

Too Many Twos in One Patient: Two Central Venous Catheters, Two Routes, Two Hospitals, Two Lost Guidewires, Two Vascular Systems, One Patient

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Abstract

Central venous catheter insertion by Seldinger's technique is a very common procedure nowadays. The technique though considered safe, is associated with potential dreaded complications. One such complication is intravascular loss of guidewire during insertion. We describe one unusual case of two chronically lost guidewires in venous and arterial system with successful retrieval by innovative interventional techniques.

Keywords: Lost guidewire; Interventional cardiology; Interventional radiology; Central venous catheter complications; Anaesthesiology; Snare

Introduction

Central venous catheterization is routine procedure in emergency and intensive care units. They are needed for parenteral nutrition, monitoring and for long term venous access. Most commonly used technique is Seldinger with either femoral, jugular or subclavian approach [1]. Central venous catheterization is associated with complications in around 12% cases [2]. One of the rare complications with this technique occurs due to failure of guide wire removal. Here we are reporting a very unusual case with two chronically lost guidewires in two vascular systems which were retrieved successfully by two interventional techniques.

Case Report

A 35-year-old male patient case of gun-shot injury to head was admitted in outside hospital. He was managed there for around one month. He underwent craniotomy followed by frontal lobectomy. Post procedure patient was in persistent vegetative state. Then patient was referred to another hospital for further care, there he was admitted for around 1 month.

Patient was brought to our hospital in vegetative state with only eye movement and minimal eye response to command. When patient came to hospital he was already tracheostomised, shifted from parenteral to RT feeding plus medical care and physiotherapy. As a part of routine evaluation chest X-ray was performed (Figure 1). To RMO's surprise she thought there is something abnormal in X-ray. So she brought X-ray to cardiology department. X-ray was suggestive of two lost central venous guidewires. According to their position and course it was concluded that one is extending from RT IJV (J tip of guidewire)-SVC-RA-IVC-ILIAC-FEMORAL vein (straight tip of guidewire) and another one was extending from RT ICA (J tip of guidewire)-BRACHIOCEPHALIC-LOOPING IN ASCENDING

AORTA-ARCH OF AORTA-LOOPING IN DESCENDING AORTA-OPENING OF LT SCA (straight tip of guidewire).

We did routine blood evaluation, all were normal, venous and arterial Doppler and echo was done to rule out thrombus. It was decided to remove guidewires by interventional approach. Femoral approach was chosen. But both wires had both ends stuck to vessel wall due to lost standing duration in lumen.

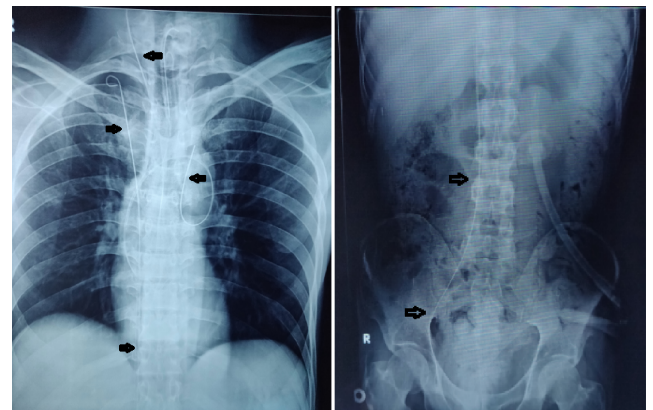


Figure 1: X-ray showing two lost guidewires (bold arrows), one extends from svc to ivc and other from RT carotid then coiling in ascending and descending aorta.

Guide wire 1

Even after many attempts snare could not be passed through both ends of venous wire. We tried double wire with looping around but still wire could not be freed. Then we tried one new method to free the attached ends. We passed JR guiding catheter with J tip teflon guide wire outside tip by rotating motion around guidewire. It got coiled and snugly fitted around wire (Figure 2). Then we pushed whole assembly upward so that straight tip got loose and by contra-lateral approach

and using snare straight tip was grasped. To free upper end we required controlled moderate close to tip traction. After both ends got free we removed guidewire from contralateral access.

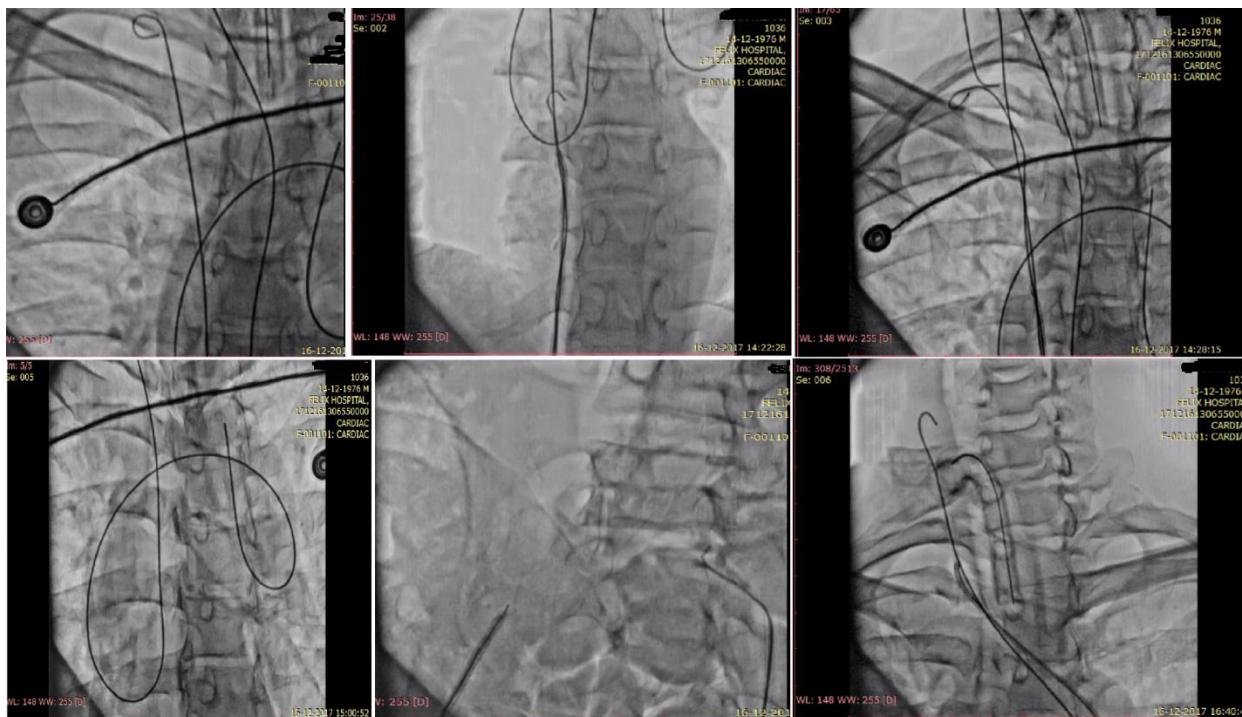


Figure 2: Interventional steps during removal of both guidewires.

Guide wire 2

In this wire also both ends were stuck, so snaring was unsuccessful. But luckily with another teflon wire looped around it, its straight tip got loose in left SCA origin. Then we snared this end and tried to pull out wire but j tip was very firmly stuck in carotid. We thought of an idea to break adhesions. We advanced snare over wire up to adhesions (Figure 2) at j tip and using another snare by contralateral approach gave traction to straight tip. Holding lower end by snare and pushing slowly other snare up at j tip adhesions got some loose. Then by slight traction under fluoroscopy wire was removed successfully.

So finally procedure was successful and uneventful. Two guidewires in two vascular systems with both stuck ends were removed by bilateral femoral artery and vein puncture with use of two snares and two mixed innovative techniques in four hours under heparin coverage to maintain ACT. Post procedure blood reports and X-ray were normal. Procedure was uneventful.

Discussion

Our case is very unique in many aspects. There are no reported cases with two lost guidewires in single patient that too in different vascular systems (arterial+venous). In addition to this both wires were fixed to vessel wall at both ends making it difficult to retrieve percutaneous. Still with some modified techniques both wires were retrieved by intervention.

If we review the literature it can be seen than it is not an uncommon complication of central venous catheter insertion. It vastly under-

reported event and most of cases are diagnosed incidentally. Method of choice for retrieval is interventional [3,4].

There are many reasons for loss of guidewire, here we enlist most common of them under-experienced operator, lack of supervision, distraction, unstable patient, patient movement, heavy workload, exhausted operator, night shifts and improper visibility.

Lost guidewire is dreaded complication because it may lead to multiple consequences such as: asymptomatic, cardiac dysrhythmia, conduction abnormalities, perforation of vessels or cardiac chambers, kinking, looping, or knotting of the wire, entanglement of previously placed intravascular devices, breakage, thrombosis, embolization or infection of guidewire.

The percutaneous retrieval of intravascular foreign bodies was first described in 1964 [5]. With current hardwares and techniques most broken or misplaced intravascular objects can be retrieved. Many commonly used techniques involve a Gooseneck snare, 3 Dormia basket, 4 the two-wire technique, a 6-F biopsy forceps, or even surgical intervention. Presently gooseneck snare is most commonly used for retrieval. These percutaneous retrieval techniques have very low success when there are no loose ends of wire to capture. Our case was similar with both ends fixed. So we have to use snare with other innovative approaches as described above.

Precautions to avoid loss of guidewire:

- Insertion by adequately trained personnel or under good supervision.

- Distractions should be avoided during the catheter insertion.
- The length of the guidewire should always exceed that of the catheter.
- Never lose control over guidewire, it should be held either at the proximal end or at the skin puncture site.
- Check for guidewire in the procedure tray after insertion.
- As a routine, an early post procedure X-ray is must to look for such complications along with other possible complications.
- Develop an appropriate checklist and protocol to be followed for central venous catheter insertion at institutional level.

Conclusion

Purpose behind this case report is to emphasize the need of great precautions while inserting central venous catheters and to define the importance of post central venous line X-ray so that this complication is not missed. If it is missed it will be detected incidentally after long

time. Such guidewires are very difficult to retrieve. For such cases of chronically lost guidewires above explained techniques can be used to release the guidewire tips. Otherwise only option left is surgical.

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