



Percutaneous Extraction of the Completely Fractured Guiding Catheter from the Tortuous Iliac Artery by using Goose Neck Snare

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Abstract

Knotting of a coronary artery catheter at the level of the iliac arteries during coronary angiography is a recognized complication. However, complete fracture and separation of catheter is uncommon. We present a case with completely fractured and separated guiding catheter at the level of iliac artery during coronary intervention. Separated free segment of catheter was successfully retrieved by goose neck snare.

Keywords: Percutaneous coronary intervention; Intracardiac catheter; Intraoperative complication

Introduction

Knotting of a coronary artery catheter, especially guiding catheters, at the level of the iliac arteries during coronary angiography is a recognized complication [1]. However, complete fracture and separation is rare. We present an unusual case in which a guiding catheter was twisted and separated in the abdominal aorta during manipulation of the guiding catheter and was retrieved with goose neck snare by using a larger size sheath.

Case Report

An 85 year-old woman was presented to our hospital with the complaint of chest pain. She had history of hypertension. Her blood pressure was 110/70 mm Hg and pulse rate was 72/min. There was no abnormal finding on physical examination. The patient was taken to the cardiac catheterization laboratory due to the occurrence of high troponin level and ST elevation on leads D1 and aVL in her ECG tracing. It was decided that the patient had acute high lateral MI and urgent PCI was necessary.

Coronary angiography showed total occlusion in the proximal portion of the Cx artery and severe stenosis in the distal 1/3 portion of the right coronary artery. Percutaneous coronary intervention was planned. EBU 3.5 left coronary guiding catheter was engaged to left coronary ostium and 0.014 inch floppy guide wire was advanced through the Cx lesion and it was predilated first with Invader 2.5 mm × 1.5 mm monorail balloon. Subsequently, Ephesus 3 mm × 25 mm DES was implanted successfully.

Right coronary intervention was performed 5 days later. 6F sheath introducer was placed in the right femoral artery. Hockey Stick guiding catheter was engaged to the right coronary ostium and 0.014" floppy guide wire passed through the lesion. The lesion was then predilated with Ephesus 2.5 mm × 15 mm monorail balloons. But after predilatation Ephesus 3.5mm × 32mm DES could not be passed through the lesion. The guiding catheter was replaced with right Amplatz catheter in order to achieve adequate support. During manipulation for the engagement to the coronary ostium, we noticed that the catheter was knotted at the level of abdominal aorta just below the level of the right renal artery.

We tried to correct the knotting by twisting the catheter in counterclockwise direction and advanced 0.38" guide wire through the catheter to correct the knotting. At this moment we realized that the catheter was ruptured near the proximal portion of right iliac artery (Figure 1). To remove the ruptured segment of the catheter we replaced 6F femoral sheath with a wider 7F sheath. At first we tried to catch the end of the catheter with an endomyocardial biptome forceps, but our attempt was unsuccessful. We decided to use Gooseneck snare and finally we succeeded to catch the

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Figure 1: Catheter was ruptured near the proximal portion of right iliac artery.



Figure 2: Ruptured catheter from its portion near to femoral artery and removed through the large femoral sheath.

ruptured catheter from its portion near to femoral artery and removed through the large femoral sheath (Figure 2). Two units of packed red blood cells were transfused to the patient due to the decrease in her hemoglobin level down to 9 g/dl and after transfusion, hemoglobin level was increased to 11 g/dl. No source of the bleeding was seen in thoracic and abdominal CT angiography.

Two days later the patient was taken again to the catheterization laboratory for RCA intervention. Right coronary EBU guiding catheter was engaged into the right coronary ostium and 0.014 \times 2 extra support guide wires were advanced through the lesion and passed it successfully. Commander 3 mm \times 18 mm bare stent was successfully implanted into the lesion with buddy wire technique. No complication was observed. The patient was discharged on the next day with no complaints, ECG changes or enzyme elevation.

Discussion

Knotting of a coronary artery catheter at the level of the iliac arteries during coronary angiography is a recognized complication. Knotting usually occurs as a result of excessive torquing mostly of the right coronary catheter when there is a tortuous iliac artery or aorta. Catheter knotting and rupture during coronary angiography and PCI are especially seen in elderly and hypertensive patients.

It can be very difficult to retrieve the knotted coronary catheter via femoral arterial route. Any unreasonable force applied may tear the main arteries leading to serious complication. The initial standard

approach is usually untwisting the catheter in the opposite direction [1]. Applying clockwise or anticlockwise rotation or gentle traction can result in reduction of simple knots [2]. However, more complex knots may rotate in the direction of torque adding further problems. Sometimes a guidewire can be advanced to the knot and with gentle traction of the catheter the wire may pass through and open the knot. Unfortunately, if a knot is too tight, the guidewire will not be able to pass through the knot. There is also a risk of perforating the catheter if excessive force is used. If a catheter fracture occurs due to excessive manipulation, it is possible to remove the fractured fragment by using snare device from radial or femoral route [3,5]. In cases of tight knots without rupture the proximal segment of the catheter above the knot can be snared with a loop snare for security and the distal end of the catheter can be torqued clockwise or counterclockwise until the knot is resolved [3,6].

In elderly hypertensive patients who have tortuous vessel structure beginning the procedure with a 23cm sheath decreases the risk. Similar to our case, replacing the standard sheath with a larger one may allow the insertion of a large calibre retrieving catheter [4,7].

Conclusion

We describe a proximal guiding catheter fracture in a patient with tortuous iliac artery. Using a longer sheath and avoiding excessive manipulation is necessary to prevent this complication. Cardiologists who perform coronary angiography and percutaneous coronary intervention must be familiar with at least one type of snare catheter which should be readily available to retrieve fragments of wire or catheter fragments within vascular system.

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