

CASE REPORT

Loss of Guide Wire as an Important Complication of Central Venous Catheterization; a Case Report

Fares Najari^{1*}, Mohamad javad Amirian¹, Sara Sadjadi¹, Ideh Baradaran Kayal²

1. Department of Forensic Medicine, Shohadaye Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

2. Legal Medicine Organization, Alborz University of Medical Sciences, Karaj, Iran.

Received: January 2018; Accepted: February 2018; Published online: 5 March 2018

Abstract: Many critically ill patients need aggressive procedures, such as central venous catheterization. The complication rate of central venous line placement is estimated to be 15%. Common complications include arterial puncture, hematoma, pneumothorax, hemothorax, arrhythmia, thoracic duct injury, infection, and thrombosis. Cardiac tamponade, pericardial effusions, pleural effusions, air or guidewire embolisms, and lost guide wires are rare but severe complications. Here we report a case of lost guide wire following central venous line insertion.

Keywords: Catheterization, central venous; intraoperative complications; emergency service, hospital; case report; rare diseases

© Copyright (2018) Shahid Beheshti University of Medical Sciences

Cite this article as: Najari F, Amirian M, Sadjadi S, Baradaran Kayal I. Loss of Guide Wire as an Important Complication of Central Venous Catheterization; a Case Report. *Emergency*. 2018; 6 (1): e17.

1. Introduction

Many critically ill patients need aggressive procedures for treatment; one of these procedures is central venous catheterization. The complication rate of these procedure is estimated to be 15% (1). Common complications are arterial puncture, hematoma, pneumothorax, hemothorax, arrhythmia, thoracic duct injury, infection, and thrombosis (2, 3). Cardiac tamponade, pericardial effusions, pleural effusions, air or guidewire embolism, and lost guide wire are rare but severe complications.

There are some case reports of lost guide wires, such as the cases reported by Kumar et al. in 2006 (4), Satoshi Akazawa et al. in 1996 (5), Khatami et al. in 2010 (6), Muhammad Qamarul Hoda et al. (7), and Mohammad Kashif et al. (8). Here we report a case of lost guide wire following central venous line insertion.

***Corresponding Author:** Fares Najari; Department of Forensic Medicine, Shohadaye Tajrish Hospital, Shahr-dari Street, Tajrish Square, Tehran, Iran. Postal code: 1981964771 Tel: 00989123195140 Email: fares.hospital@yahoo.com

2. Case presentation:

Patient was a 32-year-old pregnant woman (G3P2) who became a surrogate mother on November 18th, 2015. The embryo was implanted successfully and she was carrying twins without any complications. In the 33rd week of pregnancy (June 23rd, 2016), she had blood spotting and premature rupture of membranes and underwent caesarean section in a general hospital. Her first laboratory test results were as follows: Hemoglobin 10.7 mg/dl; hematocrit 31.4%; white blood cell 10.7 1000/mm³ (Neutrophil count 80%).

The twins were born with Apgar score 7/10. The patient had severe bleeding due to uterine adhesion to the bladder (placenta percreta) and the surgeon decided to block the ovarian arteries. Two days after surgery, an infectious diseases specialist consultation was requested because of the patient's high fever and tachycardia. Laboratory tests indicated the following: white blood cell 14 1000/mm³ (Neutrophil 93%); ESR 120; CRP 94.5. Due to inappropriate peripheral intravenous line, placement of a central venous catheter via the right femoral vein was attempted by the anesthesiologist.

Twelve days after caesarian section, the patient had no fever and she left the hospital with personal consent and against medical advice. Sixteen days later, the patient was hospitalized in another hospital due to pain and edema of her right leg. She underwent Doppler sonography of the right lower extremity and warfarin therapy for suspect deep vein



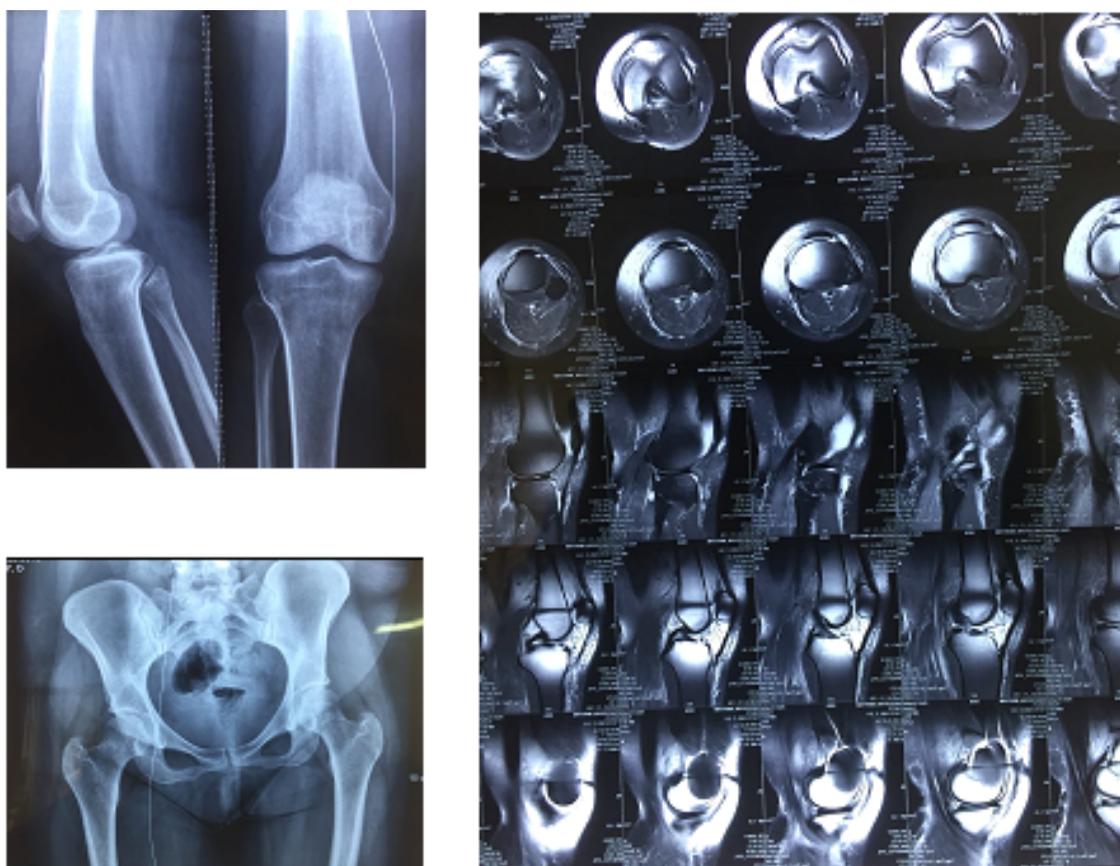


Figure 1: Anterior-posterior and lateral view of right knee, Anterior-posterior view of pelvis, and magnetic resonance imaging of patient's right knee.

thrombosis (DVT). She was discharged from the hospital with oral warfarin after 15 days of hospitalization. Four days after discharge, she returned to the same hospital with pain and hematoma above the right knee. Doppler sonography revealed chronic DVT and a multiple septate region without echo. Radiography and magnetic resonance imaging of the right knee revealed the lost guide wire in her right femoral vein (Figure 1). The guide wire was retrieved on the next day. Patient sued the anesthesiologist and the medical commission of medical procedures declared medical negligence because of commission.

3. Discussion

The most frequent reported late complications for central vein catheterizations are thrombosis and infection (9, 10). There are also some rare complications that have been reported, such as migration of the guide wire to the pulmonary artery, entrapment of the fractured guide wire, knotting of the guide wire during catheter insertion, and formation of a femoral arteriovenous fistula. A rarely reported complication of central venous line catheterization is missing guide wire,

which can result in arrhythmias, in-travascular entrapment of wires, embolization of wire fragments, and vessel perforation.

Gou H et al. reported a 40-year-old male patient who underwent central venous catheterization via the left subclavian vein, but staff did not notice that a guide wire was completely inserted in the vein. After six months, the lost guide wire was seen extending from the saphenous vein through the vena cava, right atrium, right ventricle, pulmonary artery, and lung tissue to the back of the neck (11). Schummer W et al. also reported four cases of loss of guide wire after central venous catheterization (12). There are various reasons for loss of guide wire including forgetfulness of the physician performing the procedure and a part of the wire being fractured. Obviously, the physician and the assistant nurse should be careful regarding used devices and parts not being lost just like other procedures. On the other hand, if we notice that a part of guide wire has remained in the vein due to any reason including fracture, we should better attempt to retrieve the remaining part by consulting vascular surgeons. It seems that use of ultrasound before and after placement

of central line and use of a checklist during procedure, may help identify and prevent similar complications.

4. Appendix

4.1. Acknowledgements

We would like to express our special thanks to the forensic center of Tehran, Iran.

4.2. Author's contribution

All authors meet the four criteria of authorship contribution based on the recommendations of the international committee of medical journal editors.

4.3. Conflict of interest

The authors declared no potential conflict of interest with respect to authorship and/or publication of this article.

4.4. Funding and support

None.

References

1. McGee DC, Gould MK. Preventing complications of central venous catheterization. *New England journal of medicine*. 2003;348(12):1123-33.
2. Comerlato PH, Rebelatto TF, de Almeida S, Augusto F, Klein LB, Boniatti MM, et al. Complications of central venous catheter insertion in a teaching hospital. *Revista da Associacao Medica Brasileira*. 2017;63(7):613-20.
3. Askegard-Giesmann JR, Caniano DA, Kenney BD, editors. Rare but serious complications of central line insertion. *Seminars in pediatric surgery*; 2009: Elsevier.
4. Kumar S, Eapen S, Vaid V, Bhagwat A. Lost guide wire during central venous cannulation and its surgical retrieval. *Indian Journal of Surgery*. 2006;68(1):33.
5. Akazawa S, Nakaigawa Y, Hotta K, Shimizu R, Kashiwagi H, Takahashi K. Unrecognized migration of an entire guidewire on insertion of a central venous catheter into the cardiovascular system. *Anesthesiology: The Journal of the American Society of Anesthesiologists*. 1996;84(1):241-2.
6. Khatami MR, Abbasi R, Sadigh G. Guide wire migration during femoral vein catheterization. *Iranian journal of kidney diseases*. 2010;4(4):333-5.
7. Hoda MQ, Das G, Mamsa KA, Salimullah H. Unusual site of guide-wire entrapment during central venous catheterization. *JPMA The Journal of the Pakistan Medical Association*. 2006;56(3):139-41.
8. Kashif M, Hashmi H, Jadhav P, Khaja M. A Missing Guide Wire After Placement of Peripherally Inserted Central Venous Catheter. *The American journal of case reports*. 2016;17:925.
9. Durbec O, Viviand X, Potie F, Vialet R, Albanese J, Martin C. A prospective evaluation of the use of femoral venous catheters in critically ill adults. *Critical care medicine*. 1997;25(12):1986-9.
10. Joynt GM, Kew J, Gomersall CD, Leung VY, Liu EK. Deep venous thrombosis caused by femoral venous catheters in critically ill adult patients. *Chest*. 2000;117(1):178-83.
11. Guo H, Peng F, Ueda T. Loss of the guide wire: a case report. *Circulation journal: official journal of the Japanese Circulation Society*. 2006;70(11):1520-2.
12. Schummer W, Schummer C, Gaser E, Bartunek R. Loss of the guide wire: mishap or blunder? *British journal of anaesthesia*. 2002;88(1):144-6.

