

LOST CENTRAL VENOUS CATHETER (CVC) GUIDEWIRE: A CASE REPORT

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Abstract

Central venous cannulation is a common tool and routine procedure performed in intensive care unit using Seldinger's technique. This is safe technique, however, have multiple potential risk. Guide wire related complications are rare but potentially serious. We describe a case of lost guide wire during central venous cannulation followed by retrieval by interventional radiologist and outline measure that can be taken to prevent such complication.

INTRODUCTION

Central venous cannulation (CVC) is a routine procedure in Intensive care, emergency and anesthesia department usually performed under ultrasound guidance [1]. CVC are needed for condition like emergency intra venous access, fluid infusions, nutritional support, administration of vasopressor, central venous pressure monitoring, transvenous pacing wire introduction, and hemodialysis. On case-to-case basis cannulation is performed at different site such as internal jugular, subclavian, femoral, or brachial vein.

Complication associated with Central venous cannulation are central line associated blood stream infection (CLABSI) about 12%, **arterial** puncture, nerve injury, air embolism, arrhythmias, early/delayed pneumothorax. One of the extremely rare complications is intravascular loss of guidewire in the vessel during CVC placement [2]. The incident/prevalence of lost guide wire is not reported in the literature.

Case Details

A 58 yr old female presented in emergency department with complaints of chest pain on & off since one month and shortness of breath for last one week. She was managed in medical ward with provisional diagnosis of DCMP (dilated cardiomyopathy) with LVEF 20-25%. She developed flash pulmonary edema for which she was intubated in the ward and was shifted to MICU for mechanical ventilation and further management. After 2 days of care in MICU patient was extubated over NIV support. In view of persistent hypokalemia and need for potassium replacement it was planned to secure a CVC. During insertion of CVC by 1st year PG resident in right femoral vein with Seldinger's technique [3,4] an inadvertent loss of Guide wire occurred. The immediate radiograph pelvis/abdomen taken post incident (Fig1) shows guide wire in right femoral vein up to inferior vena cava.

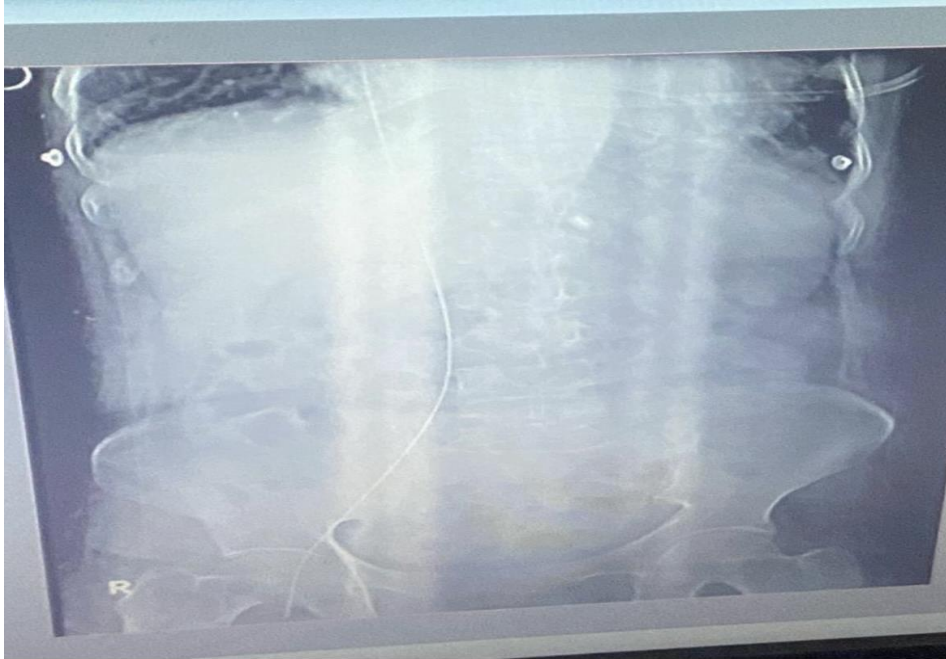


Fig 1: X-ray pelvis/abdomen showing guide wire (arrows) in the right femoral vein upto inferior vena cava

Post incident immediately ultrasound was done to look for guide wire. It was visible in right femoral vein just 2cm distal to the site of needle puncture/insertion. There was no immediate complication. Immediately an attempt was made to retrieve the guide wire by general surgery team with local dissection, however it was not successful.



Fig 2: Chest X-ray showing guide wire in inferior vena cava extending till right brachiocephalic vein

Next help was sought from Interventional Radiologist for retrieval of guide wire. It was planned as an elective procedure in cardiac cath lab next day morning. Patient was

kept under cardiac monitoring and strict surveillance. Inj enoxaparin 40 mg s/c was started as a prophylaxis for thrombotic complication. Chest X-ray was done just before shifting the patient to cath lab and it was noticed that guide wire migrated in inferior vena cava till right brachiocephalic vein (Fig 2). After taking informed consent the Patient was shifted to the cath lab and again under fluoroscopy the latest position was of guide wire was checked. It was decided to retrieve the guide wire from right internal jugular vein (IJV). 7fr sheath was inserted into right IJV under local anesthesia, again position of sheath vis-à-vis guide wire was checked after injection of contrast. There was gap of around 2cm between lower end of sheath and J tip of guide wire. Gooseneck snare was passed through sheath, J tip of guide wire was looped around and pulled out successfully without any complication. subsequent stay of patient in the hospital was uneventful.

DISCUSSION

Loss of guide wire during CVC insertion is an iatrogenic issue which is under reported. CVC has many serious complications such as infection, failure to place catheter, misplacement, kinking, breakage, thrombosis, arrhythmias, pneumothorax, and hematoma [1,2,3]. In our patient guidewire migrated from right femoral vein to inferior vena cava and finally up to right brachiocephalic vein. This is rare and completely avoidable complication of CVC insertion. The guide wire should be held at least 18 cm distant during initial insertion. If this rule is followed the guide wire cannot be lost [4]. Another simple technique to prevent inadvertent loss of guide wire is to hold proximal tip (non-J tip end) of the guide wire during dilator use and while sliding the CVC into the vein with a small artery forceps. This technique was named as Ghatak's technique in an article published by Tanmoy Ghatak et al in 2013 [5].

Predisposing factor for the inadvertent intravascular loss of guidewire include, lack of attention, lack of experience in cannulation, inadequate supervision of trainees, cognitive overload in ICU. Signs of guide wire loss include missing guide wire from the tray, resistance to injection via distal lumen, poor venous flow back from distal lumen, guide wire visible in radiograph [6].

Most commonly reported guide wire related complications are immediate such as dysrhythmias and heart block. Late complications are migration of guide wire, perforation of vessels or heart chamber leading to cardiac tamponade, kinking, looping or knotting of guide wire, entanglement of previously placed intravascular devices such as pacemaker leads.

For retrieval of guide wire interventional radiology techniques are the method of choice. With modern interventional technique and devices, a lost guide wire or fragment can be removed in most of the cases [7]. During the intervention the patient should be heparinized. Usually the guide wire is caught by a gooseneck snare passed through a sheath placed in right jugular vein under fluoroscopy as it was done in our case.

The loss of guide wire is completely preventable complication, we wish to emphasize and raise awareness of the potential complication. Aim to high light this rare complication is that in era of cognitive overload in ICU this complication can still happen. Central venous catheter insertion is a procedure requiring advanced operating skills, expert supervision and attention to the details in order to prevent adverse effects.

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