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CASE REPORT

Entrapment of a Partially Degloved Stent in the Radial Artery: is there Any Way Out?

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Abstract

Stent loss during percutaneous coronary intervention (PCI) is uncommon but may lead to serious adverse events. Here we describe a challenging case of stent loss in the radial artery during primary PCI. There, a long stent failed to cross the culprit lesion, and an attempt to pull back the undeployed stent into the guiding catheter resulted in eversion of the stent, partially stripping it off the stent balloon and rendering the stent irretrievable. Retrieval of the stent at all costs might have led to major complications; hence stent deployment in the radial artery bailed us out of this precarious situation.

Keywords: Coronary artery disease, Myocardial infarction, Primary percutaneous intervention, Stent, Radial artery, Stent loss

Introduction

Stent loss during primary percutaneous coronary intervention (PCI) is uncommon but may lead to serious adverse events [1]. Radial access is the preferred approach for coronary intervention. However, this radial-first policy carries some drawbacks related to artery size, which restricts the options of stent retrieval in the event of stent loss necessitating surgical intervention [2, 3]. Here we describe a challenging case of stent loss in the radial artery during primary PCI in the setting of acute anterior wall ST elevation myocardial infarction. There, a long stent failed to cross the culprit lesion, and an attempt to pull back the undeployed stent into the 6 French (Fr) guiding catheter resulted in eversion of the proximal part of the stent, partially stripping it off the stent balloon and rendering the stent irretrievable. Stent deployment in the radial artery bailed us out of this precarious situation.

Case report

A 55-year-old hypertensive male patient presented to our chest pain clinic with sudden onset retrosternal chest pain of 2 hours duration, diagnosed as acute anterior wall ST segment elevation myocardial infarction (STEMI) and taken to cathlab for primary PCI. The procedure was performed transradially with 6Fr system and showed high-grade stenosis of the distal left circumflex and distal right coronary artery and determined the culprit to be an occluded left anterior descending artery (LAD) (Fig. 1). After intubation of the left main coronary artery with a 6Fr extra back-up (EBU) 3.0 guiding catheter and crossing the lesion with a 0.014 balance middle weight (BMW) guidewire, several predilatations were performed using 2.0 × 20 mm angioplasty balloon. Stenting of the lesion was then

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attempted using BioMime (Merillife science, Vapi, Gujarat, India) 3.0-2.5 × 60 mm Sirulimus eluting stent. Unfortunately, the stent could not be advanced from the left main coronary artery to the LAD, and all attempts to push it across the lesion were unsuccessful. After a brief struggle, we decided to pull the stent into the guiding catheter and try again with the assistance of a Guideliner; however, we noticed that the stent was half-degloved off and about to slip out of the balloon. At this point, we realized the fact that the stent was stuck and that it could not be pushed forward into the LAD or pulled back to the guiding catheter. In view of the risk of stent loss and embolization into the great vessels when attempting snaring or manipulation in the ascending aorta, the guiding catheter, the trapped stent, and the wire assembly were removed gently toward the radial sheath.

In the radial artery, focused inspection of the stent under fluoroscopy showed that the proximal stent struts got crumpled with clear separation from the proximal balloon marker (Fig. 2a). Multiple attempts of stent snaring with different snare catheters failed. We tried to pass another wire parallel to the stent in an attempt to deliver a balloon and crush the distorted part of the stent to make it retrievable through 6Fr guiding catheter, but this wire got entangled with the protruding stent struts and snipped (Fig. 2b).

As the patient experienced chest discomfort, the stent and a remnant filament of fractured guidewire were deployed in situ (Fig. 2c) with excellent result and no immediate complications (Fig. 2d) apart from very minimal instant forearm pain that resolved spontaneously within a few minutes. The intervention was continued using the transfemoral approach with successful deployment of a new BioMime (Merillife science, Vapi, Gujarat, India) 3.0-2.5 × 60 mm stent (see Fig. 3).

Radial pulse was intact and bounding during hospital stay. Two days later, the patient was

Abbreviations

BMW	balance middle weight
EBU	extra back-up
Fr	French
LAD	left anterior descending artery
PCI	percutaneous coronary intervention

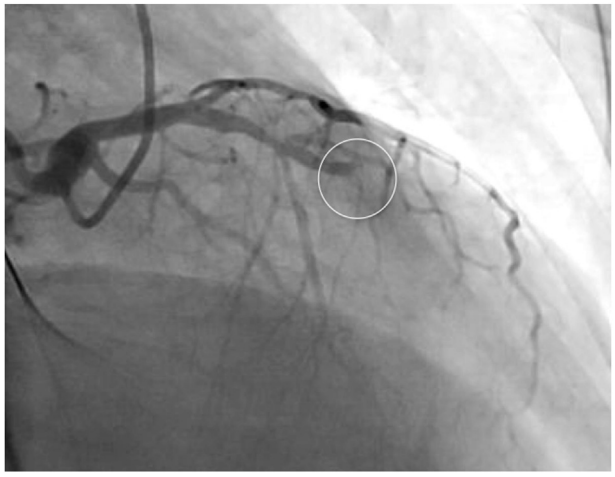

Figure 1. Occluded mid left anterior descending artery (culprit lesion) in the setting of an acute anterior wall ST elevation myocardial infarction.

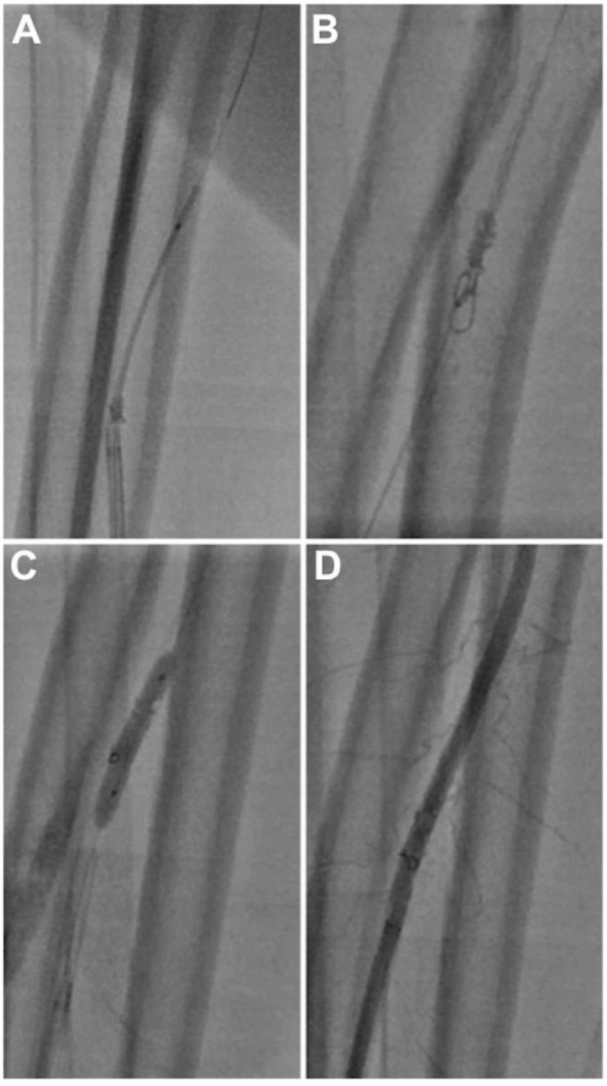

*Figure 2. **A:** The guiding catheter, the damaged stent, and the wire assembly in the radial artery. The proximal stent struts got crumpled **B:** second wire got entangled and snipped, **C:** the stent and a fractured guidewire were deployed in situ, **D:** Good result and no complications.*

Figure 3. Transfemoral approach with successful deployment of a new BioMime 3.0-2.5 × 60 mm stent.

discharged, and there have been no adverse events during six months of clinical follow-up.

Discussion

Coronary stent loss can be attributed to many factors, for example: 1) applying negative pressure during stent delivery, 2) poorly prepared heavily calcified lesion or severely tortuous, angulated artery, especially with long stents, 3) withdrawal of the stent back to the guiding catheter if the balloon is partially inflated or the guiding catheter is not in coaxial alignment with the coronary ostium [1, 4]. The rule of thumb is to choose the shortest possible stent with best trackability, crossability, and pushability when confronting complex lesions.

In view of the relatively small caliber of the radial artery, stent retrieval in case of stent loss is troublesome, and the several techniques that are described in the literature are not always straightforward and easy to implement. These include removal with a variety of snare devices as described by Malik et al. [4], antegrade insertion of an 8Fr sheath in the brachial artery, and stent exteriorization using forceps [5]. In emergencies, it makes sense to either crush small-sized stents into the vessel wall or deploy those fits with the size of the radial artery and continue the procedure. If the lost stent is not very high in the forearm, then surgical cutting down and stent removal under local anesthesia is a reasonable option.

Stent loss in the radial artery is a challenging situation; however, it also allows for bailout in-situ deployment with no negative long-term major adverse events [6].

Learning objectives

- o Lesion preparation is essential for coronary stent implantation particularly in patients with long, calcified or tortuous lesions to facilitate stent delivery and expansion.
- o Select the shortest possible stent with best trackability, crossability, and pushability when confronting complex lesions.
- o Stent loss in the radial artery is a challenging situation; however, it also allows for bailout in-situ deployment with no negative long-term major adverse events.

Author contribution

Nooraldaem Yousif and Husam A. Noor: Conception and design of Study; Literature review; Acquisition of data; Analysis and interpretation of data; Research investigation and analysis; Data collection; Drafting of manuscript; Revising and editing the manuscript critically for important intellectual contents; Data preparation and presentation; Supervision of the research; Research coordination and management; Funding for the research.

References

[1] Baszko A, Telec W, Naumowicz E, Siminiak T, Kałmucki P. Stent loss in the radial artery - surgical vs. interventional approach - report of two cases. Postepy Kardiol Interwencyjnej 2015;11(1):50–104. https://doi.org/10.5114/pwki.2015.49186.

[2] Nardin M, Verdoia M, Barbieri L, Schaffer A, Suryapranata H, De Luca G. Radial vs Femoral Approach in Acute Coronary Syndromes: A Meta- Analysis of Randomized Trials. Curr Vasc Pharmacol 2017;16(1):79–92. https://doi.org/10.2174/1570161115666170504125831.

[3] Bianchi R, D'Acierno L, Crisci M, Tartaglione D, Cappelli M, Canonico M, et al. From Femoral to Radial Approach in Coronary Intervention. Angiology 2017 Apr;68(4):281–7. https://doi.org/10.1177/0003319716656714.

[4] Malik SA, Brilakis ES, Pompili V, Chatzizisis YS. Lost and found: Coronary stent retrieval and review of literature.

Catheter Cardiovasc Interv 2018 Jul;92(1):50–3. https://doi.org/10.1002/ccd.27464.

[5] Kim MH, Cha KS, Kim JS. Retrieval of dislodged and disfigured transradially delivered coronary stent: report on a case using forcep and antegrade brachial sheath insertion. Catheter Cardiovasc Interv 2001 Apr;52(4):489–91. https://doi.org/10.1002/ccd.1109.

[6] Brilakis ES, Best PJ, Elesber AA, Barsness GW, Lennon RJ, Holmes DR, et al. Incidence, retrieval methods, and outcomes of stent loss during percutaneous coronary intervention: a large single-center experience. Catheter Cardiovasc Interv 2005 Nov;66(3):333–40. https://doi.org/10.1002/ccd.20449.