

Loss of guide wire, a rare completely avoidable complication of central venous catheterization

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Abstract

Although percutaneous catheterization of central veins is a routine technique, it is a procedure requiring advanced operating skills, expert supervision, and attention to detail in order to prevent adverse effects. Here we describe a case of lost guide wire during central venous catheterization (CVC).

INTRODUCTION

Percutaneous catheterization of central veins is a routine technique. The complication rate of central venous cannulation may be as high as 12%.¹⁻³ The Seldinger technique, originally used to cannulate vessels for radiographic procedures, is frequently used for central venous cannulation.^{4 5}

CASE REPORT

A 60-year-old man was admitted in ICU after laparoscopic surgery for generalized peritonitis due to neglected perforated appendix; the operation was difficult, after surgery the patient developed septicemia and multiorgan failure.

An experienced physician passed a cannula into the right jugular vein using the Seldinger technique. He had been taught the technique, in particular the handling of the guide wire, but carried out the procedure without supervision. During passing the catheter over the guide wire, the wire was completely lost, an immediate plain film of the chest (Fig. 1) and abdominal x-rays (Fig.2) revealed that the wire had traveled down through the superior vena cava (SVC) extending into the inferior vena cava; the distal J-end was located in the right iliac vein just above the iliac bifurcation.

Figure 1

Figure 1: CXR showing the lost guide wire had traveled down through the superior vena cava extending into the inferior vena cava

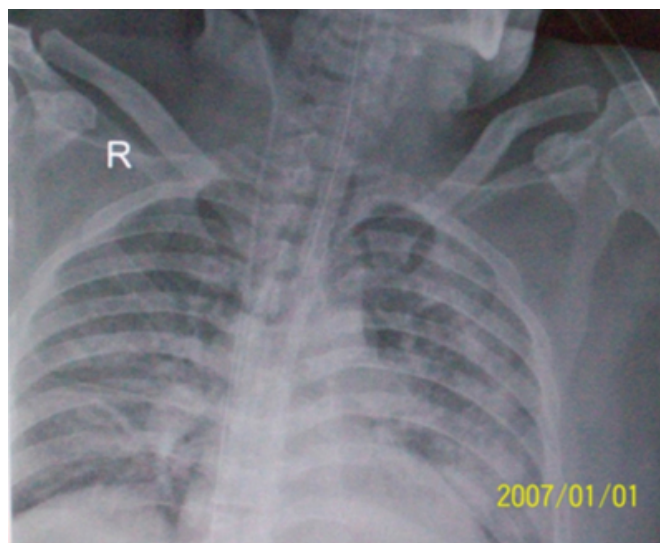


Figure 2

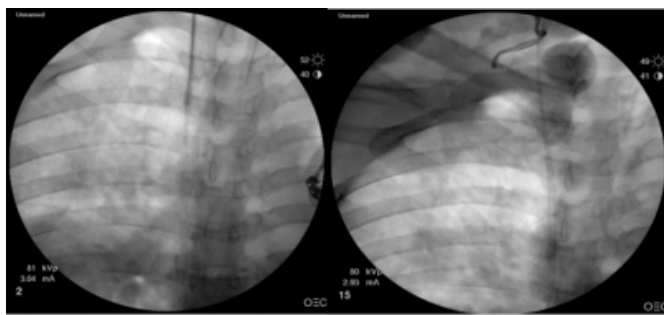
Figure 2: Abdominal X-ray showing the distal J-end of the lost guide wire located in the ILIAC VEIN just above the iliac bifurcation



The guide wire was removed using a snare passed through a sheath from a right jugular access under fluoroscopic guidance (Fig. 3A and B).

Figure 3

Fig. 3A: Snare passed into the SVC Fig. 3B: The guide wire caught with the snare



DISCUSSION

Other complications of central venous cannulation are discussed elsewhere.^{6–8} We report the rare intravascular insertion of a complete guide wire. This is a rare and completely avoidable complication of central venous catheterization. The guide wire should be held at the tip at all times to prevent passage into or out of the vessel. If this rule

is followed, the guide wire cannot get lost.

Ultrasound-guided cannulation of the internal jugular vein significantly improves success rate, decreases average access time and reduces complication rate. This technique should be preferred in complicated cases or when access problems are anticipated.

Loss of the guide wire is a serious and potentially life-threatening complication with reports of fatalities in up to 20% of cases when the complete wire is lost⁹, unlike the fracture and dislodgement of a portion of the CVC.

Percutaneous retrieval of intravascular foreign bodies was first described in 1964.¹⁰ With currently available methods and the assistance of interventional radiologists most broken or misplaced intravascular objects can be retrieved.^{11,12}

There are numerous techniques described in the literature. The majority of these techniques involve a gooseneck snare¹³, Dormia basket¹⁴, the two-wire technique, a 6-F biopsy forceps, or even surgical intervention.

Today, the most commonly used retrieval technique involves using a snare¹⁵ with the first documented use of a Gooseneck Nitinol Snare in 1991.¹⁶

However, these can be difficult to master and require high-quality fluoroscopy or specialized instruments. The use of the Dormia basket is associated with an increased risk of endovascular trauma.

Some interventionists have contended that before and during the time of removal of the misplaced wire the patient should be anticoagulated, usually with heparin. ¹⁷

Our method involved using the existing right internal jugular access and eventually replacing the access with the intended catheter.

Our technique involved transporting the patient to the operating theater. However, unlike other advanced methods described elsewhere in the literature, our approach could be employed with a C-arm. This approach allows applicability at the bedside for patients in the intensive care unit who are too ill to travel.

CONCLUSION

Our technique is applicable to all types of patients, especially critically ill patients who may not tolerate prolonged procedures. This technique is simple, rapid, and has broad applicability across all institutions in attempting to

retrieve a lost CVC guide wire.

Percutaneous central venous puncture is a procedure requiring advanced operating skills, expert supervision, and meticulous attention to detail. To prevent adverse effects we must abandon the practice of 'See one — Do one — Teach one' and must make sure that trainees are aware of all possible complications. The loss of a guide wire is a completely preventable complication provided that one always holds on to the tip of the wire.

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