

## IMAGES IN INTERVENTION

# Percutaneous Coronary Artery Bypass for Type 3 Coronary Perforation



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A 70-year-old woman who had 3 tandem stenoses with severe calcification in a large tortuous right coronary artery (RCA) (Figure 1A) underwent percutaneous coronary intervention. Type 3 coronary perforation occurred following rotational atherectomy (1.25-mm burr, 140,000 rotations/min) (Figure 1B) (1). First, we used a 3.0 × 15 mm semicompliant balloon to clamp the RCA ostium, and then we used a 2.5-mm perfusion balloon (Ryusei, Kaneka Medix, Osaka, Japan). Although pericardiocentesis was performed successfully, her systemic blood pressure was not restored, probably due to sudden ischemia of the dominant RCA. A total of 3 covered stents (GraftMaster 2.8 × 16 mm, Abbott Vascular, Abbott Park, Illinois) were successfully implanted to cover the perforation (Figures 1C to 1E). Two bare-metal stents were added proximal (4.0 × 23 mm) and distal (4.0 × 26 mm) to the covered stents, and post-dilation was performed using a 4.0-mm noncompliant balloon to dilate the covered stents. Her blood pressure recovered following successful stent implantation (Figure 1F).

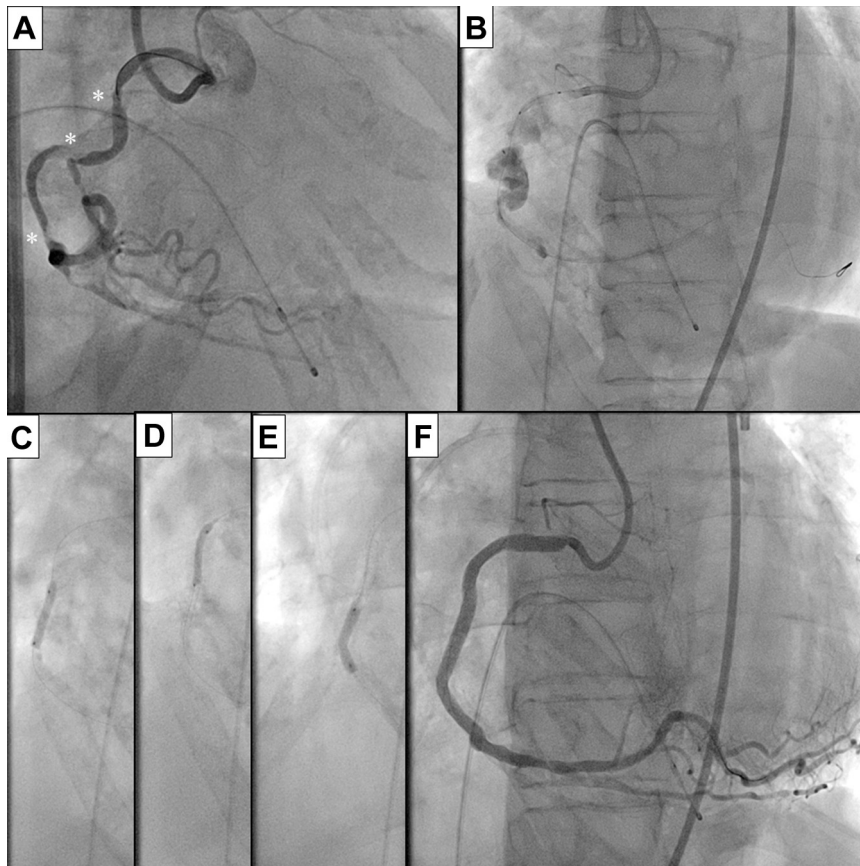
She discharged on foot at day 13 following percutaneous coronary intervention, and her left ventricular systolic function was normal without segmental asynergy. Multislice computed tomography (Aquilion One, Toshiba, Tokyo, Japan) was performed at 2 months following percutaneous coronary intervention. Surprisingly, the covered stents created a bypass for the ruptured RCA and shell of RCA (Figures 2A and 2B), which suggests a part of the guidewire was totally outside of the RCA vessel. Although some coronary perforation can be repaired by the long inflation of the perfusion balloon (2), the perfusion balloon would never repair this kind of perforation. Our case suggests that there is a definite indication of covered stents for type 3 coronary perforation.

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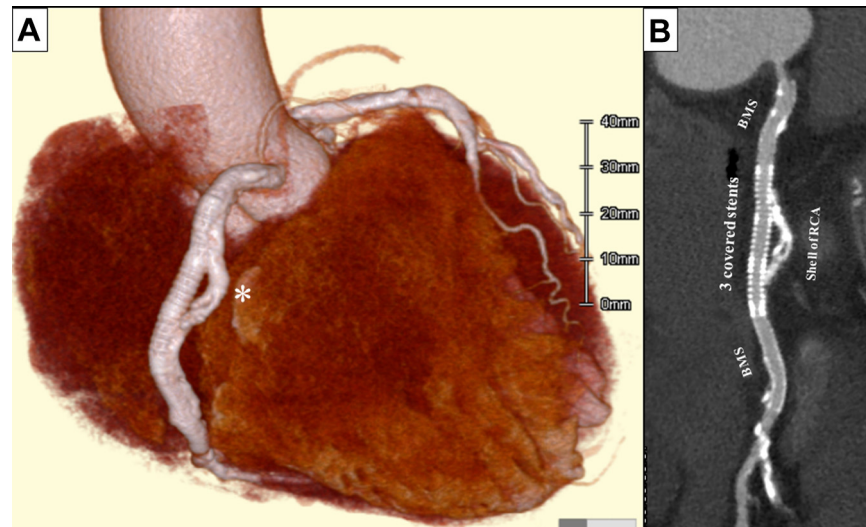
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**FIGURE 1** Images of the RCA Interventions



**(A)** A right anterior oblique view of right coronary artery (RCA). There are 3 tandem stenoses (\*) in the proximal to the middle of the RCA. **(B)** Type 3 coronary perforation in the middle of the RCA. **(C)** The first covered stent was deployed at the middle of the RCA. **(D)** The second covered stent was deployed at the proximal side of the first covered stent with overlapping. **(E)** The third covered stent was deployed at the distal side of the first covered stent with overlapping. **(F)** Final angiogram of the RCA. There was no leakage from the middle of the RCA. The right ventricular branch completely disappeared.

**FIGURE 2** Images of the Multislice Computed Tomography

**(A)** A volume rendering image of whole heart. The shell of native the right coronary artery (RCA) (\*) is completely separated from the GraftMaster stents. **(B)** A curved multiplanar reconstruction image of the RCA. There is no restenosis in the covered stents or the bare-metal stents (BMS). There is no contrast medium in the shell of the RCA.

## REFERENCES

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**KEY WORDS** coronary perforation, covered stent, GraftMaster, percutaneous coronary intervention, perfusion balloon, rotational atherectomy