

# Recanalization After False Lumen Stent Placement During Iatrogenic Coronary Dissection: A Case Report.

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## Case report

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# Abstract

Iatrogenic coronary artery dissection is an uncommon but life-threatening complication of coronary angiography and angioplasty. It may result in devastating consequences if not promptly treated with immediate revascularization. We report a case of recanalization after false lumen stent placement during iatrogenic coronary dissection.

## Background

Iatrogenic coronary artery dissection is an uncommon but life-threatening complication of coronary angiography and angioplasty. It may result in devastating consequences if not promptly treated with immediate revascularization. We report a case of recanalization after false lumen stent placement during iatrogenic coronary dissection.

## Case Presentation

A 53-year-old female presented in another hospital with symptoms of shortness of breath and chest pain on exertion. She had an unremarkable physical examination. Laboratory examination revealed elevated troponin I (2.08ng/ml) and without ST elevation in electrocardiography. She was diagnosed as non-ST-segment elevation myocardial infarction. Emergency coronary angiography demonstrated a severe lesion in the middle part of the posterolateral (PL) branch (Fig. 1A and 1B). Revascularization of PL branch was planned but the flow was limited from the proximal-right coronary artery (RCA) to mid-RCA after wiring in RCA (Fig. 1C and 1D), the patient experienced severe chest pain, and two stents were deployed from the proximal-RCA to mid-RCA (Fig. 1E and 1F). The patient presented marked ST elevation, severe hypotension, hemodynamic collapse, and loss of consciousness. Cardiopulmonary resuscitation was initiated and an intra-aortic balloon pump was used after the patient's vital signs were stable. Intravascular ultrasound (IVUS) imaging showed two stents placed in false lumen (Fig. 2). One month later the patient was discharged from intensive care unit. Although two stents were deployed in proximal-RCA false lumen, she survived from cardiac arrest caused by iatrogenic coronary artery dissection.

Two months later, the patient was admitted to our hospital. The electrocardiogram showed pathological Q waves in leads III and aVF and ST-segment elevations in II, III and aVF. An echocardiogram showed left ventricular ejection fraction of 47.2% with hypokinetic inferior wall and inferoseptal segments. Because of stents in RCA false lumen history, coronary angiography was initiated. Coronary angiography demonstrated recanalization of the RCA true lumen (Fig. 3A) and occlusion of the stents previously deployed in the false lumen. It was confirmed by IVUS. Normal flow was restored in the PL branch. A wire was carefully placed in RCA true lumen (Fig. 3B), after IVUS imaging (Fig. 3C) confirmed wire in true lumen a drug-eluted stent (Fig. 3D-F) was deployed from the RCA ostium to mid-RCA for sealing the dissection. Final IVUS imaging confirmed fully expanded and well apposed stent.

## Discussion

Iatrogenic coronary artery dissection is a rare complication during coronary angiography or angioplasty, with an incidence of 0.1–1.1%<sup>[1, 2]</sup>. Immediate stenting is usually the preferred treatment in most cases<sup>[3]</sup>. Apposition of stents in the false lumen can result in complete collapse of the true lumen leading to catastrophic outcomes<sup>[4]</sup>. M.Paz Suarez-Mier<sup>[4]</sup> reported a case of two-stents placement in false lumen during iatrogenic coronary artery dissection in the left coronary, and the 38-year-old woman died after 60 min of continuous cardiopulmonary resuscitation. We report a case of recanalization after false lumen stent placement during iatrogenic coronary dissection caused by PCI. Although two stents were implanted in the false lumen, the patient survived fortunately. It maybe the true lumen was not totally lost after false lumen stent placement. It could explain that recanalization of the RCA true lumen and occlusion of the stents previously deployed in the false lumen.

Wiring the true lumen and sealing the false lumen are essential for successful bail-out dealing with iatrogenic coronary artery dissection. In case of difficulty in wiring the true lumen, IVUS-guided “double wiring technique” has been reported to be a potentially useful treatment strategy<sup>[5]</sup>. If the interventional guide wire could not be advanced into the distal coronary artery and the coronary flow were abnormal after wiring the coronary artery, artery dissection should be considered. If the wire were advanced into the dissection and were not confirmed by IVUS, stents in the false lumen can lead to disastrous consequences. Thus, early use of IVUS to recognize the position of the wire can effectively avoid the implantation of the stent in the false lumen. IVUS is useful in not only detecting the dissection but also introducing the guide wire into the true lumen in patients with coronary artery dissection<sup>[6]</sup>. Once the iatrogenic coronary artery dissection is confirmed, algorithm for management of catheter-induced coronary artery dissection from JACC<sup>[7]</sup> may improve the success rate of iatrogenic coronary artery dissection intervention.

## Abbreviations

PL: posterolateral branch

RCA: right coronary artery

IVUS: intravascular ultrasound

## Declarations

### Ethics approval and consent to participate

The ethics committee of the Second Affiliated Hospital of Zhejiang University approved the study.

### Consent for publication

Consent for publication is obtained from the patient.

### **Availability of data and materials**

The datasets of the current study are available from the corresponding author upon reasonable request.

### **Competing interests**

The authors declare that they have no competing interests.

### **Funding**

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### **Authors' contributions**

JL wrote the manuscript. JL and LD obtained the image data.

All authors were involved in the treatment of the patient. All authors read and approved the final written manuscript.

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### **Authors' information**

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## Figures

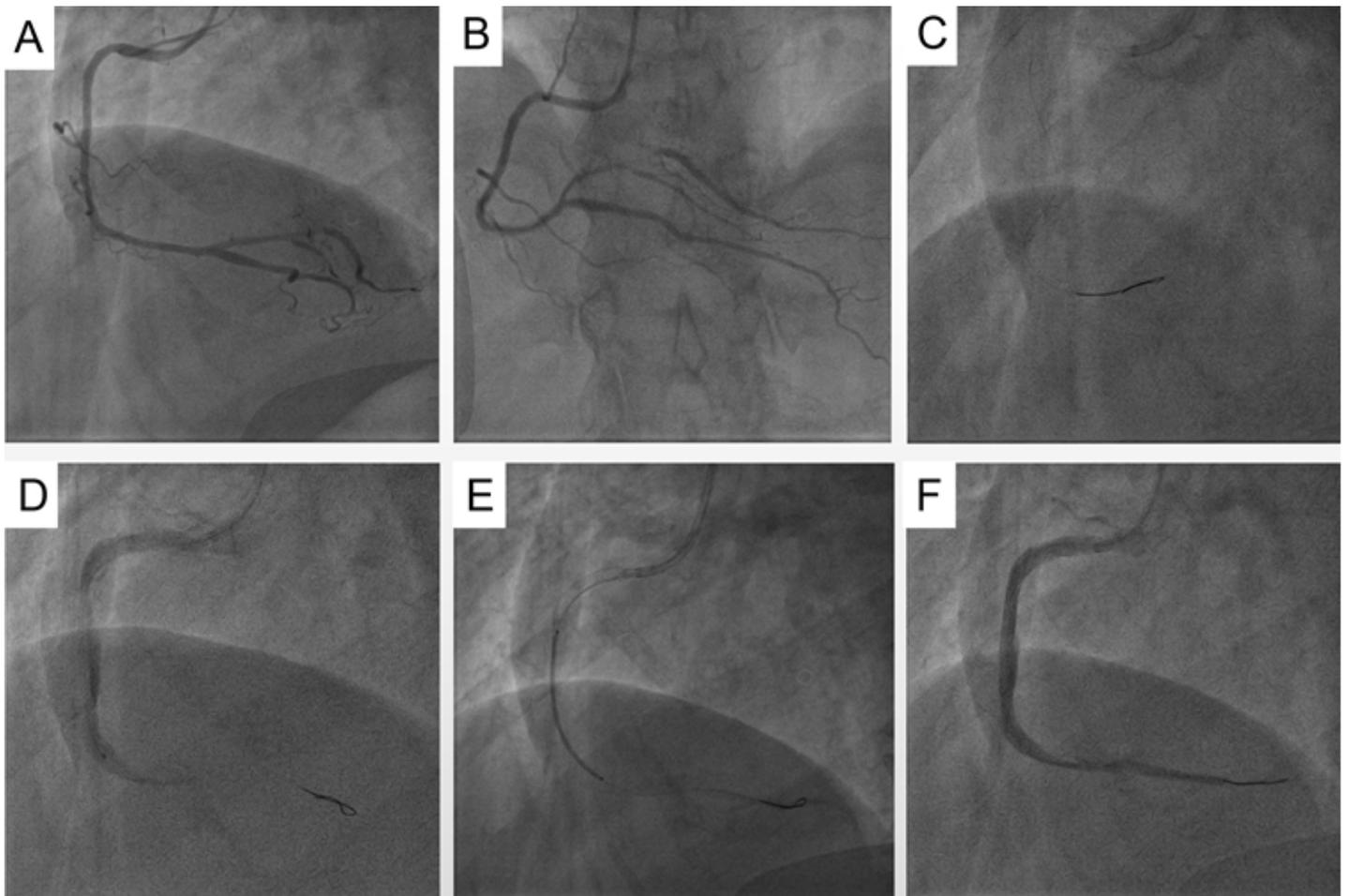
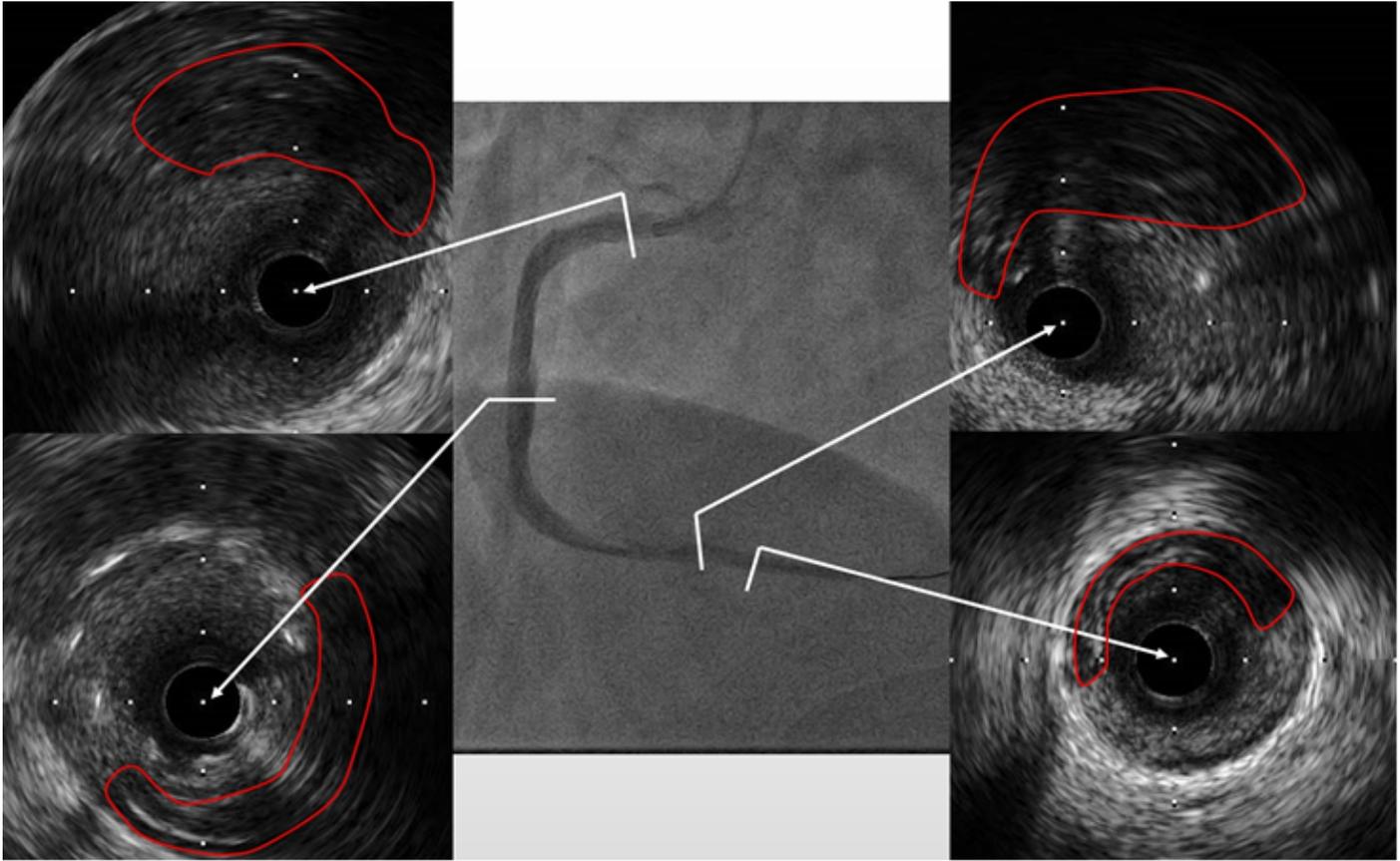


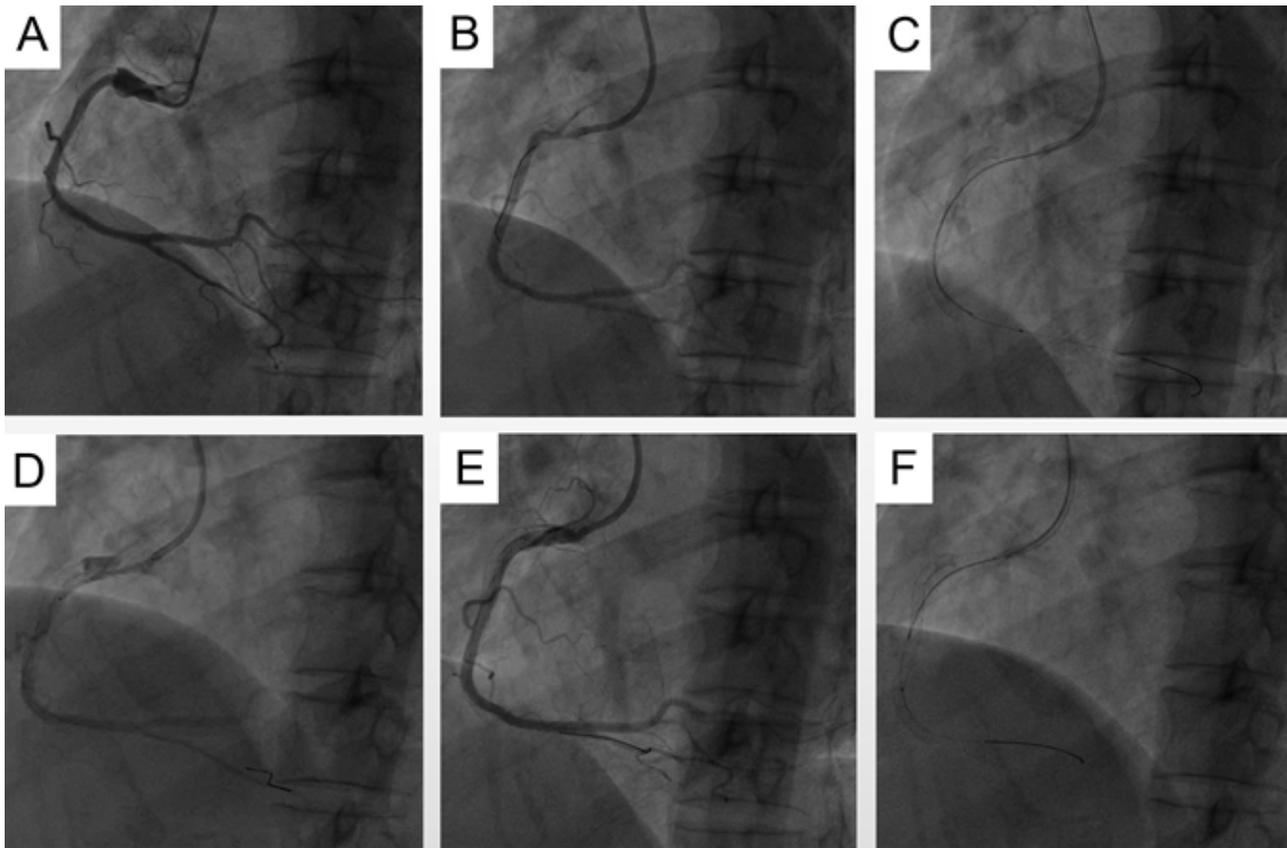
Figure 1

The angiography revealed a severe lesion(TIMI 3) in the middle part of the posterolateral (PL) branch(A and B). Revascularization of PL branch was planned but the flow was limited from the proximal-RCA to mid-RCA after wiring in RCA(C and D) and two stents were deployed from the proximal-RCA to mid-RCA(E and F) in the false lumen.



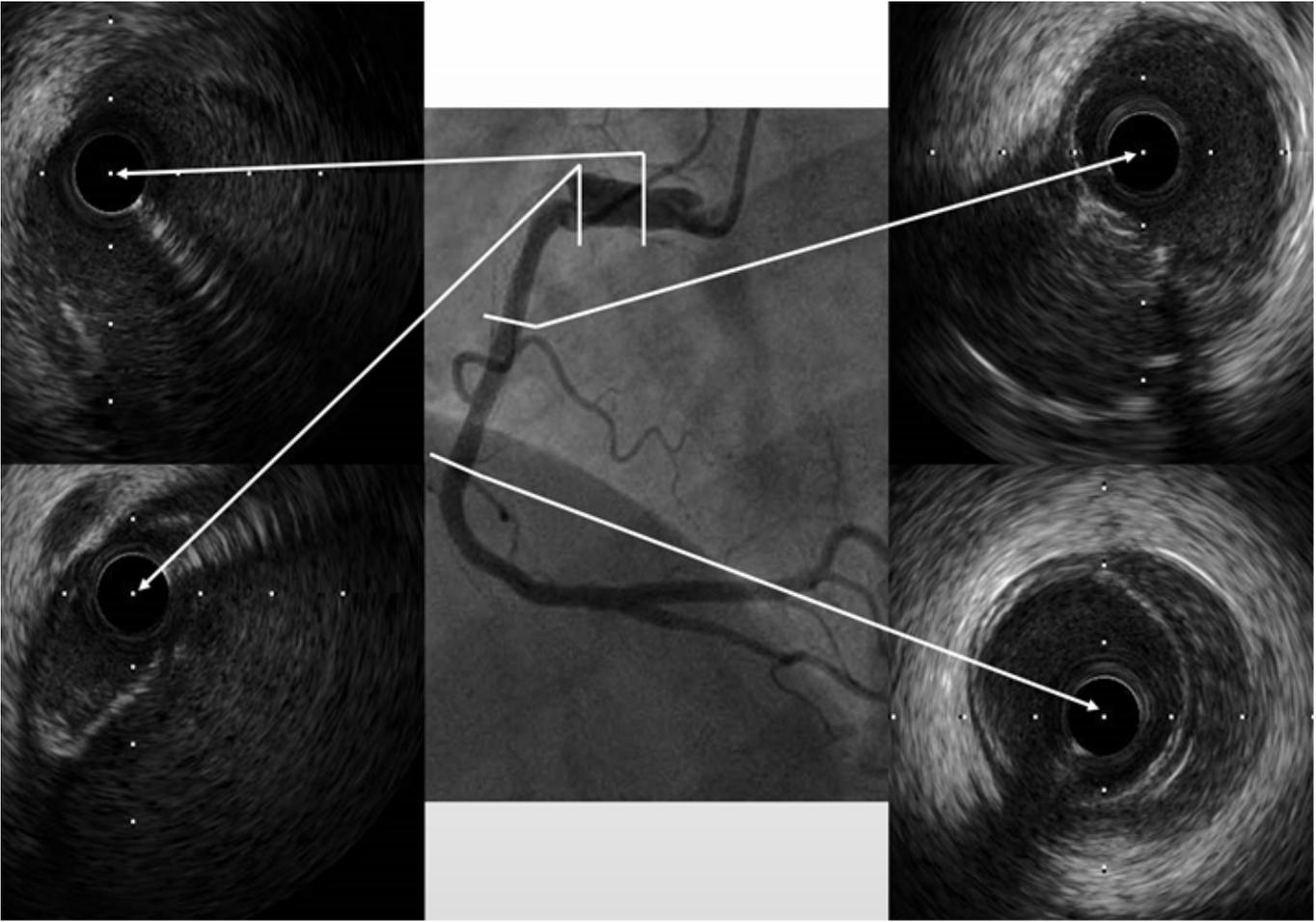
**Figure 2**

IVUS imaging showed the true lumen(red circles) collapsed by two stents placed in false lumen.



**Figure 3**

Recanalization of the RCA true lumen(A) and occlusion of the stents previously deployed in the false lumen from the proximal-RCA to mid-RCA had been revealed. Normal flow was restored in the PL branch. The previously placed stents were clearly demonstrated to be extraluminal. A wire was carefully placed in RCA true lumen(B), after IVUS imaging(C) confirmed wire in true lumen a drug-eluted stent(D-F) was deployed from the RCA ostium to mid-RCA for sealing the dissection.



**Figure 4**

IVUS showed that the previously deployed stents were in the false lumen with spontaneous re-canalization of the true lumen.