Successful intravascular management of a fractured sheath after percutaneous coronary intervention for chronic total occlusion

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We report a case of a 53-year-old man who was admitted for planned percutaneous coronary intervention (PCI) of chronic total occlusion of the left anterior descending artery. The patient had been hospitalized 1 year earlier for inferior wall ST-segment elevation myocardial infarction and was treated with PCI of the right coronary artery with drug-eluting stent implantation. From the last hospitalization, the patient reported stable stenocardial symptoms (CCS II). On transthoracic echocardiography, left ventricular ejection fraction was 42% with hypokinesia of the apex, anterior and posterior walls, and akinesia of the inferior wall. Viability in the left anterior descending vascularization area was confirmed with cardiac magnetic resonance imaging.

Shortly after follow-up coronary angiography the procedure was conducted through radial access (7F Glidesheath Slender) with the aid of contralateral injections from the femoral access (6F sheath) (Figure 1A). Successful crossing of the chronic total occlusion using Fielder XT-R, Gaia 2, and Gladius guidewires was achieved through the antegrade wire escalation strategy, followed by the antegrade dissection re-entry technique. Finally, three drug-eluting stents (2.5/18 mm, 2.75/30 mm, 3.0/30 mm) were implanted under intravascular ultrasound guidance with optimal angiographic results and TIMI 3 flow (Figure 1B).

While closing the femoral access site with the Perclose ProStyle system, a vascular sheath fragmented in the right common femoral artery. The remaining part of the sheath stayed in the vessel on the diagnostic wire (0.035"). After consultation with a vascular surgeon, a 9F sheath was inserted over the diagnostic wire into the right common femoral artery. Using a 15 mm vascular loop Snare, the wire was pulled out via the radial sheath. The diagnostic wire (0.035") was exchanged for a Terumo guide wire (0.035"). The misplaced part of the sheath was pushed by an inflated Armada 5.0/30 mm balloon catheter and was finally removed *via* the femoral access site (Figure 1C–E). Control angiography of the right common femoral artery showed no local complications. Finally, the access site was closed with two vascular stitches, with the Perclose ProStyle system. The patient was discharged two days after the procedure with a small bruise in the groin (Figure 1F).

Device loss or entrapment occurs in 0.56% of PCI procedures, with stents constituting the most commonly lost device [1]. The incidence of stent loss, based on literature, is low and decreased from 5% before 2000 to 0.3% after 2005 [2]. Vascular sheath fracture during PCI is a less common potential complication [3, 4]. Some patients can successfully be managed percutaneously. However, half of the patients with entrapped device may require surgery [5]. In our case, the presence of the diagnostic wire (0.035") in the vessel was crucial for the successful percutaneous retrieval of the sheath fragment. During the widening of the skin access site, the femoral sheath was likely incised and detached due to the presence of calcifications in the vessel wall. According to the literature review, we conducted, our complication is the fourth report of vascular

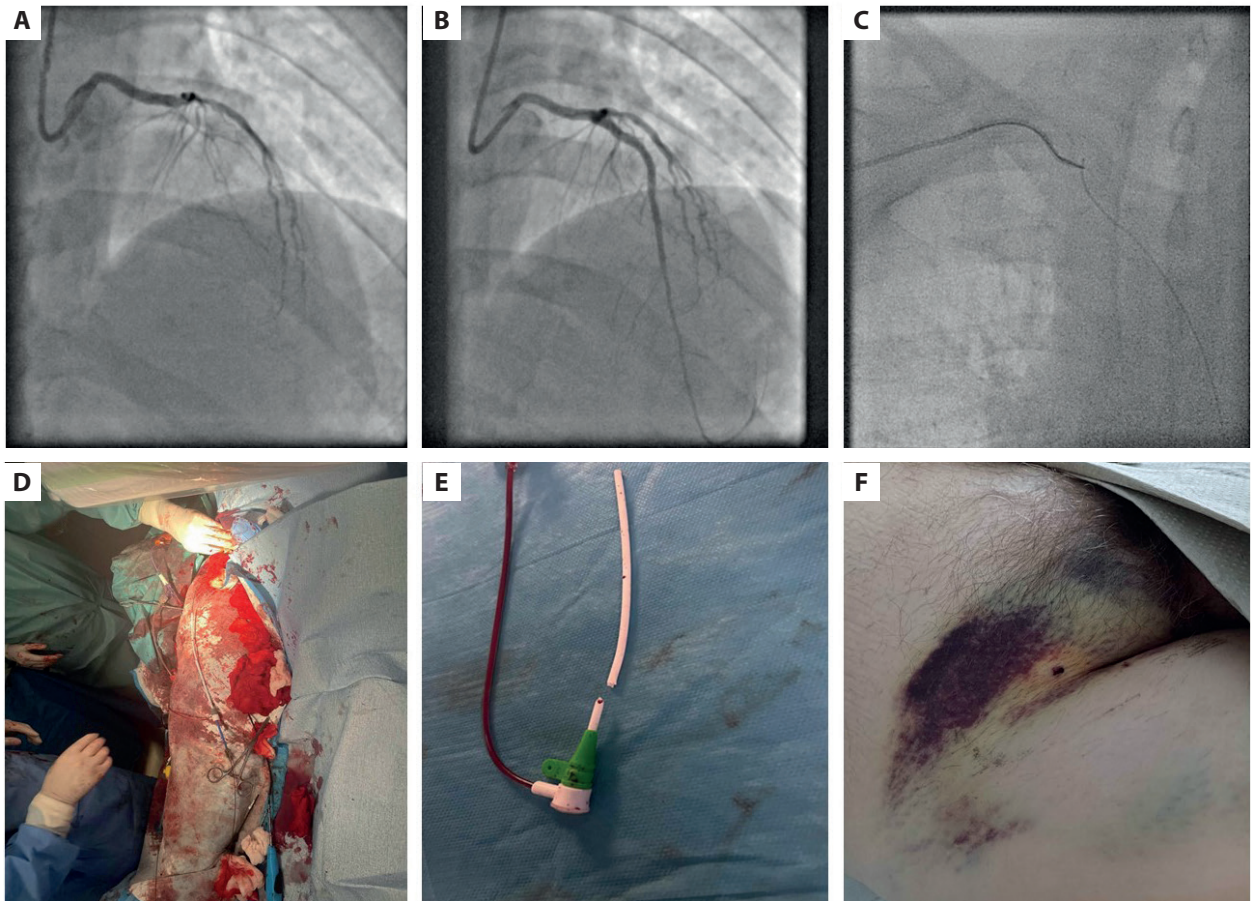

Figure 1. A. Baseline coronary angiography. Ostial chronic total occlusion of the left anterior descending artery. **B.** Final result of the procedure. **C.** Removal of the vascular sheath. Creation of a vascular loop. **D.** Intra-procedural view. Pushing out the vascular sheath through the femoral access site. **E.** The main body and the fractured part of the vascular sheath after retrieval. **F.** A small bruise in the patient's right groin the next day

sheath fracture during PCI and the first to describe its percutaneous removal.

Article information

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