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Case Report

Retrieving a deformed stent during transradial intervention: An alternative femoral approach using guide catheter shortening

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ABSTRACT

Stent dislodgment during percutaneous coronary intervention is a rare complication. We report a case of successful retrieval of a deformed coronary stent through alternative transfemoral approach while performing transradial procedure when the stent could not be retrieved safely from transradial route.

1. Introduction

Stent dislodgement (SD) is a rare complication of percutaneous coronary intervention (PCI) with a reported incidence ranging from 0.32% to 8%.[1] Although majority can be retrieved percutaneously,[2] bailout cardiac surgery may be needed sometimes.[3] Here we describe a case of SD during transradial PCI where an attempt to recapture the stent in to the 5 French (Fr) guiding catheter resulted in eversion of the proximal end of the stent, partially stripping it off the balloon thus rendering it impossible for any further retrieval through the 5 Fr guiding catheter. Transfemoral approach using a shortened 8 Fr guide catheter and 20 mm Amplatz goose neck snare bailed us out of this precarious situation.

2. Case report

A 60-year-old male who had prior stenting to left anterior descending artery (LAD) and right coronary artery (RCA) 8 months ago developed unstable angina. His LAD & RCA stents were normal and a significant lesion in left circumflex artery (LCX) just after the origin of obtuse marginal branch was seen (Fig. 1a). We decided to revascularize the LCX lesion. After intubation of the left coronary artery with a 5 Fr Judkins left (JL)-3.5 guiding catheter (Launcher, Medtronic, USA) and crossing of the lesion with a 0.014″ Cougar XT guidewire (Medtronic, USA), a 2.0 × 10 mm Pantera balloon catheter (Biotronik, Switzerland) was used to predilate the lesion in the LCX artery with a reference vessel size of 2.5 mm. Stenting of

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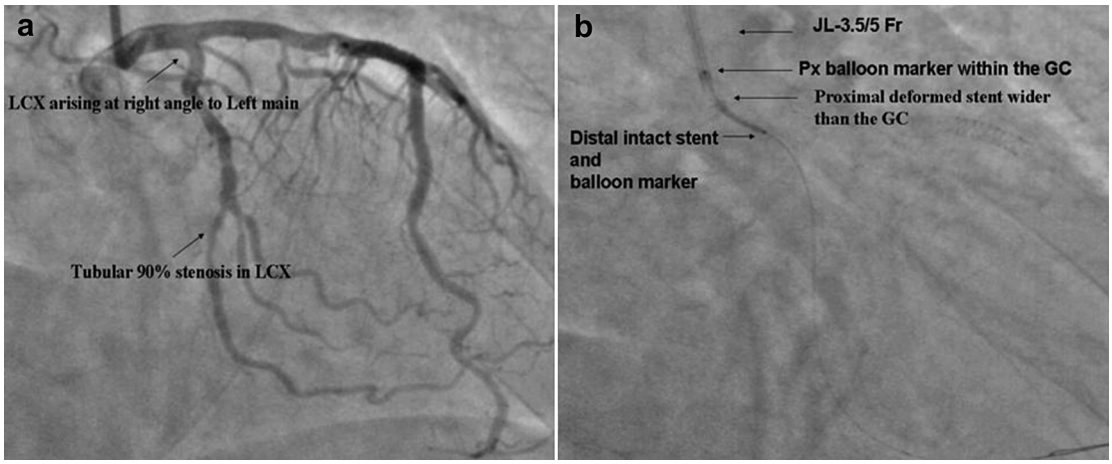

Fig. 1 – a: Diagnostic coronary angiography showing target lesion in the LCX after the origin of obtuse marginal branch. Note LCX arising at right angle to LMCA, b: Proximal stent stripped off the balloon when pulled into the 5 Fr guiding catheter (GC).

the lesion was then attempted using a 2.5 × 19 Taxcor stent (paclitexel eluting stent on a stainless steel platform, Eurocor GmbH, Germany). However, the stent could not be advanced from the left main coronary artery to LCX because of almost 90° origin of LCX from left main coronary artery. During an attempt to pull the stent into the guiding catheter, we observed that the stent was stripped off the balloon and proximal stent struts got crumpled with clear separation from the proximal balloon marker (Fig. 1b). As the deformed stent-balloon assembly could not be retrieved in to the 5 Fr guide due to its smaller diameter, we decided for an alternative femoral artery approach to snare out the deformed stent. Accordingly, right femoral arterial access was achieved with an 8 Fr sheath and an 8 Fr Judkins right (JR-3.5) guide catheter (Launcher, Medtronic, USA) was selected for snaring. With both JR guide catheter and snare sheath having the same length of 100 cm, the guide catheter required shortening (Fig. 2a). About 10 cm of the guide catheter segment near the hub was cut and removed. We then used a short segment (~3.0 cm) of a 7 Fr femoral sheath to connect the two cut ends of the 8 Fr JR guide. For this the ends of the 7 Fr sheath segment were flared with an 8 Fr dilator so that it could accommodate the larger size 8 Fr JR guide. The cut segment of the sheath was then intervened between the two ends of the cut guide (Fig. 2b). The integrity of the joints was checked with firm flush and suction for any leakage. The shortened guide catheter was ready for use and was then advanced up to the deformed stent that was now pulled up into the right subclavian artery. A 20 mm Amplatz goose neck snare was passed through the guide in its snare sheath and the distal end of the deformed stent was caught tightly (Fig. 3a). The deformed stent was then snared within the guide and the whole assembly was exteriorized from the right femoral sheath. The PCI of the LCX lesion was later performed with a 7 Fr Amplatzer left-2 (AL-2) guide back up (Launcher, Medtronic, USA). The lesion was once again predilated, now with a non compliant 2.5 × 10 mm

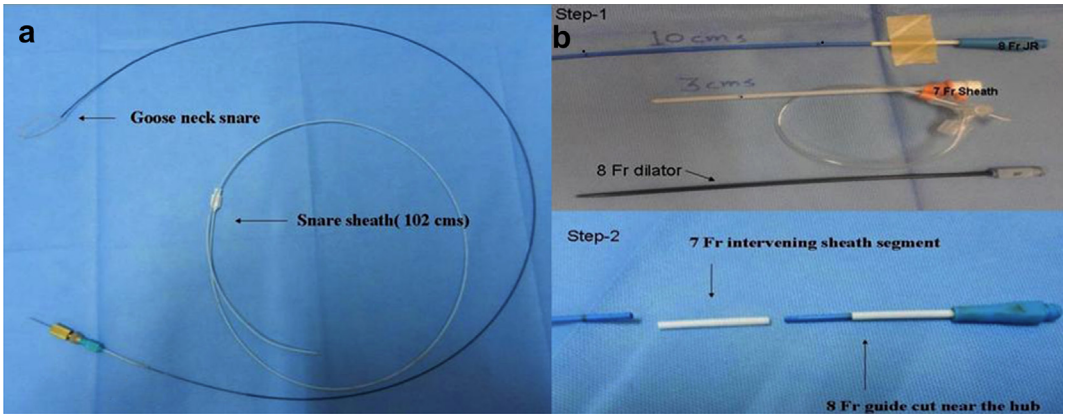

Fig. 2 – a: Snare kit used for snaring the deformed stent via femoral route. Note almost same length of snare sheath as that of guiding catheter (~100 cm), b: Technique of guide catheter shortening wherein ~10 cm of guide catheter and ~3 cm of sheath are cut (Step-1). The ends of the intervening sheath piece are flared with 8 Fr dilator and interposed between the two ends of the cut guide (Step-2).

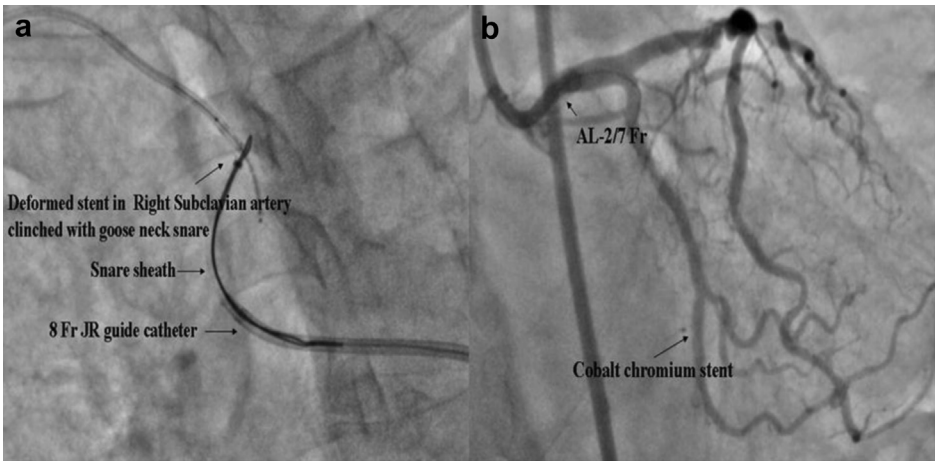

Fig. 3 – a: The deformed stent in the right subclavian artery being snared within the guide, b: Procedure completed through femoral approach with 7 Fr AL-2 guide back up and smaller length cobalt chromium stent.

Pantera Leo balloon catheter (Biotronik, Switzerland) followed by stenting with a 2.5 × 15 mm Magical stent (paclitexel eluting stent on a cobalt chromium platform, Eurocor GmbH, Germany) (Fig. 3b).

3. Discussion

Transradial PCI is gaining acceptance worldwide in terms of lesser access site bleeding, early ambulation, and costs. As a transradial PCI is done with smaller sheaths due to smaller vessel caliber, retrieval in an event of SD is difficult. Factors predisposing to the SD are poor support of the guiding catheter or the guidewire, vessel tortuosity proximal to the lesion, inadequate predilatation and vessel calcification. For removal of an undeployed but undamaged stent during transradial stenting, various techniques have been described. These include pullback using a gooseneck snare inserted through the existing radial sheath after the balloon catheter is removed or using a 1.5 mm catheter balloon inflated distal to the undeployed and undeformed stent.[4–6] One case report also describes the use of the antegrade insertion of an 8 Fr brachial sheath and using a forceps to retrieve the dislodged stent during transradial PCI.[7]

However, none of these were possible in our case as the stent was deformed and was still on balloon catheter. We could have pulled the entire assembly into the radial artery and recovered the damaged stent by surgical means or deployed the damaged stent into the radial artery but then it would have resulted in loss of radial artery and switch to femoral access for completion of PCI. So it was safer approach to snare the deformed stent via femoral route and complete the procedure thereafter. For this the guide-balloon-stent assembly was first specifically pulled in to the right subclavian artery to prevent stent embolism into the arch vessels during planned snaring attempt. As it was important to bring the deformed stent into the guiding catheter so we adopted the technique of guide catheter shortening which is well described for retrograde total occlusion revascularization.[8] In this technique a femoral sheath that is one size smaller than the guide (like we used a 7-French sheath for an 8-French guide) is selected. It was only when the stent got deformed that we realized that 5 Fr Judkins left guiding catheter was a poor choice, as the LCX was markedly angulated and stainless steel platform contributed to the poor delivery profile of the stent. Use of a better supporting guiding catheter such as AL-2, cobalt chromium platform stent with good track ability and smaller stent length helped us in our later attempt to revascularize the LCX.

4. Conclusion

Anticipation of difficulties during a transradial PCI prevents possible stent dislodgment. In this case of deformed stent retrieval we avoided any damage to the radial or brachial artery, adopted the technique of guide catheter shortening to prevent stent loss in systemic circulation and utilized commonly used snare device.

Conflicts of interest

All authors have none to declare.

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