

Successful Primary PTCA for A 61-Year-Old Male with Inferior Wall Myocardial Infarction: Navigating Anomalous Coronary Arteries and Occlusions

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Abstract: 61 years old Male admitted with Inferior wall myocardial infarction and patient was taken for Primary PTCA (percutaneous transluminal coronary angioplasty). RCA (Right coronary artery) was not visualized in the Right Sinus. Angiography of left coronary sinus showed anomalous origin of left coronary artery from left sinus and showed proximal RCA total occlusion. Judicious use of JL 4.0 (Judkin Left) at the right time helped to shorten the procedure duration, reduce contrast volume and revascularise the patient at the earliest.

Keywords: Anomalous origin on Right coronary artery; Judkin Right, 3DRCA, Judkin Left catheter

1. Introduction

The Incidence of coronary anomalies in patient undergoing coronary angiography varies from 0.64 - 1.3%, Many of these anomalies are benign, however some are associated with serious morbidity. [1] When encountered in the cardiac catheterization laboratory, they are often challenging to deal with, particularly in settings of Acute Coronary Syndromes. There are often challenges to selectively engage, Requiring multiple catheters, increased contrast volume and radiation exposure. [2] The outcomes of such procedure is greatly influenced by the awareness of the operator about the anatomical variations and the technique required. [3]

2. Case Presentation

61 Years old Male, was admitted with complaints of chest pain for 3 hours duration. Patient was a known case of Diabetes, Systemic hypertension; on regular treatment. ECG taken on arrival showed ST elevation suggestive of Proximal RCA territory involvement. Patient was taken up for Primary PTCA. Initially Left coronary artery ostium was hooked and Coronary angiogram of left system showed proximal to distal diffuse disease of Left anterior descending artery along with discrete lesion in Left Circumflex artery. Right ostium was tried to hook with catheter in the right sinus. Despite attempts to engage right system, Right ostium was not visualised. After multiple attempts there was a visible filling of Right system from the left sinus. Initially Judkin right catheter was used which was difficult for engagement of ostium (Figure 1) after which 3DRCA was tried which also did not yield success. As the RCA Was originating from left sinus, with an anomalous slight down looking ostium, JL 4.0 was tried which was able to hook the right ostium with good support. The JL guide was kept at left sinus floor and thus it was made was more curved and that helped to hook Right ostium. The RCA was now wired and predilated after which stenting was done. TIMI iii flow was achieved. Patient stable post procedure and planned for Non culprit PTCA later. Hence timely guide selection helped to intervene at the earliest.

As the patient was critically ill and the primary aim was to open the infarct related artery, we proceeded with primary PCI after confirming that it's not malignant course by taking multiple views. Once the patient became stable, we did CT angiography and confirmed that it is not malignant course.

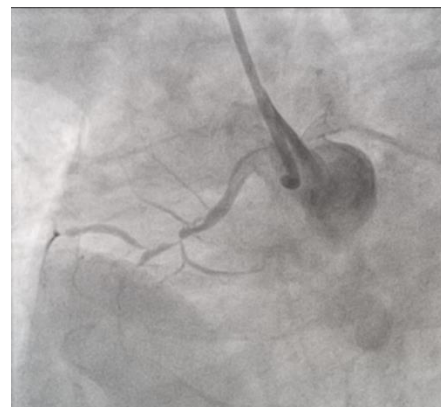


Figure 1: RCA hooked with JR3 catheter

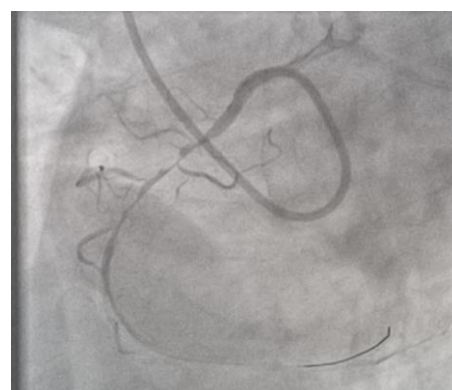


Figure 2: RCA engaged with JL4 guide catheter with good support

3. Discussion

The coronary arteries may present with several anomalies in terms of both number and position. Newer image-based

modality has led to greater identification of these anomalies.^[4] During Procedure the unusual ostial location and course of an anomalous coronary artery can pose technical challenges in the catheterization laboratory, often requiring large iodinated contrast volume and high radiation exposure and may delay intervention in acute coronary syndrome patients. In patients with Previously undocumented or unknown coronary artery anomaly, it is efficient to obtain a high-quality deep root aortic root angiogram which will have a broad view rather than hunt for them. In Non-ACS setting, Computed Tomographic angiography can provide rapid and accurate diagnosis^[5].

The anomalous aortic origin of the left or right coronary artery with malignant interarterial course is associated with increased risk of sudden cardiac death^[6]. Usually there will be technical difficulties especially while engaging the right coronary artery. The RCA (Right coronary artery) can arise anamously from various location within the sinuses of Valsalva. They include: 1) RCA ostium adjacent to left main coronary artery ostium 2) RCA ostium inferior to left main coronary artery ostium 3) RCA ostium towards the commissure of the right and left cusps 4) Ostium above the sinotubular plane 5) Ostium from the right cusp superior and towards the left cusps etc.^[7]

For RCA ostium adjacent to ostium of the left Main coronary artery, the common catheters used are Leya catheter left coronary Amplatz 45°^[8] / 90° or R - ACAOS Launcher coronary guide. Because of Proximal Intramural course of RCA in this setting extra care should be taken to mitigate the high risk for dissection by the catheter tip.^[9]

If the RCA ostium is inferior to left Main or Towards the commissure of left and right cusp it is easier to engage with Amplatz left or Amplatz right on basis of aortic root dimensions^[10]. If the Ostium rises above the sinotubular plane, JR 4, Hockey stick or Multipurpose or Amplatz left or right is used.^[11]

An Anomalous RCA from the right cusp, Superior and towards the left cusp might be difficult to achieve selective engagement and support if intervention is needed. Options include 3DRCA and Amplatz left or right, but if support is needed then Sherpa NX balanced catheter is a better option.^[12]

4. Conclusion

If case of suspected anomalous coronary artery origin, a small check for anomalous artery in entire root followed by high quality root injection if not accessible followed by judicious use of catheter is necessary to prevent delay in treatment and reduce contrast volume and radiation exposure.

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