

# Successful use of a guide wire to engage an occluded vessel following failure of conventional catheterization techniques in a patient with acute myocardial infarction

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The present report describes the case of a 43-year-old woman with acute inferior myocardial infarction, in whom the culprit vessel was

posteromedially located, and various diagnostic or guide catheters could not be engaged. The culprit vessel was directly cannulated using a guide wire, which allowed for a successful coronary intervention.

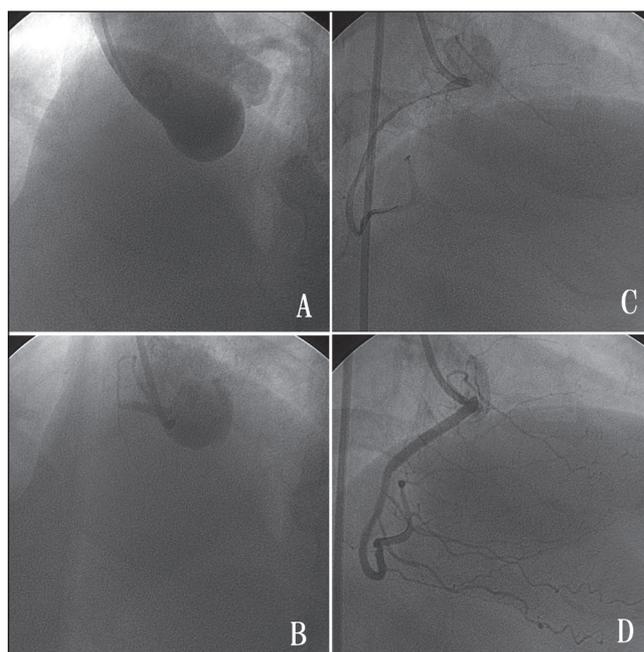
**Key Words:** Acute myocardial infarction; Guide wire; Guide wire technique

In the daily practice of percutaneous coronary intervention, various shapes and designs of diagnostic and guide catheters are used to cannulate coronary arteries for coronary interventions. However, there are occasions when coronary arteries are difficult to engage, especially in cases of abnormally positioned coronary arteries or acute myocardial infarction when time is urgent (1,2). The present report describes a patient with acute inferior myocardial infarction, in whom the right coronary artery was posteromedially located, making it difficult to engage the culprit vessel using different types of diagnostic and guide catheters. The coronary intervention was performed successfully using a guide wire to cannulate the culprit vessel.

## CASE PRESENTATION

A 43-year-old woman was admitted to the Jen Ai Hospital (Taichung, Taiwan) because of persistent chest tightness and pain, shortness of breath and cold sweating for two days. The patient had a history of hypertension and hyperlipidemia without regular treatment. She also smoked and consumed alcohol.

At physical examination, her body temperature was 37°C, pulse rate was 93 beats/min, respiration rate was 20 breaths/min and blood pressure was 130/98 mmHg. Her breathing sound was coarse, and her heart rhythm was regular with a grade 2/6 systolic murmur over the left sternal border. Her abdomen was soft and her peripheral pulses were intact. There was no peripheral edema, and a neurological examination was unremarkable. A complete blood count and blood chemistry profile was normal. Radiographs of the chest revealed cardiomegaly and pulmonary congestion. An electrocardiogram showed sinus rhythm with ST elevation over leads II, III and aVF, revealing acute inferior myocardial infarction. An echocardiogram demonstrated inferior wall hypokinesis with normal left ventricular systolic function. Creatine kinase and creatine kinase MB were 130 U/L and 12 U/L on admission, 2532 U/L and 162 U/L at 6 h, 1200 U/L and 104 U/L at 12 h, 723 U/L and 90 U/L at



**Figure 1** A case of acute inferior myocardial infarction. **A** Ascending aortogram visualizing the posteromedial position of the right coronary artery. **B** Aortogram of the Judkins right 4 guide catheter near to the right coronary artery showing total occlusion of the proximal right coronary artery. **C** Wire crossing the right coronary artery using a Choice PT guide wire. **D** Final angiogram after balloon dilation and stent implantation of the right coronary artery

18 h, and 268 U/L and 36 U/L at 24 h, respectively. Troponin I was 0.155 µg/L on admission, 87.89 µg/L at 6 h and 63.94 µg/L at 12 h.

On hospitalization, immediate cardiac catheterization was performed (Figure 1). The left anterior descending and

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circumflex coronary arteries were normal. However, attempts to cannulate the right coronary artery were not successful using diagnostic catheters, as well as the Judkins right 4 and 5, and Amplatz guiding catheters (Boston Scientific, USA). Therefore, an ascending aortogram was performed to visualize the position of the coronary arteries. The right coronary artery was found to be located posteromedially from the right coronary cusp, with total occlusion from the proximal right coronary artery. Unfortunately, further attempts to engage the right coronary artery remained unsuccessful using the above catheters. It was decided that a Judkins right 4 guide catheter be positioned as near as possible to the right coronary artery to allow for imaging. A Choice PT floppy guide wire (Boston Scientific, USA) was subsequently used to successfully cannulate the right coronary artery. Afterwards, the guide catheter was advanced to the right coronary artery using the guide wire as a rail for tracking the catheter to the correct position. Balloon dilation followed by stent implantation of the culprit right coronary artery was performed successfully. The patient recovered and was discharged.

### DISCUSSION

In the practice of cardiac catheterization, we may sometimes encounter difficulty in engaging the coronary arteries using diagnostic or guide catheters. In such cases, taking an ascending aortogram to visualize the location of the coronary arteries is suggested. However, if the culprit vessel still cannot be engaged with the aid of the aortogram, especially in cases of abnormal coronary positions or acute myocardial infarction when time is urgent, a guide catheter may be placed nearest to the position of the culprit coronary artery and directly cannulated with the guide wire. The guide catheter can then be advanced to the

coronary artery using the guide wire as a rail for tracking the catheter to the correct position, as described in the present report.

Similar to manipulating a guide wire for retrograde crossing of valvular aortic stenosis to advance a pigtail catheter to the left ventricle for ventriculography (3,4), so can the guide wire be used to cannulate the coronary arteries to advance the diagnostic or guide catheters to engage the culprit vessel for coronary interventions. Instead of trying different types of catheters to cannulate the coronary arteries, it may be more economical, less disturbing (5) and more time saving to cannulate the coronary vessels using a guide wire, especially in emergency situations or abnormally positioned coronary arteries.

Our experience with the present patient suggests that a guide wire may be used to engage the culprit vessel in acute myocardial infarction when diagnostic or guide catheters cannot engage the coronary arteries for coronary interventions.

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