascular society functional class III angina. His coronary angiography revealed tight lesion in proximal LAD artery followed long segment of moderately severe disease in mid LAD. (Figure 1)

After getting informed and written consent loading dose of Clopidogrel (600 mg PO) and Aspirin(300 mg PO) were administered. Through right radial approach left coronary system was engaged with XB3 6F. Intra venous un-fractionated heparin was given according to body weight in a dose of 100U/Kg. A 0.014"floppy guide wire was placed across the lesion and placed in distal LAD. A chromium-cobalt Everolimus drug eluting stent 2.75x38mm was positioned across the stenotic lesion. At first attempt stent balloon inflation was failed but at second attempt stent balloon was inflated at 20 atm for 20 seconds. After 20 seconds balloon failed to deflate. (Figure 2)

Patient started having chest pain. Various unsuccessful attempts were made to deflate the balloon. First negative suction was tried with inflation device two to three times but failed then active suction was tried with 20cc syringe and then with 50cc syringe but failed to deflate stent balloon. Attempts were made to inflate stent balloon to high pressure (28 to 30 atm) to burst stent balloon and finally succeeded to burst the stent balloon.

There was risk for air embolism after bursting of stent balloon but it did not occur. Balloon was removed. Patient was pain free. Check injection showed no complication like perforation, dissection and air embolism etc with final TIMI III blood flow. (Figure 3) The proximal stenotic lesion was covered by 3.5x15mm Zotarolimus drug eluting stent overlapped with distal stent. (Figure 4)

The overlapped segment was post dilated with 3x20mm Non-Compliant balloon at 12 atm. Final

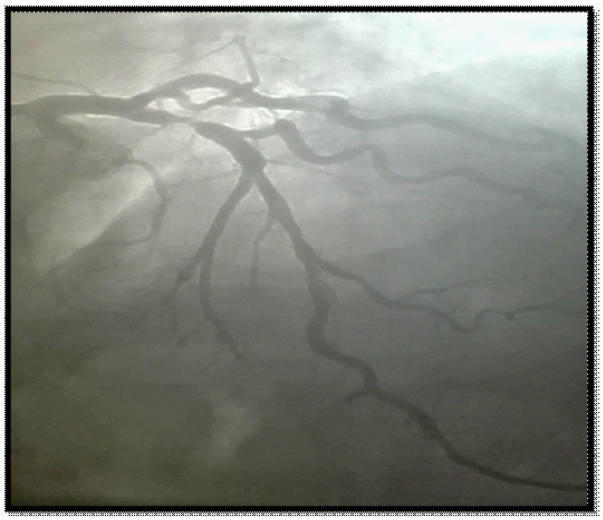

Figure-1

Figure-2

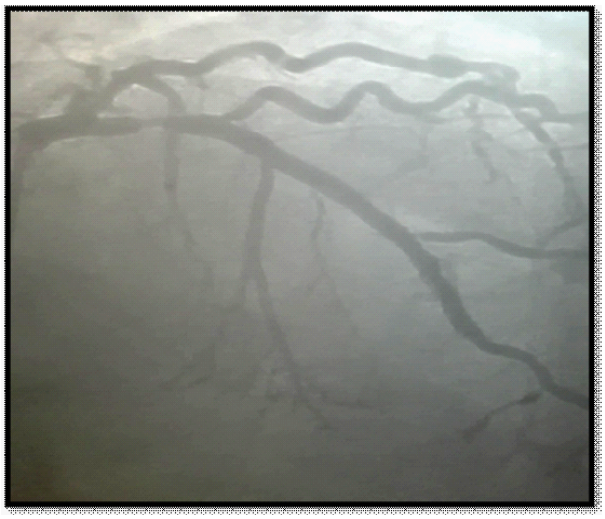

Figure-3

Figure-4

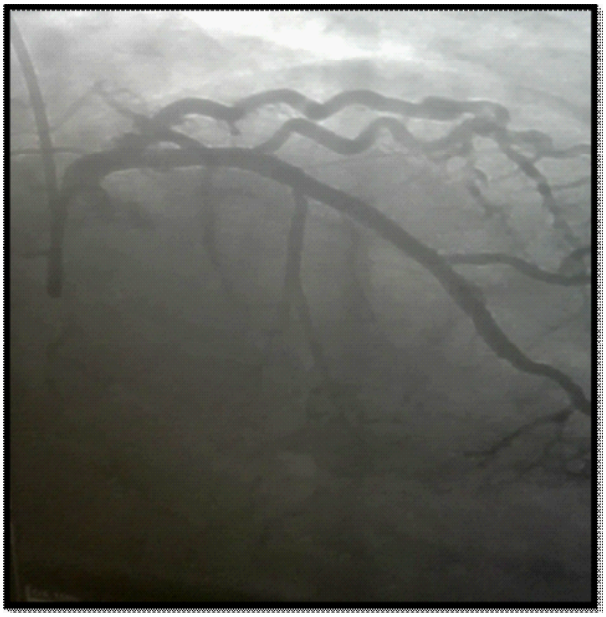

Figure-5

check injection showed TIMI III flow without any complication (Figure 5)

There were no electrocardiographic changes. Echocardiography showed no pericardial effusion. Patient remained in coronary care unit for 24 hours and was then discharged safely.

DISCUSSION:

Balloon deflation failure may be due to the operator fault, manufacturer fault or patient. Technical barriers that may attribute to such a complication are kinking in the shaft, closure of the lumen supplying fluid for balloon deflation, or blockage of the lumen with solid material such as foreign bodies or crystallized contrast.[1] All these obstacles may lead to in-adequate negative pressure required for deflation of the balloon. The exact mechanism for this unexpected complication in our case could be due to any of the above-explained plausible reasons.[2]

The most common technique used to approach the dilemma of balloon deflation failure has been balloon inflation beyond maximal rated pressure to facilitate its bursting as was done in our case. This, however, does not guarantee that the balloon will burst and is instead accompanied by risks such as vessel rupture, balloon rupture, balloon or guide wire entrapment, slow or no blood flow, or fatal coronary perforation.[3]

The second alternative suggestion is to advance the micro catheter near to stent balloon and to introduce rigid back part of the floppy wire to perforate balloon.[4]

These complications can be encountered by many operators in daily interventional procedures and needs to be managed appropriately.

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