

Broken Guidewire Fragment in the Radio-brachial Artery During Transradial Sheath Placement: Percutaneous Retrieval via Femoral Approach

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A case in which a 0.014" wire was broken during the sheath placement in the radial artery for transradial coronary procedure is described here, and a successful retrieval of it using conventional methods is also described. Through the left femoral artery, the 6 Fr guiding catheter was advanced down to the tip of the broken wire at the brachial artery, and the distal part of the broken guidewire was captivated into the guiding catheter. By inflating the balloon catheter inside of the guiding catheter, seized broken guidewire between the inflated balloon and the guiding catheter was removed successfully by withdrawing the whole system en bloc.

Key Words: Radial artery, angioplasty, complication, foreign body

INTRODUCTION

The transradial approach is currently popular for vascular access during percutaneous coronary angiography and intervention.¹ One of the difficulties with this approach exists in accessing the artery.² Although arterial puncture is usually simple, sometimes there are difficulties in introducing a 0.035" guidewire through the puncture needle. One method to overcome this problem is using the floppy tip 0.014" guidewire assisted method. After the 0.014" guidewire is introduced in the radial artery via catheter needle, the catheter needle is further advanced and the 0.014" guidewire

is replaced by a 0.035" wire while the arterial sheath is placed. This report described a case of a 0.014" wire that broke during sheath placement and a successful percutaneous retrieval.

CASE REPORT

A 68 year old woman had received an intervention with stent at the middle segment of the right coronary artery, and she was scheduled for 6 month follow up coronary angiography in order to evaluate the patency of the stented segment. The previous coronary angiogram and intervention were performed using her right radial artery. Because the right radial artery still had a good pulse according to the positive Allen test, another puncture to the right radial artery was attempted. However, there was difficulty in advancing the 0.035" wire via 20 G catheter needle (Sindongbang Co., Korea) after successful puncture of the right radial artery. In this case, a floppy tip 0.014" wire is passed first into the radial artery through the catheter needle, and the arterial sheath was introduced over the 0.014" guidewire with difficulty. While trying to advance the arterial sheath, the wire was broken (Fig. 1A).

In order to retrieve the broken guidewire, a 6 Fr sheath was placed in the right femoral artery, and a 6 Fr Judkins right guiding catheter was advanced down to the broken wire tip at the right brachial artery. Retrieval using a snare wire (FSF-21-300, Cook, Inc., Bloomington, IN, USA) was attempted several times, but the attempts were

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unsuccessful in catching the wire (Fig. 1B). During these attempts, the 0.014" guidewire was caught in the inside of the guiding catheter (Fig. 1C). At this moment, we decided to trap the broken guidewire tip inside the guiding catheter, and thus, we introduced the 0.014" Choice PT (Boston Scientific Scimed, MN) guidewire and balloon catheter (MAVERICK 2.5-20 mm, Boston Scientific Scimed, MN) over it (Fig. 1D). The balloon catheter was placed alongside the wire at the distal portion of the guiding catheter, where the balloon catheter

was fully inflated at 4 atm to trap the broken guidewire (Fig. 1E). The whole system was pulled back while the balloon was inflated (Fig. 1F).

DISCUSSION

Accessing the radial artery and sheath placement is difficult in some cases.² Using the 0.014" wire in case a difficulty arises during the introduction of the 0.035" guidewire is one technique

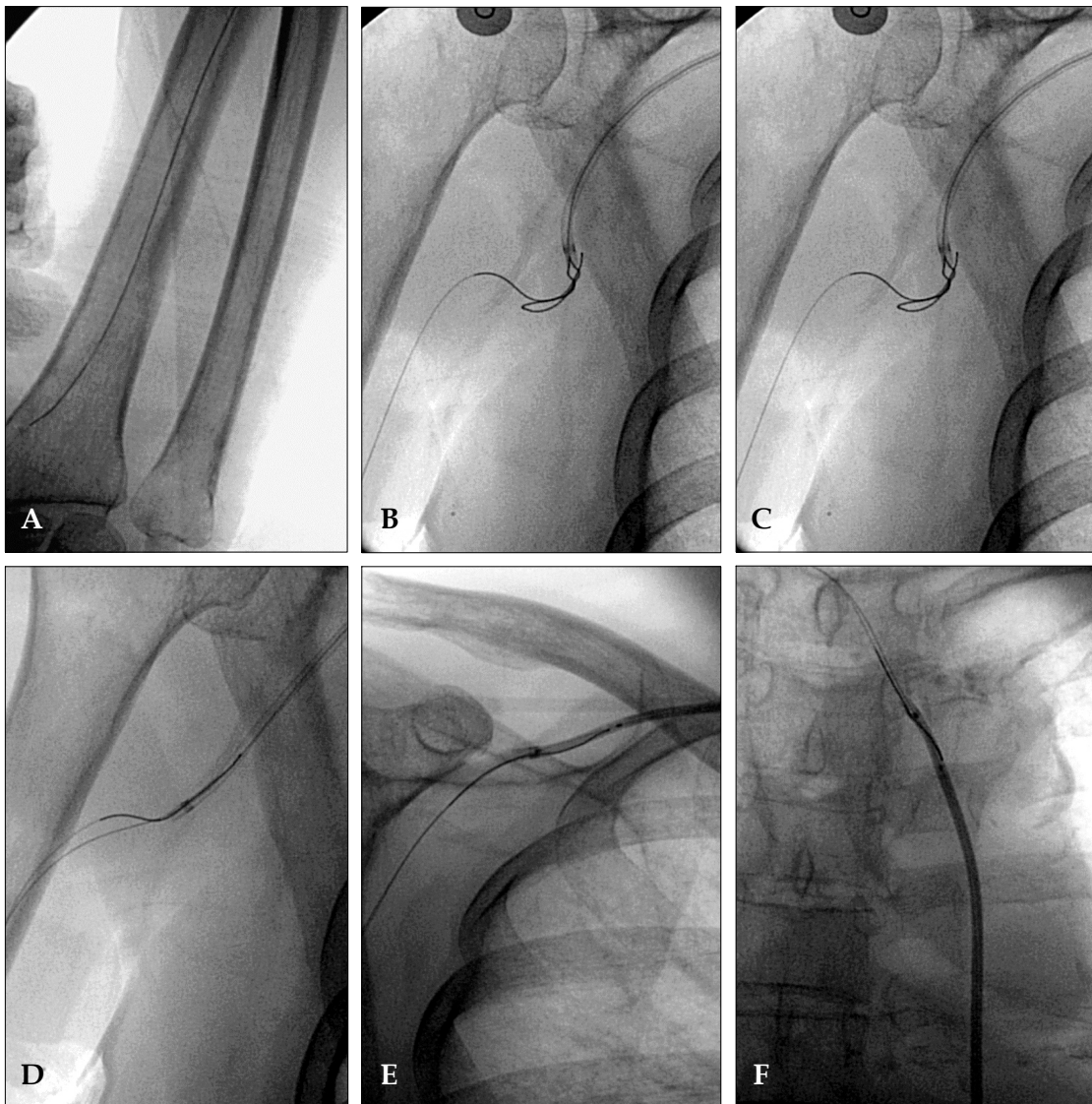


Fig 1. A. A broken 0.014" guidewire retained in a left radio-brachial artery. B. Retrieval using a snare was attempted several times but failed. C. The distal part of the broken 0.014" guidewire inside of the guiding catheter. D. Another 0.014" guidewire was passed alongside the broken wire. E. Balloon catheter was positioned alongside the broken wire inside of the distal tip of the guiding catheter. F. Balloon was inflated in the guiding catheter and the guiding catheter was withdrawn.

for the successful introduction of the arterial sheath. In our cath lab, we tried the catheter needle, which consists of 2 pieces of an inner steel needle and an outer catheter sheath, for the radial puncture. In case of a difficulty during the 0.035" guidewire introduction, a 0.014" guidewire is helpful in advancing the catheter needle safely deep inside the radial artery and changed to 0.035" guidewire for the introduction of arterial sheath. And also, the 0.014" guidewire itself can be used for the introduction of the arterial sheath over it. In our case, we tried to introduce the arterial sheath over the 0.014" guidewire. While trying to introduce the arterial sheath, the 0.014" guidewire was broken.

Retained guidewire or a catheter fragment in the circulation causes complications, such as thrombosis, emboli, and sepsis. Thus, nonsurgical removal of the catheter or guidewire is the treatment of choice.³ Several methods for a dislodged broken wire have been reported.⁴⁻⁷ Snare loop wire or its modification was the most common technique used.^{3,4} Other techniques retrieved the intravascular guidewires in the coronary artery or the great vessel using biopsy catheters, hook-tip catheters, basket retrievers, or through surgical removal.^{4,7} In our case, the guidewire in the brachial artery was removed successfully using the wire-balloon technique after the failure to retrieve it with the snare loop wire technique. Although the snare-loop device was unsuccessful in catching the fragmented tip of the guidewire,

it aided in introducing the fragment inside the guiding catheter. Finally, we were able to succeed in the retrieval of the broken guidewire using a relatively simple and safe way with an angioplasty wire and balloon catheter.

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