

**CASE REPORT****RETRIEVAL OF A MIGRATED CENTRAL VENOUS GUIDE WIRE: A CASE REPORT**M.G.M.A Bandara<sup>1</sup>, P.A.H.M.M.B.B Herath<sup>1</sup>, J.Udupihilla<sup>2</sup>, P.B Hewavithana<sup>2</sup><sup>1</sup>Teaching Hospital, Peradeniya.<sup>2</sup>Department of Radiology, Faculty of Medicine, University of Peradeniya.

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Orcid ID: <https://orcid.org/0000-0002-4138-4042>**Abstract**

A 66-year-old patient was admitted to a peripheral hospital with necrotising fasciitis and septic shock, with a background history of severe co-morbid diseases. The septic shock was managed at an intensive care unit with IV vasopressors and IV antibiotics via right internal jugular central venous catheter (CVC). Insertion of CVC was complicated by migration of guide wire in to the inferior vena cava (IVC). This case illustrates the migration of a guide wire as a complication of CVC insertion, and the subsequent retrieval of this guide wire.

**Key words**

Guide wire, migration of a guide wire, retrieval of a guide wire

**Introduction**

Central venous line insertion came in to medical practice with the advancement of patient care. Central venous catheter (CVC) insertion is frequently required for patients managed in intensive care units or in patients with difficult peripheral cannulation. A technique which was originally described by Seldinger in 1953 by using a guide wire is the usual practice<sup>[1]</sup>. It is not totally free of complications though it's considered a safe procedure. Well known complications include puncture site bleeding, failure to place the catheter, improper catheter position, pneumothorax, haematoma formation and infection. Loss of the guide

wire is a rare (0.3-12%), but serious and potentially life threatening complication<sup>[2]</sup>. Loss of the complete guide wire carries a fatality rate of up to 20%<sup>[2]</sup>. Loss of the guide wire is often immediately noticed.

**Case report**

A 66-year-old patient with a past history of type II diabetes and hypertension developed left lower limb pain and swelling of one-day duration. Diagnosis of necrotising fasciitis was made and treatment was commenced. As the patient developed septic shock, he was admitted to the intensive care unit. During the insertion of a central venous catheter to



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right internal jugular vein, inadvertent migration of the proximal end of guide wire into the superior vena cava (SVC) was observed. The procedure, despite being performed by an experienced anaesthetist was a difficult one due to the collapsed veins associated with the patient being in a state of shock.

This had led to the use of multiple guide wires to obtain access to the collapsed central veins. The missing guide wire was noted at the end of the procedure. As the guide wire could not be visualized on sonography, chest X-ray was obtained and it revealed that the guide wire was projected over the cardiac shadow in a straight course with the distal end at the level of the L5 vertebra, angled towards right, raising the possibility of migration into the right common iliac vein. Since wire retrieval was not feasible, the patient was transferred to a tertiary care hospital. Subsequent CT thorax and abdomen showed the exact location of the guide wire, extending from the SVC to the right common iliac vein, through the right atrium and inferior vena cava (IVC) (Figure 1). The patient was optimized for the interventional procedure and the retrieval was done using a Gooseneck snare (Figure 2) under fluoroscope guidance.

## Discussion

As the case we presented was a difficult case of central venous line insertion, multiple guide wires had been used. The use of multiple guide wires may have led to inattention towards the original guide wire. Therefore it had gone unnoticed within the CVC and its proximal end had migrated into the SVC. Complications related to the guide wire include complete loss of the guide wire, and fracture of the guide wire with uncoiling<sup>[3]</sup>. Established predisposing factors for an intravascular loss of guide wire include inattention as

illustrated by this case and lack of experience in the Seldinger technique. The signs of a guide wire loss are a missing guide wire and resistance to injection via the central lumen.



**Figure 1:** “J” guide wire extending from sub hepatic IVC in to right common iliac vein (course through right atrium and supra hepatic IVC not shown)

The percutaneous retrieval of intravascular foreign bodies was first described in 1964<sup>[4]</sup>. With currently available methods, most broken or misplaced intravascular objects can be retrieved with the assistance of interventional radiologists. Most of these techniques involve a Gooseneck snare, Dormia basket, a 6F biopsy forceps, or vascular surgical intervention. Nowadays, the most frequently used retrieval technique involves the use of a snare. These can be difficult to master and require high quality fluoroscopy<sup>[5]</sup>. In this

case, the guide wire was retrieved through right femoral vein access by using a Gooseneck snare under fluoroscopy guidance. It is not easy to retrieve a guide wire when it is kept within the blood vessel for few days, as a thrombus can be formed around the wire. In this case guide wire was taken out after one week, when the patient was stable enough to undergo an intervention. At the time of retrieval, guide wire had adhered to the vessel wall and catching it in to the gooseneck snare was not found to be easy. However, successful retrieval of the intact wire was achieved without any complications.



**Figure 2:** Retrieved “J”guide wire (right).Goose neck snare(left) used to retrieve “J” guide wire

## Conclusions

Migration of guide wires is a known complication of CVC insertion. It could be prevented by making sure that the wire is well visible at the proximal end, before the catheter is advanced in to the vein, and by firmly holding the wire throughout the procedure. Retrieval of the migrated wire should be done to prevent intravascular complications.

## References

1. Seldinger S. Catheter replacement of needle in percutaneous arteriography, *ActaRadiologica*. 1953;39:368-376. <https://doi.org/10.3109/00016925309136722>
2. Heberer M, Moser J, Dürig M, Harder F. [Prospective study of complications of central venous catheters]. *Infusionsther Klin Ernahr*. 1984 Oct;11(5):254-61.
3. Unnikrishnan K, Sinha P, Nalgirkar R. An alternative and simple technique of guidewire retrieval in a failed Seldinger technique, *Anesthesia and Analgesia*. 2005;100:898-899. <https://doi.org/10.1213/01.ANE.0000146654.99367.DD>
4. Peter R. Bream JR. Retrieval of a wire lost during central venous catheter replacement, a case report using a new technique for wire retrieval and a review of the literature. *Endovascular Today*. 2008May;38 - 41. Available at [https://evtoday.com/pdfs/EVT0508\\_03.pdf](https://evtoday.com/pdfs/EVT0508_03.pdf) last accessed on 06/11/2018
5. Srivastav R, Yadav V, Sharma D, Yadav V. Loss of guide wire: a lesson learnt review of literature. *J Surg Tech Case Rep*. 2013 Jul;5(2):78-81. <https://doi.org/10.4103/2006-8808.128732>