A Nightmare Of Coronary Stent Balloon Non Deflation And Shaft Fracture

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- I do not have any potential conflict of interest

Clinical Information

- Mr.BR, 60 year old man
- Hypertension since past 15 years on regular anti-hypertensive medications
- Presented with history of angina New York heart association class III of three months duration which increased to class IV two days prior to the arrival at the hospital
- Physical examination revealed heart rate of 90 beats per minute and blood pressure of 140 / 90 mmHg
- Cardiovascular examination revealed no abnormal heart sounds or murmurs

Relevant test results prior to catheterization

- Electrocardiogram revealed sinus rhythm and biphasic T wave inversions in leads V 1 to V 4
- Two dimensional echocardiogram revealed regional wall abnormality with hypokinesia of apical septum and apex , left ventricular ejection fraction of 50 %
- Troponin I was positive

Relevant catheterization findings

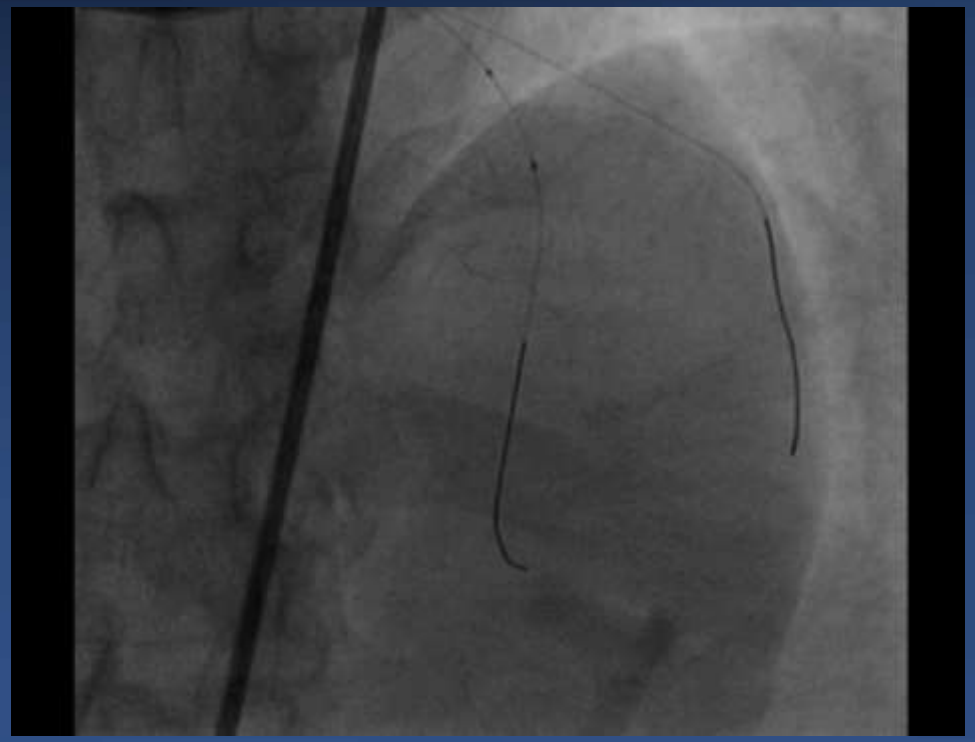
- Coronary angiogram done through right femoral artery approach revealed single vessel disease of left anterior descending artery 99 % subtotal occlusion and a normal large diagonal artery branch abutting it

- There was also retrograde filling of the left anterior descending artery from the right coronary artery

Interventional Management

- **Procedure Step**

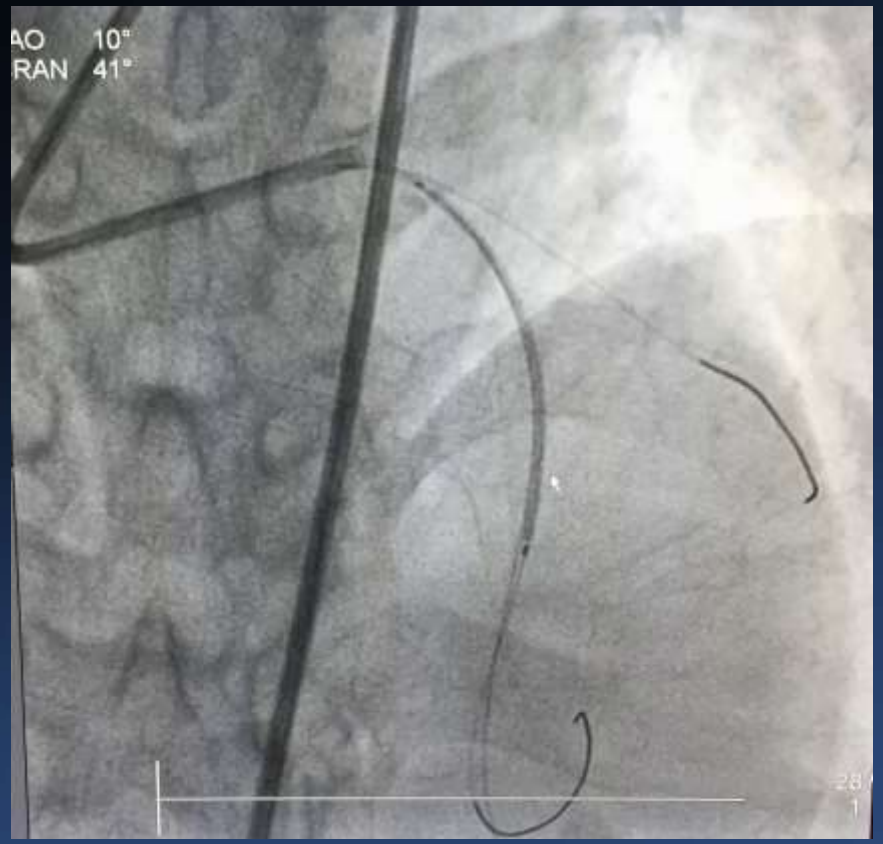
- The patient was taken up for angioplasty with provisional stenting of LAD

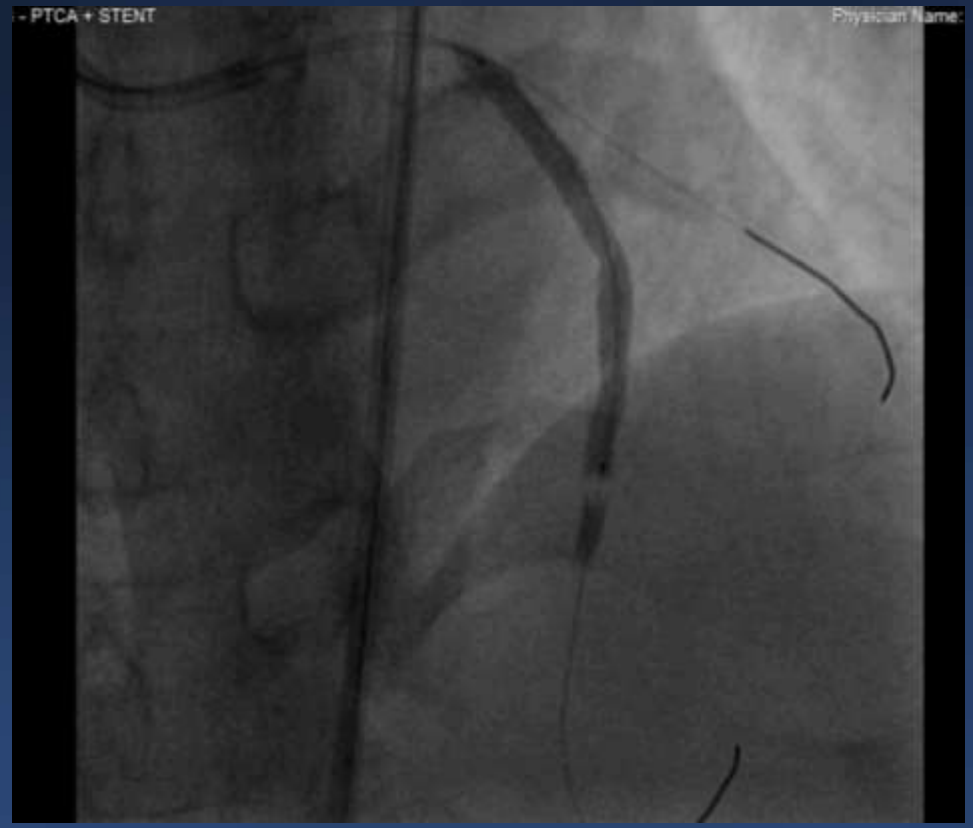


The left main artery was engaged with 3.50 extra back up guiding catheter

Two work horse guide wires were placed in LAD and diagonal branch

The lesion was pre-dilated with 2.50x 15 mm and 3.0 x 15 mm semi-compliant balloon

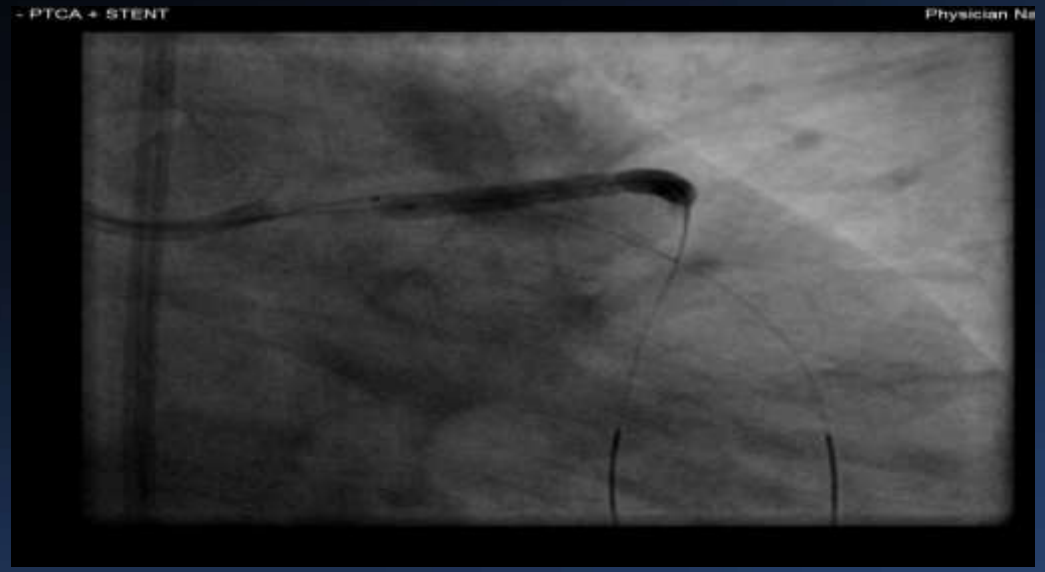


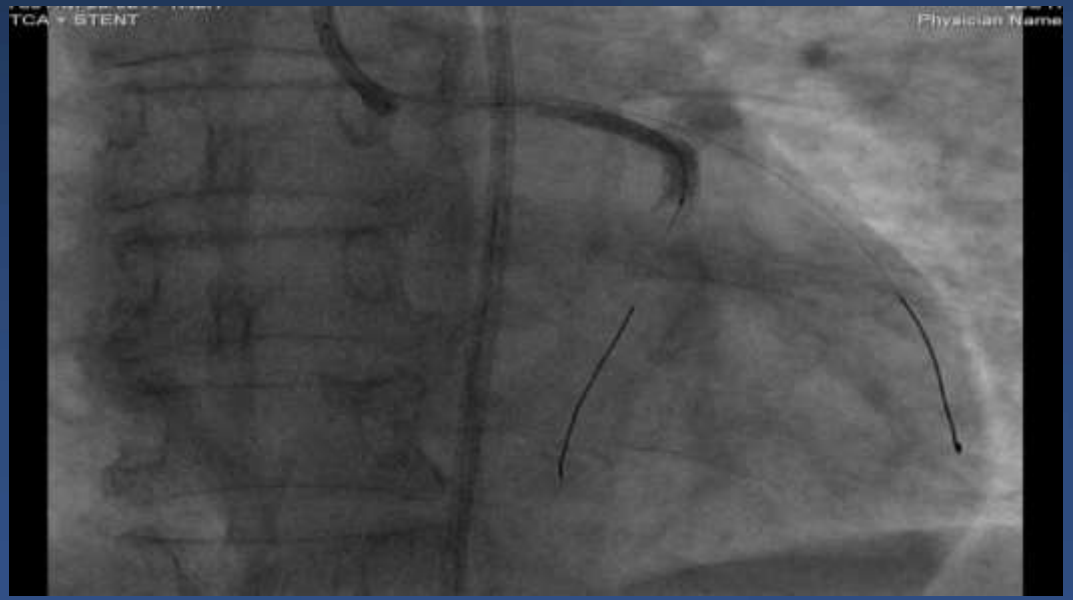


Despite multiple attempts deflation of the balloon could not be achieved

3.50 x 44 mm drug eluting stent was placed in LAD, inflated at nominal pressure

At this stage patient crashed-resuscitation initiated.
With saline in indeflator, multiple rapid inflation,deflation of the balloon at burst pressure was attempted but without any success.

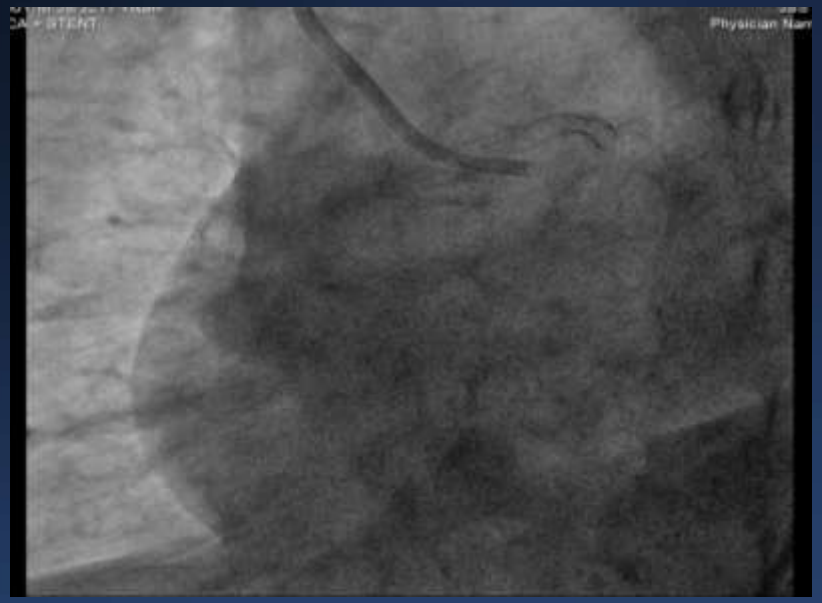




A micro-catheter was placed in the proximal end of the balloon,using reverse end of a stiff coronary wire multiple puncture was done, there was only slight,slow deflation of the balloon.

When attempts were made to pull the balloon out, the shaft fractured, got dislodged

3 x 15 mm non-compliant balloon was placed in diagonal , inflated at 4 atmospheric pressure,the entire system of wires,balloon,shaft was successfully pulled out



Angiogram revealed normal stent in-situ, TIMI III flow, no dissection and thrombus

2D echocardiogram showed no evidence of pericardial effusion and LVEF of 45 %

The patient stabilized, was discharged after three days

Discussion Points

- What could have possibly led to this scenario of balloon non-deflation
- Are there any other alternative techniques to deal with such situations
- Would imaging have altered the management

Conclusion/Take-home Message

- Stent balloon deflation failure, shaft fracture is a rare dreaded complication
- It is often due to technical problem with stent or balloon and faulty balloon preparation during angioplasty with high concentration of the contrast agent
- Non deflated balloon should not be attempted to forcefully pull out as there is risk of vessel injury, dissection or stent distortion
- The operator should not panic and follow the standard treatment protocols to deal with such complications
- Emergency coronary artery bypass surgery should be the last resort to overcome these complications