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An unusual case of guide wire fractured during primary percutaneous coronary intervention, and two year follow-up

Nietypowy przypadek złamania prowadnika podczas pierwotnej przezskórnej angioplastyki wieńcowej — obserwacja dwuletnia

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Abstract

We report a case of inferior myocardial infarction treated with primary percutaneous coronary intervention. During the procedure, the guide wire fractured within the right coronary artery. Despite many attempts, the piece of wire could not be removed. The options were to take the fractured wire out (either percutaneously or surgically) or to leave it in the patient. After discussion with cardiac surgeons, we managed the patient medically. The motto of this case report is that, although percutaneous and surgical management may be the primary options, medical management with dual antiplatelet drugs is possible.

Key words: angioplasty, stent, complication, broken wire

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INTRODUCTION

The fracture and dislodgement of an angioplasty device within the coronary tree is a rare but increasingly noted complication [1]. Entrapment, overcoiling and excessive traction of the guide wire can cause it to fracture; our case was caused by an excessive tensile load to the guide wire and/or entrapment by stent struts. If the fragment of guide wire is not removed, there is a likelihood of acute embolisation leading to acute coronary thrombus. Nevertheless, there has been no agreement as to whether the immediate removal of the broken fragment of guide wire is necessary.

Our report shows that, althought broken angioplasty wire fragments are an increasing problem in catheterisation laboratories, they are not the deadly complication they have been thought to be.

CASE REPORT

A 56 year-old male with a history of smoking was admitted to our hospital with acute inferior myocardial infarction and was immediately referred for cardiac catheterisation for primary percutaneous coronary intervention (pPCI). Coronary angiography revealed the left side coronary arteries had non-significant disease, but the right coronary artery (RCA) had two focal significant lesions in the mid and distal portions (Fig. 1A). After passing a guide wire, we stented the distal lesion directly, and then the proximal lesion was stented, again directly (Fig. 1B). After the second stent implantation (successful pPCI), we tried to pull back the guide wire into the guiding catheter but the wire was immobile. Subsequently, we made several attempts using simple manoeuvres (traction, pull and push, balloon reinflation and deflation,

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back-and-forth vibration) but the guide wire could not be removed, even after its tip (~15–20 mm piece) was entrapped and broken off (Figs. 1C, D). After more unsuccessful attempts, the operators decided to leave the broken guide wire within the vessel and the patient was treated medically because of his stable condition. Hospitalisation and follow-up was done in the intensive coronary unit and medical management was carried out according to contemporary guidelines for pPCI. The patient had an uneventful post-PCI course. He was discharged after six days and was maintained on clopidogrel (75 mg/day for one month) and aspirin (300 mg/day indefinitely).

A follow-up was carried out at one, three, six, 12 and 18 months and two years. At the two year follow-up, the patient had not experienced any events including thrombosis. Two years later, he developed CCS II angina and underwent a scintigraphic test with thalium, which showed reversible ischaemia in the anterior and inferior segments. Following this test, we conducted a control coronary angiogram, which showed patent stents without in-stent restenosis. The broken guide wire had been retained within the RCA in the same position, but the proximal edge of the proximal stent in the RCA had 80% stenosis (Figs. 1E, F) as well as a long and tortuous stenosis (80–90%) in the left anterior descending coronary artery; also its first diagonal branch ostium had a severe narrowing (70%) and the left circumflex artery was free of disease. Therefore, the patient was referred for surgery for a two vessel bypass.

DISCUSSION

This report describes a case of broken guide wire which was not taken out of the RCA during pPCI. At two year follow-up, the patient had been doing well, without any events.

Entrapment and fracture of diagnostic or therapeutic devices within the coronary circulatory system are a rare, but increasing, problem [1–4]. The incidence of such complications during the application of coronary artery interventional procedures ranges from 0.2 to 0.8% [3]. Retained guide wire fragments in the coronary tree cause complications such as emboli, thrombosis, dissection and rupture [4]. Once the diagnosis of entrapment complication has been established, great efforts should be made to remove the entrapped guide wire percutaneously at first. Several methods have been reported [4]. Snare loop wire or its modification is the commonest technique used [4–6] while other techniques could include the use of hook-tip catheters or basket retrievers (if available). If these attempts are unsuccessful, surgical removal of the entrapped foreign body with coronary artery bypass grafting to the affected vessel may be performed [1, 7]. On the other hand, such techniques are not only complex, but are also sometimes unsuccessful.

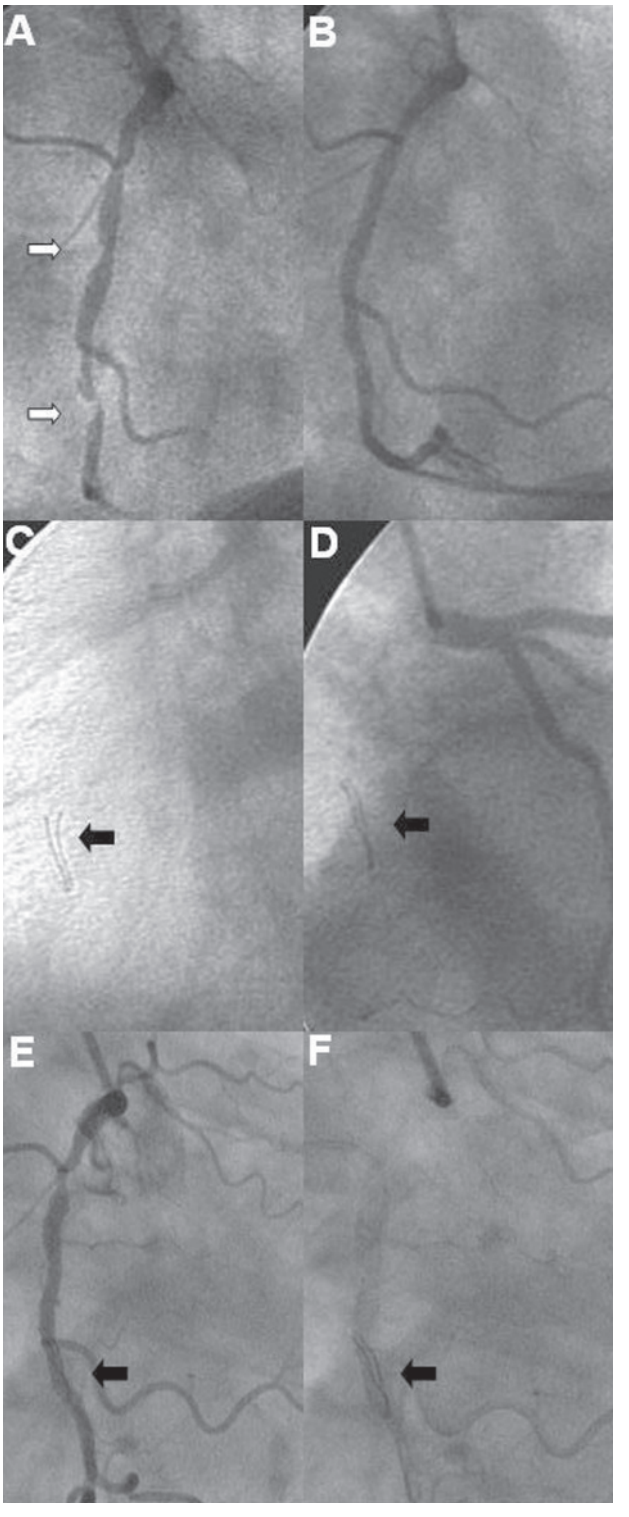

Figure 1. **A.** Baseline coronary angiogram showing two focal lesions in right coronary artery; **B.** After treatment; **C.** Broken guide wire fragment is retained in distal part of right coronary artery; **D.** Broken wire fragment is seen during left side coronary angiogram; **E, F.** At two year follow-up, angiogram shows that the broken guide wire is still in the same position, with no restenosis

CONCLUSIONS

Various complex treatment modalities (percutaneous and/or surgical) for retrieving a broken guide wire have been successfully used. In addition to these options, medical management can be an option, if the status of the patient is suitable.

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