

Guide Wire Loss of Femoral Venous Cannulation: Case Report and Literature Review

Tao Fan¹ and Ying-Jie Song²

ABSTRACT

Placement of a central venous catheter (CVC) is a common procedure, often replaced by femoral vein cannulation. The overall complication rate is 12 - 15%. Loss of a complete guide wire into the circulation is a rare and preventable complication. Here we report a case of guide wire loss during femoral venous cannulation and literature review.

Key Words: Central venous catheterization. Catheter. Complications. Guide wire loss. Femoral vein catheterization.

INTRODUCTION

The right femoral vein catheterization is an alternative method of CVC (central venous catheter). In it there are many complications may occur. The overall complication rate is 12 - 15%.¹⁻³ These complications include arterial puncture, haematoma, pneumothorax, haemothorax, chylothorax, brachial plexus injury, arrhythmias, air embolism, catheter malposition, and catheter knotting.^{4,5} However, a guide wire loss through the femoral vein catheterization completely into the blood vessels is very rare. Migration of a guide wire into the circulation can occur from any of the usual CV catheter insertion sites.^{6,7} A complete guide wire may not necessarily produce any symptoms and its loss may remain unnoticed for long.

Hereby, we report the migration of a guide wire into the circulation from the right femoral vein catheterization.

CASE REPORT

A 48-year man was referred to the Hospital because of right leg soreness in February 2013. The past history included a hemorrhagic shock related to a car accident in June 2012. Due to the need for intravenous infusion, CV catheterization of the right femoral vein with Seldinger technique was attempted at that time. After an active rescue, the patient had been discharged home in good physical condition. He could manage occupational work and daily life normally in the past 8 months until the past week when he developed right leg soreness.

On radiography and CT scan, one 60 cm guide wire was seen to have ascended in the inferior vena cava and

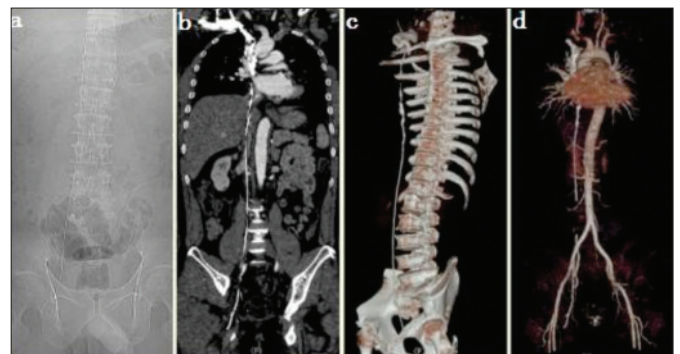


Figure 1: (a) A routine radiograph of the abdomen displayed a guide wire at the right border of the spine. (b) Coronal CT showing CVC guide wire in abdominal and pelvic cavity. (c) Three-dimensional CT showing the long guide wire of paraspinal from first rib to ischial. (d) CT angiography showing insertion of the guide wire from superior vena cava to right femoral vein.

passed through the heart (Figures 1 a-d). Based on the consultation with the vascular surgeons and radiologists, the risks of surgery to remove the guide wire were considered high. The patient also refused surgery to remove it due to worry about the risks. He was advised to avoid strenuous exercise, and use oral aspirin and warfarin daily. He was warned that magnetic resonance imaging was contra-indicated in the future. Fortunately, the patient's condition has remained stable over a 2-year follow-up period with right leg soreness relief, and International Normalised Ratio (INR) maintained between 2.0 and 3.0.

DISCUSSION

Central venous access techniques are commonly used for diagnosis and treatment, especially in critical care units. Complications may arise in as many as 15% of these procedures, such as infection, failure to place the catheter, arterial puncture, improper catheter position, misplacement, kinking, breakage, thrombosis, embolism, arrhythmias, pneumothorax, and hematoma.⁷⁻¹⁰ However, complete loss of the guide wire as a result of deficient insertion with the Seldinger technique has rarely been reported. Review of world literature identified a complete guide wire loss into the circulation in only five

Department of Oncology¹ / General Surgery², First People's Hospital of Yichang, Xiling District, Yichang City, Hubei, China.

Correspondence: Dr. Ying-Jie Song, Department of General Surgery, First People's Hospital of Yichang, Jiefang Road No. 2, Xiling District, Yichang City, Hubei-443000, China. E-mail: 123525090@qq.com

Received: July 10, 2015; Accepted: October 26, 2015.

previous reports, including a case of hemodialysis guide wire loss.⁴ Migration of a guide wire into the circulation can occur from any of the usual CV catheter insertion sites. A complete guide wire may not necessarily produce any symptoms and its loss may remain unnoticed for long.⁶ In these 5 patients, 3 cases were asymptomatic. The diagnosis is very simple, which is often established incidentally during routine radiographic examination.⁶ Once the diagnosis is made, it should be removed immediately because the longer the guide wire is left in the body, the more likely it is to lead to serious complications. Moreover, guide wire fracture increases the risk during surgical removal.

In this case, the patient did not produce any discomfort until 8 months later it appeared right lower extremity pain symptoms to right iliac vein thrombosis. The guide wire stimulated blood vessel wall and activities increased the pain. As the patient refused surgery due to the possible risks, so he was re-assured to avoid strenuous exercise; oral anti-coagulants daily were needed, but he was warned about magnetic resonance imaging being contra-indicated in the future. Fortunately, the patient's condition has remained stable over a 2-year follow-up period.

Some measures should be taken to prevent loss of an intravascular guide wire. The wire should be inspected for defects before insertion. Catheter should be passed over wire into the vein. Wire should be visible at the proximal end, before the catheter is advanced. When guide wire is into the vein, holding the wire, and not pushing catheter and wire together into the vein is

important. The wire must always be inspected for complete removal at the end of the procedure; and should be held onto at all times until removal from the vessel.

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