Propofol-dip for tricky stent delivery

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Case report

A 70-year-old male patient was referred for closure of patent foramen ovale after recurrent transient cerebral ischaemia. A 25-mm Amplatzer PFO occluder was implanted. Thereafter and due to his age and a history of chest pain during the past six months, we performed coronary angiograms which demonstrated tight stenosis of the distal part and significant stenosis of the proximal part of the right coronary artery (RCA). To

Figure 1

Failure of the classical technique and success of stent lubrication.

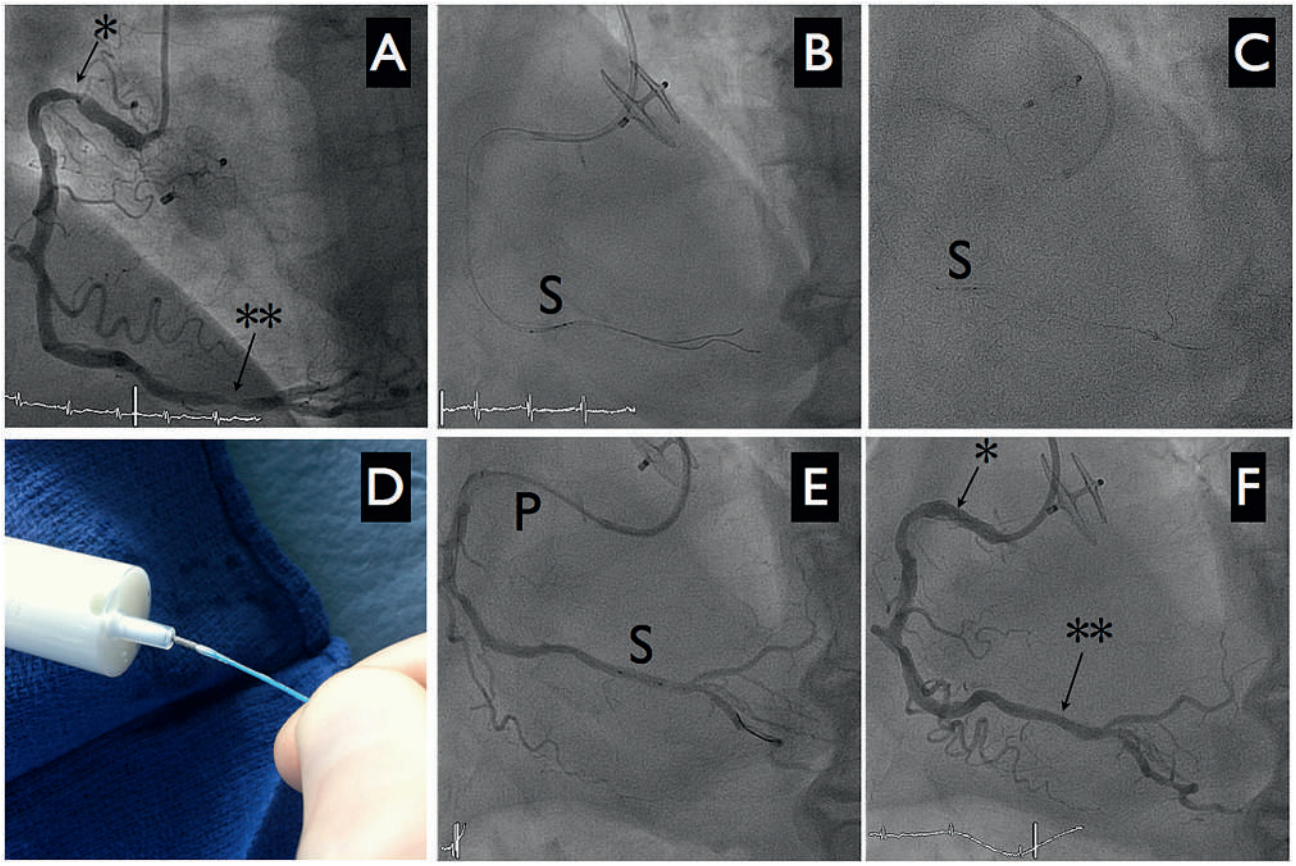
A Angiogram of right coronary artery (RCA) after PFO closure demonstrating 70% stenosis (*) in the proximal part shortly after the shepherd-crook takeoff and 90% stenosis (**) of the distal part close to the bifurcation.

B, C Despite use of a 6-French (F) Amplatzer left two guiding catheter, a low-profile 2.5/8-mm bare-metal stent (CoroFlex Blue, BBraun) and distal balloon anchoring, the stent stayed stacked into the distal part of the RCA.

D We therefore opted for topical stent lubrication with 1% propofol (Disoprivan®, AstraZaneca).

E This manoeuvre allowed easy introduction of the stent up to the distal lesion and subsequent implantation (panel F).

S = stent; P = Proxis®.



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overcome putative stent delivery hurdles, we considered a guiding catheter with extra back-up and a two-guidewire technique ("buddy wire"). Therefore, a 6-French (F) Amplatzer left two guiding catheter and two guidewires (Whisper LS® and MS® – Abbott Vasc. USA) were chosen, and permitted successful balloon angioplasty with a 3.5/15 mm-Empira® balloon (Cordis, J&J, USA). We then treated the proximal lesion by balloon angioplasty and implantation of a 4.0/12 mm everolimus-eluting stent (Xience Prime®, Abbott Vasc. USA; 16 atm). Thereafter, a 3.0/12 mm everolimus-eluting stent (Xience Prime®, Abbott Vasc. USA) could not cross the vertical part even after switching for one stiffer buddy-guidewire (Magnum®, Biotronik, Switzerland). We changed for a bare-metal stent with lower crossing profile (2.5/8 mm, Coroflex Blue, BBraun, Germany) which moved more distally but stayed stacked within the distal part of the RCA. We therefore opted to anchor the guiding catheter by inflating the Empira® balloon (6–8 bars) into the distal lesion. This enabled us to pull the stent up to a kinking in the distal RCA but failed to cross up to the distal lesion. We then chose to replace the anchor by a proximal anchor (Proxis® catheter) to enable us to use a second buddy wire. Since no noticeable advance of the stent was seen, we decided to lubricate the stent surface with sterile propofol. We dipped the stent into a syringe filled with 1% propofol (Disoprivan®, AstraZeneca), thus allowing the 2.5/8 mm stent to cross the RCA easily up to the distal lesion. Subsequently the stent could be delivered with a good final result (22 atm).

Discussion

Recent improvements in stent technology and delivery systems have expanded the frontiers of PCI, and most current studies show a satisfactory acute and long-term outcome after PCI in all patients. Nevertheless, despite these continuous improvements in stent technology, stent delivery failure (SDF) is still encountered in complex coronary anatomy and occurs in up to 5% of cases. Since SDF is associated with increased morbid-mortality [1, 2], several tips and techniques have been developed to overcome this problem [3]. These techniques involve improving the guiding catheter backup by increasing its size (>6F), using extra-support shape or using a dedicated support catheter (for instance, *guideliner-vascular solutions),* enhancing stent gliding over a second ("buddy") guidewire or lubricating its surface, exchanging the stent for a stent with an improved crossing profile, or using an "anchor" [4]. In this particular case we used most of these techniques in sequential order: good lesion preparation, 6F extrashape guiding catheter, "buddy-wire", low-profile stent, and balloon anchoring with coaxial traction. Finally, we considered stent lubrication. Since a dedicated stent lubricant (for instance, *Rotaglide, Boston Sci.*) was not available in our cathlab, we considered propofol lubrication. Propofol lubrication has been advocated in difficult sheath positioning for transaortic valve implantation. Propofol is almost ubiquitously found in most hospitals and permitted safe stent delivery in this particular case. It might therefore be of interest in cases of SDF.

References

1 Cantor WJ, Lazzam C, Cohen EA, Bowman KA, Dolman S, Mackie K, et al. Failed coronary stent deployment. Am Heart J. 1998;136:945–7.
2 Lohavanichbutr K, Webb JG, Carere RG, Solankhi N, Jarochowski M, D'Yachkova Y, et al. Mechanisms, management, and outcome of failure of delivery of coronary stents. Am J Cardiol. 1999;83:779–81.
3 Surmely JF, Cook S. Variation on the anchor balloon technique for difficult stent delivery. Kardiovaskuläre Medizin. 2007;10:397–9.
4 Aeby G, Surmely JF, Togni M, Cook S. A modified technique of balloon anchoring for tricky stent delivery. EuroIntervention. 2012;8: online publish ahead of print, November 2012.