CATHALOGUE

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CASE REPORT

Navigating Unanticipated Complications in Percutaneous Coronary Intervention: A Case Report of Elective PCI Turning into Primary PCI for RCA Stenosis

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Abstract

Background: Percutaneous coronary intervention (PCI) is a cornerstone in the management of coronary artery disease, offering a minimally invasive approach to restore blood flow in obstructed coronary arteries. However, unexpected complications can arise during these procedures, necessitating rapid adaptation and intervention to ensure optimal patient outcomes.

Case Presentation: We present the case of a 73-year-old male with effort angina and multiple comorbidities, including diabetes mellitus, hypertension, and dyslipidemia. Scheduled for elective PCI due to a moderate-tight lesion in the proximal right coronary artery (RCA), the procedure swiftly transitioned into a primary PCI scenario following abrupt vessel closure and ST-segment elevation. Diagnostic assessment revealed the need for immediate intervention to address potential causes such as thrombus, dissection, or air embolism.

Management & Results: A multidisciplinary team employed a systematic approach, utilizing aspiration thrombectomy, stent placement, balloon dilatation, and intracoronary medications to restore coronary flow and manage complications. Despite challenges including hypotension and bradycardia, sequential interventions successfully addressed thrombus burden and ostioproximal dissection. Pharmacological agents were administered to optimize coronary perfusion, leading to improved antegrade flow with residual haziness in distal vessels.

Conclusion: This case underscores the complexity of managing unanticipated complications during PCI, emphasizing the importance of rapid recognition, multidisciplinary teamwork, and advanced interventional techniques. Through meticulous assessment and targeted interventions, optimal outcomes can be achieved, highlighting the critical role of preparedness and adaptability in navigating PCI procedures.

Keywords

Percutaneous coronary intervention, Primary PCI, RCA stenosis, Complications.

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Introduction

In the realm of interventional cardiology, elective percutaneous coronary intervention (PCI) stands as a cornerstone in the management of coronary artery disease. However, as with any invasive procedure, unforeseen complications can arise, turning what was planned as an elective intervention into a critical situation demanding urgent attention. This case serves as a poignant reminder of the critical importance of not only being prepared for such eventualities but also of the necessity for swift and adept responses when they do occur.

Through a detailed examination of this case, we delve into the intricate nature of these unexpected complications during PCI and the profound impact they can have on patient outcomes and overall survival. By shedding light on this aspect of interventional cardiology, we hope to underscore the significance of vigilance, preparedness, and adept management strategies in navigating the complexities inherent in PCI procedures.

Case Presentation

A 73-year-old male presented with effort angina, classified as CCS-II/III for the past month. His medical history included diabetes mellitus, hypertension, and dyslipidemia. Despite optimal medical therapy, the patient continued to experience angina symptoms. Coronary angiography revealed a moderate-tight lesion in the proximal part of the right coronary artery (RCA), prompting the decision for elective PCI.

However, before the PCI procedure could commence, the patient developed typical chest pain and ST-segment elevation (STE) on the electrocardiogram (ECG), indicating abrupt vessel closure (AVC) in the RCA. Differential diagnoses included acute thrombus, air embolism, or dissection. Further investigation was crucial to confirm the underlying cause and guide subsequent interventions.

Diagnostic Assessment

Additional assessment through angiography and intravascular imaging techniques was imperative to discern the underlying pathology causing the AVC. Differential diagnoses such as dissection, air embolism, spasm, intramural hematoma, and thrombosis needed to be considered and excluded through meticulous evaluation.

Therapeutic Intervention

Given the emergent nature of the situation, elective PCI transitioned into primary PCI for the RCA. The patient experienced hypotension and bradycardia, necessitating rapid intervention. Strategies employed included aspiration thrombectomy, stent placement, balloon dilatation, and administration of intracoronary medications such as glycoprotein IIb/IIIa inhibitors and atropine.

Despite initial challenges, including poor catheter support and difficult lesion engagement, a multi-pronged approach was utilized to restore antegrade flow, tackle thrombus burden, and manage ostioproximal dissection. Sequential stent placement, balloon dilatation, and pharmacological interventions were employed to optimize coronary flow and resolve residual thrombus.

Follow-up and Outcomes

Post-procedural assessment revealed fair flow in the RCA with residual haziness in the posterior descending artery (PDA) and posterolateral ventricular artery (PLV). Further management involved the administration of antiplatelet agents such as tirofiban to address residual thrombus burden and optimize coronary perfusion.

Discussion

Coronary artery anomalies can manifest as variations in vessel origin, number, intrinsic anatomy, or course and termination[1]. They are infrequent occurrences in the general population, with an estimated incidence of no more than 1%[2]. While these anomalies may coexist with other congenital heart conditions, some individuals may

present with a solitary anomaly, often remaining largely asymptomatic[3,4].

The case at hand unveils the multifaceted challenges intertwined with managing unanticipated complications during PCI. From the sudden transition from elective to primary PCI to the myriad diagnostic and therapeutic interventions employed in response, it illustrates the intricate dance between clinical acumen, technological prowess, and teamwork that characterizes modern interventional cardiology. This discussion serves as a platform to delve deeper into the nuances of this case, exploring the underlying factors contributing to the complications encountered, the rationale behind the therapeutic decisions made, and the lessons gleaned from this experience.

Through a comprehensive analysis, we aim to underscore the critical importance of a systematic approach, interdisciplinary collaboration, and the judicious application of advanced interventional techniques in navigating the complexities inherent in PCI procedures. In doing so, we not only glean insights into the management of this specific case but also glean broader lessons that can inform and enhance clinical practice in interventional cardiology.

Conclusion

The successful management of unanticipated complications during elective PCI, transitioning into primary PCI, highlights the importance of prompt recognition, timely intervention, and collaborative care in optimizing patient outcomes.

Learning Points

- Unanticipated procedural complications may arise during PCI interventions, necessitating rapid and effective management.
- Knowledge of potential complications, differential diagnoses, and therapeutic strategies is essential for practicing cardiologists to mitigate risks and optimize patient outcomes.
- Multidisciplinary teamwork and utilization of advanced interventional techniques are critical in addressing complex PCI scenarios and improving patient survival.

References

1. Perisic ZD, Kostic TL, Djindjic BJ. Diagnosis and percutaneous coronary intervention of an anomalous right coronary artery originating from the middle of the left anterior descending artery: a case report. J Int Med Res. 2020 Feb;48(2):300060519896709. doi: 10.1177/0300060519896709.
2. Kamran M, Bogal M. Anomalous right coronary artery originating from the left anterior descending artery. J Invasive Cardiol. 2006 Aug;18(8):E221-2. PMID: 16877791.
3. Wilson J, Reda H, Gurley JC. Anomalous right coronary artery originating from the left anterior descending artery: case report and review of the literature. Int J Cardiol. 2009 Nov 12;137(3):195-8. doi: 10.1016/j.ijcard.2009.03.140. Epub 2009 May 8. PMID: 19427707.
4. Hershey J, Isada L, Fenster MS. Emergent primary PCI of anomalous LAD. J Invasive Cardiol. 2006 May;18(5):E152-3. PMID: 16670456.

Figure/Video

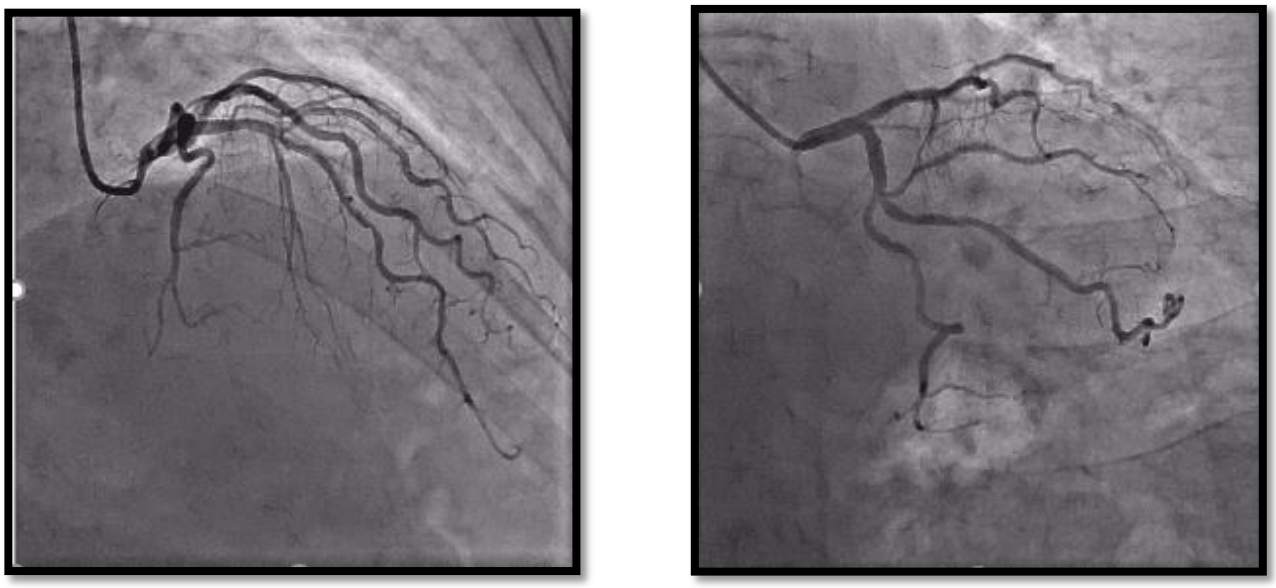


Figure 1 (A&B): Cor-Angiogram

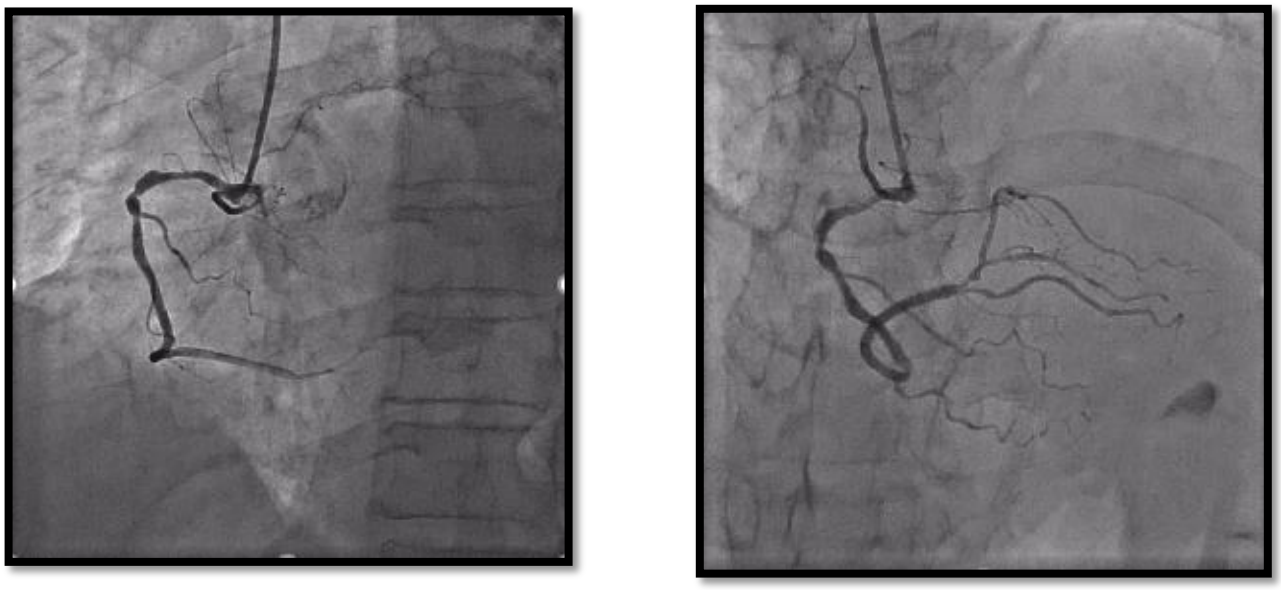


Figure 2 (A&B): Moderate-Tight lesion in proximal part of RCA

The patient had been taking anti-anginal medications for the past 2 months. Despite this, the symptoms didn't improve. Therefore, we decided to proceed with angioplasty.

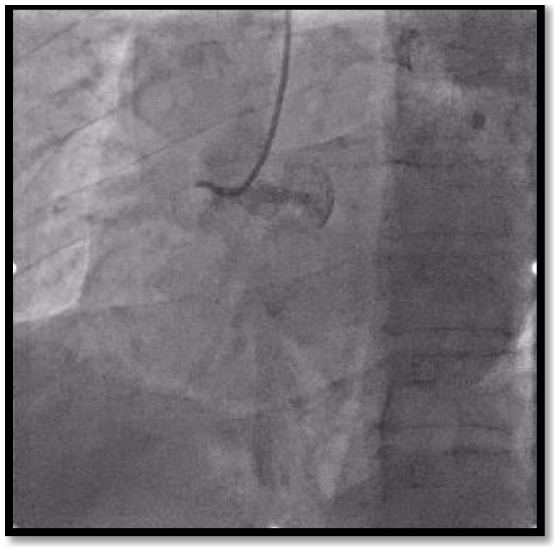


Figure 3: Check injection showed Abrupt Vessel Closure (AVC)

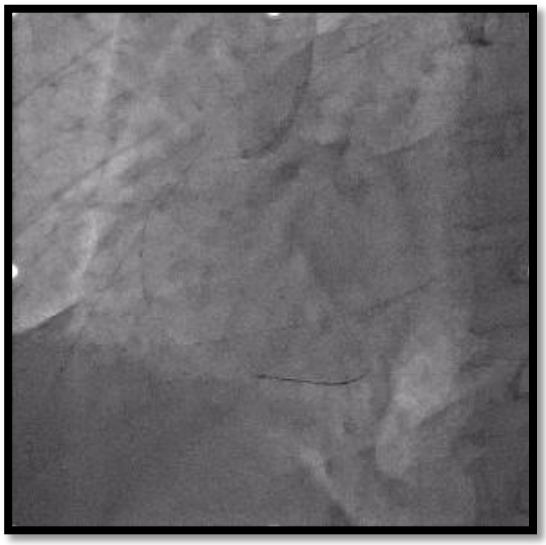


Figure 4 Sion blue wire crossed the lesion Aspiration Thrombectomy (2-3 runs)

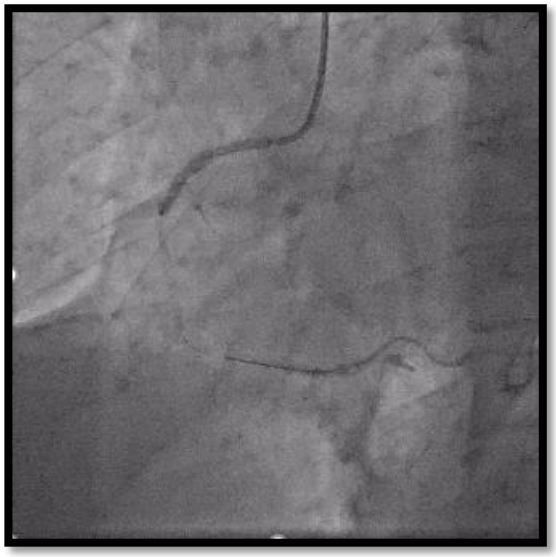


Figure 5: Stented with 3X38mm DES

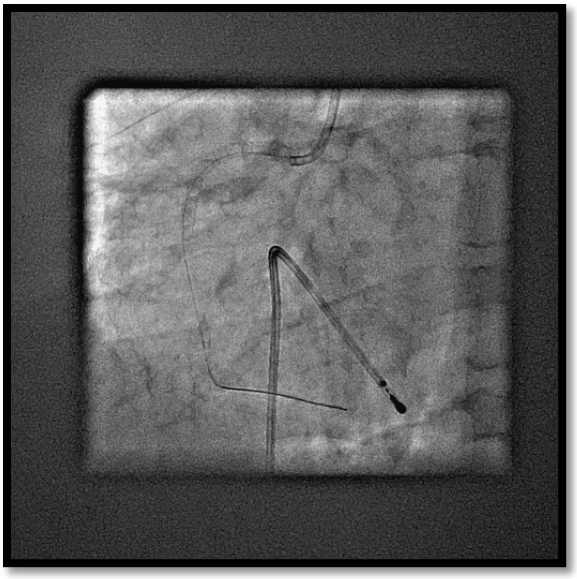


Figure 6: Following the check injection, no flow was observed. Subsequently, due to the patient's hemodynamic instability characterized by bradycardia and hypertension, ionotropic support was recommended, and a TPM was inserted.

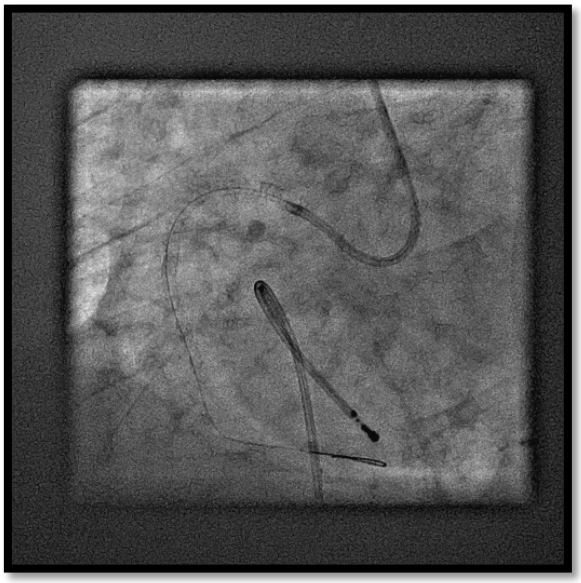


Figure 7: Aspiration Thrombectomy to tackle thrombus burden.

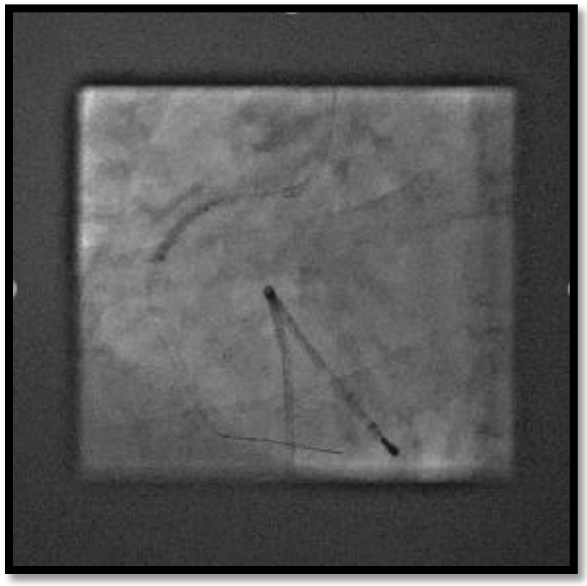


Figure 8: Thrombus was tried to tackle with series of brief balloon inflations to restore the antegrade flow (2.0x15 balloon), Slight improvement.

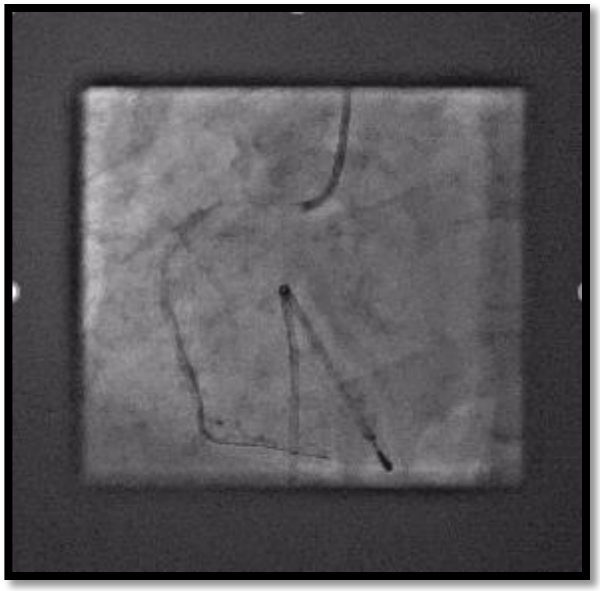
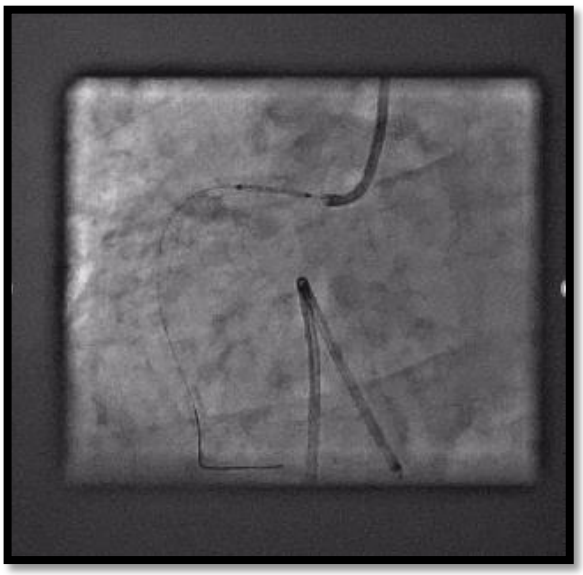


Figure 9: Check injection showed there is either ostio-proximal Dissection /Thrombus



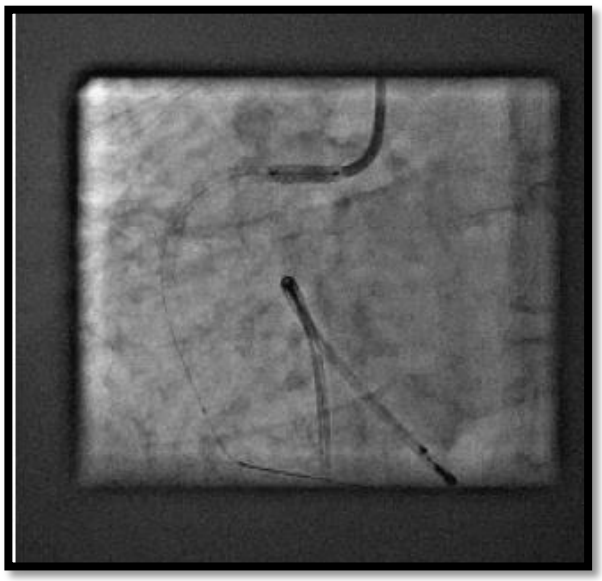


Figure 10 (A&B): Covered proximal part with another stent 3x12mm DES

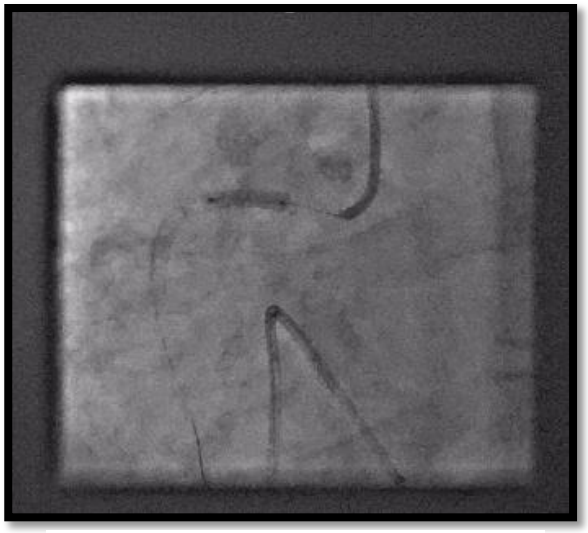


Figure 11: Post dilated with 2.0x15

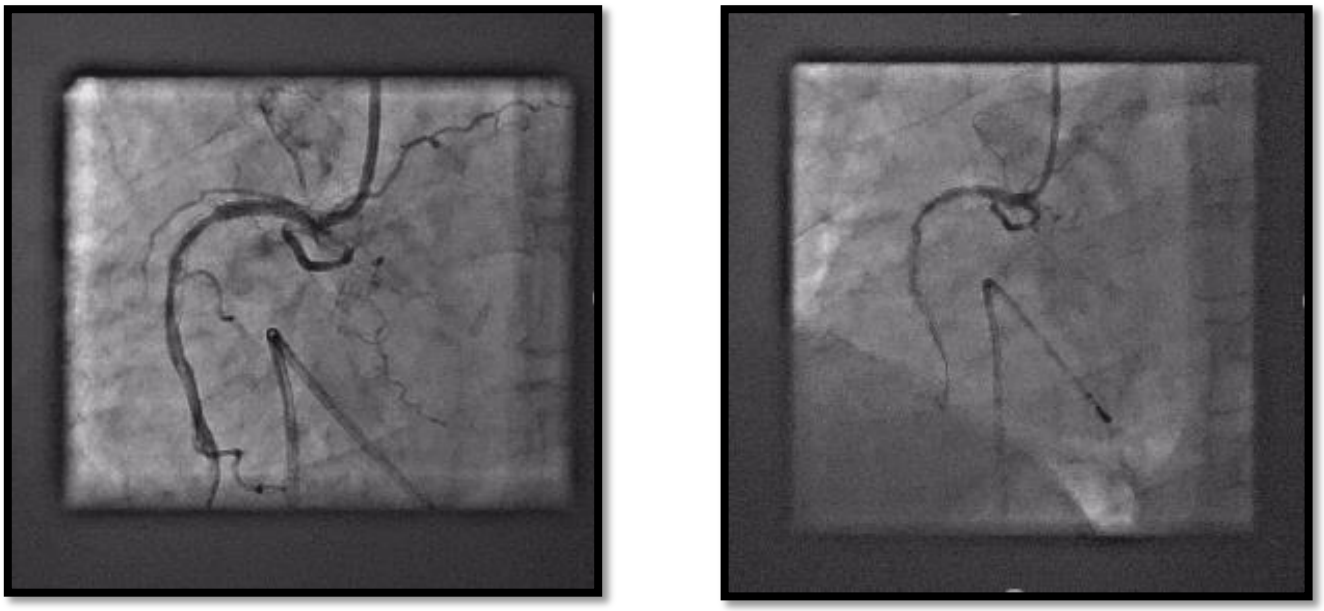


Figure 12 (A&B): Check injection showed fair flow with thrombus shifted distally to previously placed stent.

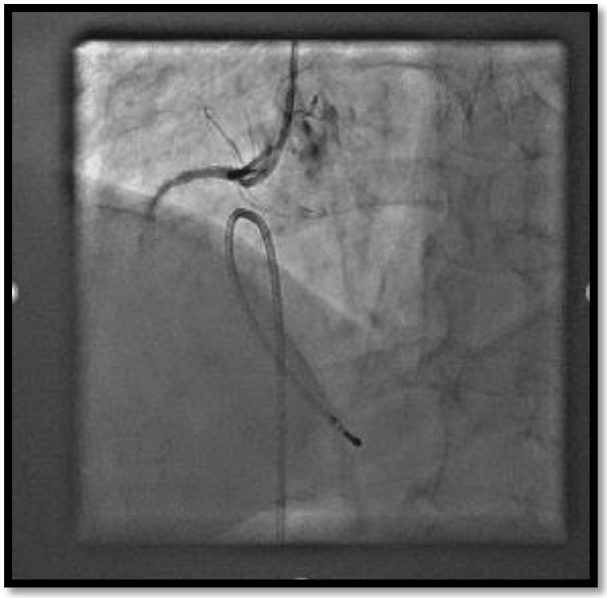


Figure 13: b/c of poor catheter support/difficult to engage, it was planned to change the guider

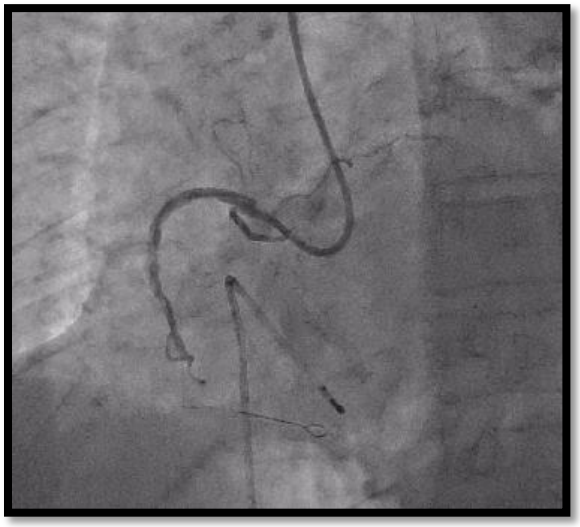


Figure 14: pilot 50 wire with change of cathete(AL 1)

Figure 15: Before tackling the distal thrombus, Dilated with 3.25x10,bit improvement

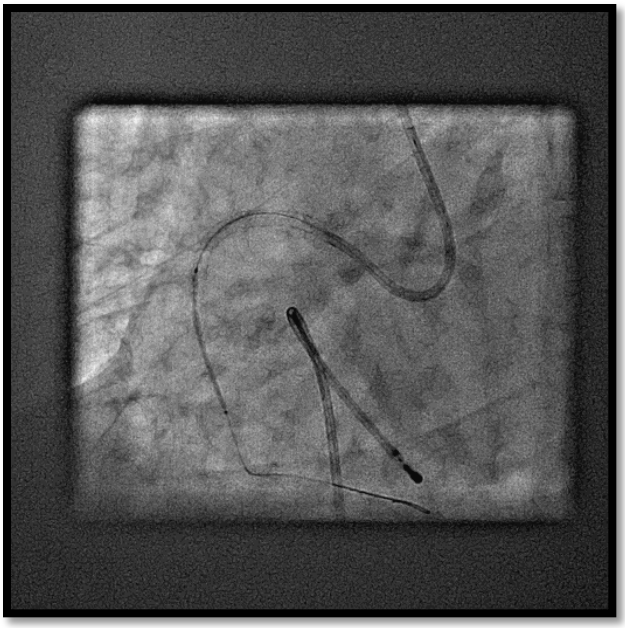


Figure 16: Another stent was put to trap the dislodged thrombus (2.75x28mm)

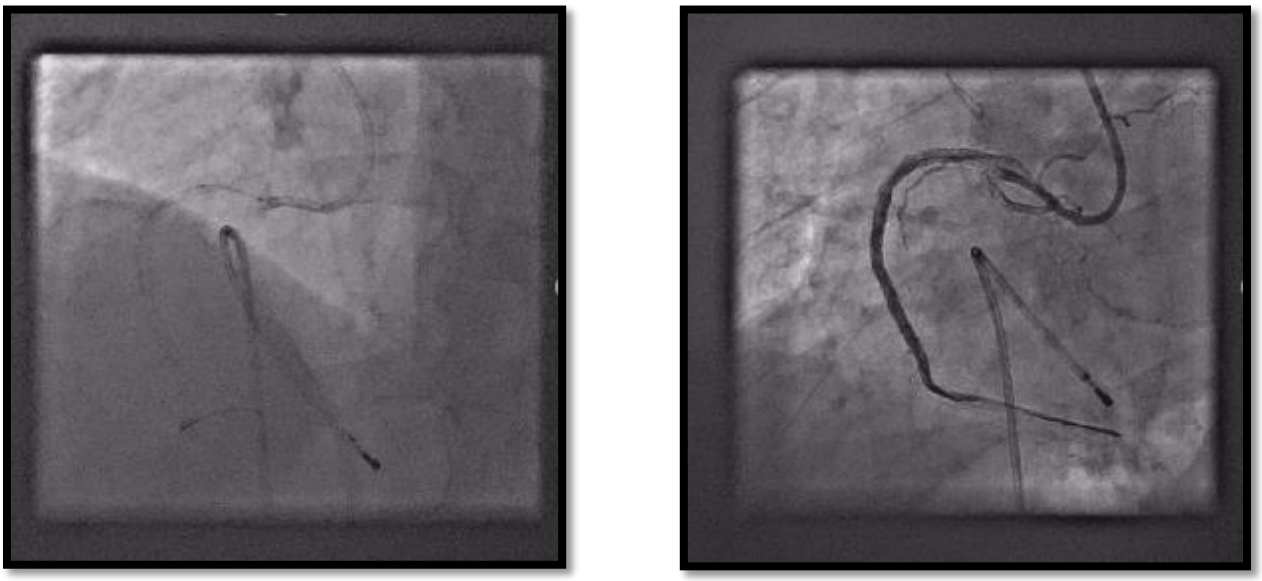


Figure 17 (A&B): Balloon dottering and dilatation was done with 3.25x10mm

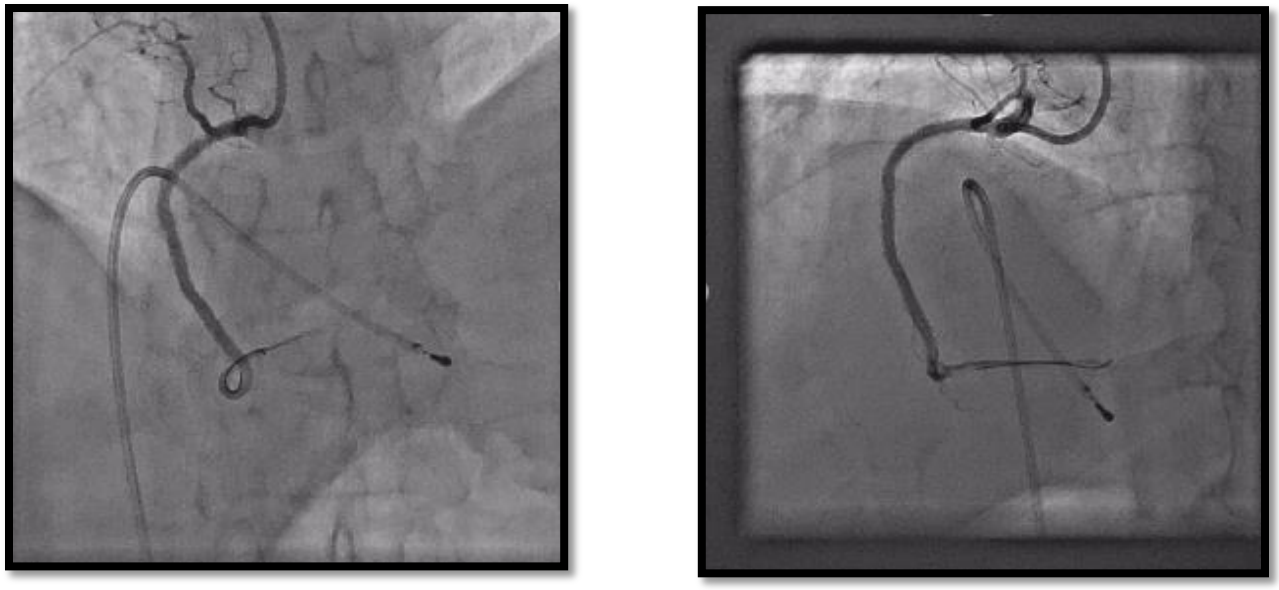


Figure 18 (A&B): maximum thrombus management was applied. However, check injection revealed persistent haziness in the PDA/PLV. Consequently, the decision was made to address the remaining thrombus with Aggrastat (Tirofiban).