Revascularization after removal of broken catheter from left circumflex coronary artery

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Summary

Coronary angiography is the gold standard for diagnosis of coronary artery disease. Though it is a relatively safe procedure, complications can occur. We present an unusual case of a dehisced radio opaque ring from the diagnostic angiography catheter into the left circumflex artery. It was successfully retrieved with a guide-wire and a balloon catheter and revascularization was done in the same setting.

Key words: angiography; broken catheter; retrieval; revascularization

Introduction

Coronary angiography is a relatively safe procedure. Though coronary catheter fractures have been reported before, the exact incidence during diagnostic angiography is unknown. We present a case, wherein the radio opaque tip of the diagnostic angiography catheter broke off and embolized into the left circumflex coronary artery (LCX). It was successfully retrieved and revascularization was completed in the same setting.

Case report

A 45-year-old diabetic male presented with history of typical effort angina of six months duration. His resting electrocardiogram and echocardiogram were normal. As the stress test was positive for inducible ischemia at a work load of 7 METS, he was taken for selective coronary angiography.

A 7F, Judkins left (JL) 3.5 diagnostic catheter (Cordis Corp., Miami Lakes, Florida) was selected to cannulate the left coronary artery through a 8F femoral sheath. This catheter had been used before and was sterilized using ethylene oxide. Before the first shoot could be taken a radio opaque object was seen within the LCX artery (fig. 1A). It appeared to be the broken soft tip of the diagnostic catheter. Immediately the catheter was withdrawn and examined. The soft ring on the tip of the catheter was found missing.

An 8F, JL 3.5 guiding catheter (Cordis Corp., Miami Lakes, Florida) was introduced into the left coronary artery. The detached tip of the diagnostic catheter was seen sitting in the LCX artery, proximal to a tight lesion (fig. 1B). A 0.014” floppy guidewire (Abbott Vascular, Santa Clara, California) was manipulated to go through the catheter tip and positioned in the distal LCX artery (fig. 2A). A 2.0 x 10 mm Sprinter balloon (Medtronic, Inc., Minneapolis, Minnesota) was advanced over the guidewire through the lumen of the broken catheter tip. There was no distal migration of the catheter tip during the introduction of balloon into LCX artery. The balloon was kept distal to the catheter tip and was inflated to 2 atm (fig. 2B). An attempt was made to pull back the balloon with the broken piece into the guiding catheter. It was getting stuck at the tip of the guide catheter. Hence the guiding catheter was pulled out along with the inflated balloon, guidewire and the catheter tip as an assembly.

Diagnostic angiogram done after retrieval, showed 80% lesion in the proximal LCX and insignificant left anterior descending artery disease. The right coronary artery was normal. The LCX lesion was crossed with a floppy guidewire and a 2.75 x 15 mm bare metal stent was deployed at 12 atmospheres. The final angiogram showed no residual lesion, thrombus or dissection (fig. 3). There was no elevation in the level cardiac biomarkers post procedure. Patient was discharged on the 3rd day and is asymptomatic at one year follow up.

Discussion

The components retained in the coronary tree include twisted / dehisced catheter tips [1–3] broken guidewire [4], entrapped balloons and undeployed stents [5]. Most of these complications occur during PTCA and stenting, as the procedure involves excessive manipulation and traction forces during various stages of the procedure. The incidence of broken retained PCI equip-
our case utilization of ethylene oxide sterilized catheter could have caused the fracture. As the broken tip in the coronary artery might serve as nidus for thrombus formation, acute occlusion, myocardial infarction and arrhythmias, removal of the broken fragment is mandatory. Transcatheter removal is the most appealing and least invasive treatment option. Devices used for intra-coronary retrieval includes snare, cardiac bioptome and balloon catheter [1].

In our case a balloon catheter was used to retrieve the broken catheter tip. It was possible for two reasons,
Surgery should be used, when percutaneous retrieval fails. As there is a possibility of angiographically invisible dissection at the site of catheter manipulation, revascularization should be done when required in the same setting.

Conclusion

Fracture of diagnostic angiography catheter with embolization to coronary artery is a rare complication of coronary angiography. The etiology of such catheter fracture is multifactorial. When diagnostic catheter fractures, it can be retrieved from coronary circulation using an appropriately sized balloon catheter. It is preferable to perform revascularization of underlying coronary artery disease in the same sitting.

References