

Fracture of an Entrapped Coronary Guidewire During Direct Stenting of a Circumflex Marginal Branch: A Case Report

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ARTICLE INFO	ABSTRACT
Published Online: 19 October 2026 Corresponding Author: Hattach Sarah KEYWORDS: Coronary guidewire fracture; Guidewire entrapment; Percutaneous coronary intervention; Direct stenting; Obtuse marginal branch; Conservative management.	Guidewire entrapment and fracture during percutaneous coronary intervention (PCI) remain uncommon but challenging complications. Their management depends on fragment location, vessel size, coronary flow, and procedural risk of retrieval. We report the case of a 68-year-old diabetic active smoker admitted for elective PCI after a positive stress echocardiography. Coronary angiography demonstrated balanced coronary circulation with a significant isolated mid obtuse marginal branch stenosis. PCI was performed through left radial access using a BMW guidewire. A direct stenting strategy was selected. During stent deployment, insufficient distal advancement of the guidewire led to wire entrapment within the stent struts. Multiple retrieval attempts using double-wire and balloon-assisted techniques failed. Gentle traction resulted in guidewire fracture, leaving a short radiopaque fragment jailed in a small marginal branch. Repeat angiographic assessment after 48 hours confirmed persistence of the fragment without stent thrombosis or flow limitation. The patient remained clinically stable and asymptomatic. Conservative treatment with dual antiplatelet therapy was continued.

INTRODUCTION

Guidewire fracture is an uncommon complication of percutaneous coronary intervention. Management depends on anatomy, fragment location, ischemic risk, and feasibility of retrieval.

CASE REPORT

A 68-year-old diabetic active smoker underwent elective PCI after positive stress echocardiography. Coronary angiography showed a tight non-occlusive stenosis of a marginal branch arising from the circumflex artery.

PCI was performed via left radial access using a BMW guidewire. Direct stenting was selected.

During deployment, insufficient distal advancement of the guidewire resulted in entrapment within the stent struts. Double-wire and balloon-assisted retrieval attempts failed.

Gentle traction caused wire fracture, leaving a short radiopaque fragment jailed in a small side branch. Repeat angiography at 48 hours showed no thrombosis or flow limitation.

FIGURES



Figure 1. Coronary image showing the fracture of the guidewire

DISCUSSION

Guidewire entrapment may occur because of calcification, tortuosity, bifurcation anatomy, excessive rotation, or device interaction. In this case, inadequate distal wire position before direct stenting was the key mechanism.

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Several retrieval techniques are available: balloon trapping, double-wire rotation, snare retrieval, and microcatheter-assisted extraction. However, repeated attempts may increase the risk of dissection, perforation, stent deformation, distal embolization, and thrombosis.

Decision-making should be individualized according to clinical stability, coronary flow, vessel size, and fragment location.

Suggested practical decision algorithm:

1. Assess hemodynamic status and ongoing ischemia.
2. Evaluate fragment location (proximal major vessel vs distal side branch).
3. If unstable patient or proximal large-vessel fragment: attempt percutaneous retrieval promptly.
4. If retrieval fails and high-risk anatomy persists: discuss surgical extraction.
5. If stable patient, distal small fragment, preserved TIMI flow, no thrombosis: conservative management with antiplatelet therapy and surveillance.

Our patient fulfilled low-risk criteria, supporting conservative treatment.

This case highlights the preventive importance of confirming distal guidewire position and free wire mobility immediately before stent deployment.

CONCLUSION

Fracture of an entrapped guidewire during direct stenting is rare but preventable. Conservative management may be appropriate in selected low-risk retained distal fragments.

REFERENCES

1. Brilakis ES. Manual of Percutaneous Coronary Interventions.
2. Al-Moghairi AM. Management of retained intervention guide-wire: a literature review. *Curr Cardiol Rev*.
3. Iturbe JM et al. Guidewire entrapment during PCI and retrieval techniques. *Catheter Cardiovasc Interv*.
4. Hartzler GO et al. Complications of coronary angioplasty related to intracoronary devices.
5. Eggebrecht H et al. Coronary foreign body retrieval techniques during PCI.