

CASE REPORT

ACCIDENTAL MIGRATION OF A GUIDE WIRE DURING HAEMODIALYSIS CATHETER INSERTION THROUGH RIGHT INTERNAL JUGULAR VEIN

Niraj Kumar Keyal,^{1*} Manbodh Kumar Sah,² Ujjwal Deo,³ Rupesh Chaurasia³¹ Department of Critical Care Medicine, National Medical College and Teaching Hospital, Birgunj, Parsa, Nepal.² Department of Internal Medicine, Nepal Medicit Vayodha Hospital, Birgunj, Parsa, Nepal.³ Department of Critical Care Medicine, B & C Medical College and Teaching Hospital, Birtamod, Jhapa, Nepal.**Date of Submission:** November 30, 2022**Date of Acceptance:** December 20, 2022**Date of Publication:** December 31, 2022***Correspondence to:**

Niraj Kumar Keyal, Department of Critical Care Medicine, National Medical College and Teaching Hospital, Birgunj, Parsa, Nepal.

Phone: +977-9855027141

Email: nirajkumarkeyal@gmail.com

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ABSTRACT

Introduction: Intensivist and Nephrologist generally place the dialysis catheter to obtain vascular access for immediate and short-term haemodialysis. We hereby present a case of a 54 years male with a past history of diabetes mellitus, hypertension, and chronic kidney disease stage four who was planned for immediate haemodialysis for severe hyperkalaemia and metabolic acidosis. A haemodialysis catheter was inserted under ultrasound guidance through the right internal jugular vein, but during the procedure, the guidewire was pushed into vein. The chest X-ray showed the looping of the tip of a guidewire. It was successfully surgically extracted, haemodialysis was done through the right femoral vein successfully, and the patient was discharged. From this, we want to emphasize that accidental migration is a fatal, avoidable, preventable complication. Simple measures like holding the guidewire until removal from vessels, vigilant supervision of the trainees, avoidance of vigorous force during insertion of guidewire may prevent this complication.

Keywords: Central Venous Catheters, Complication, Haemodialysis, Hypertension.

INTRODUCTION

Percutaneous cannulation of the internal jugular vein for emergency or short-term haemodialysis is a common procedure performed by the Nephrologist and Intensivist. Accidental migration of the guidewire is one of the rare and avoidable complications.¹ There is limited evidence of forgotten² and accidental migration³⁻⁵ of a guidewire. Accidental migration is detected immediately only by 30.3%.⁶

The cause of complication is inexperience, inattention, inadequate supervision, application of vigorous force during catheter insertion. We report a case of fifty-four-year-old male in whom accidental insertion was immediately identified and successfully treated.

CASE REPORT

A 54-year-old male, with a history of type 2 diabetes mellitus and hypertension under irregular medication presented at the Emergency Department of a general super specialty hospital, Birtamod, Nepal. He presented with a history of shortness of breath, altered sensorium, fever, and palpitation for 5 days.

At the time of admission to the Emergency Department, his GCS was 12/15, pulse rate 110 beats per minute, blood pressure 160/90 mm of Hg, respiratory rate 30 breaths/minute and oxygenation saturation was 90% on 10 litres

of oxygen. The chest examination showed crepitations in the right lower zone. The abdominal and cardiovascular examination was normal.

His investigation profiles were total leucocyte count (TLC)-16250/mm³, platelets-90000/mm³, haemoglobin (Hb)-8gm/dl, urea 251 mg/dl, creatinine 6.8 mg/dl. sodium and potassium were 125 mmol/L and 7.4 mmol/L, respectively. Liver function test (LFT) showed total bilirubin-2.5mg/dL, direct bilirubin 1.6 mg/dL, total protein 5.2mg/dL, albumin 3.2mg/dL, alanine transferase (ALT)- 354 U/L and aspartate transferase (AST)-358 U/L. Random blood sugar was 281 mg/dL and urine acetone were negative. Arterial blood gas analysis showed pH-7.1, PaCO₂- 31 mmHg, PaO₂-60 mmHg, HCO₃⁻-10 mmol/L.

The patient was diagnosed as acute kidney injury on chronic kidney disease with severe hyperkalaemia and metabolic acidosis. The patient was started on 10 ml of 10% calcium gluconate over 10 minutes, nebulization with salbutamol 3 ml, 25% dextrose 100ml with 8 U regular insulin and was planned for urgent haemodialysis.

A trainee under the guidance of the register decided to cannulate the right internal jugular vein under the ultrasound. After cleaning and draping, initial cannulation was done with a needle attached to a syringe. Following this, the dilator and the guidewire were introduced. Unfortunately, by inattention, the guidewire was pushed into the right internal jugular vein by the operator. The procedure was immediately stopped and an urgent chest x-ray was done, it showed the guidewire in the right internal jugular vein (Figure 1).



Figure 1: A chest x-ray shows the guidewire in the right internal jugular vein.

The vascular surgeon was not available at our centre so the otolaryngologist decided to remove the wire by open surgery in the operating room. The procedure was performed under general anaesthesia and the surgery lasted for 2 hours. A venotomy revealed migration of the guidewire to the right internal jugular vein and was successfully extracted. A chest X-ray was done after removal of the guidewire which also showed the successful removal of the guidewire (Figure 2).



Figure 2: A chest x-ray after removal of the guidewire

The dialysis catheter was inserted in the right femoral vein and haemodialysis was done successfully. Acidosis and potassium level improved and the patient was shifted from the intensive care unit to the floor on the 3rd day. He was discharged from the hospital on the 8th day of hospital admission.

One week following discharge, he presented at the outpatient for a follow-up. He was advised to continue his anti-diabetic and hypertensive medication and continue monthly follow-up.

DISCUSSION

Guidewire related complication generally causes morbidity and mortality during insertion of a haemodialysis catheter. Migration of a guidewire can cause migration of a catheter into the circulation, embolism, cardiac tamponade, arrhythmias, perforation of cardiac chambers.¹ Therefore, the guidewire should be removed quickly and completely.

The cause of migration of the guidewire includes

inattentive, exhausted, inexperienced operator, inadequate supervision, patient movement, excessive length of the guidewire.^{3,6,7} Predisposing factor in our patient was an emergency situation leading to hasty, inadequate supervision, the inexperience of trainee, and distraction.

In our patient, guidewire was removed by the surgery as interventional radiologists using gooseneck snares, endovascular retrieval forceps, or dormia baskets were unavailable at our centre.

Migration of a guidewire can be prevented by using a mosquito forceps or small artery forceps to fix the non 'J' end of the guidewire during dilator use and while sliding the dialysis catheter into the vein,⁸ confirming that the wire is visible at the proximal end before the catheter is advanced, railroading the catheter over the guidewire into the vein and not pushing catheter and wire together, holding onto the wire at all times until removal from the vessel, application of less vigorous force during dilator use, and maintaining the catheter insertion checklist.

The complication is generally under-reported due to iatrogenic nature and medicolegal issues but it should be reported as it gives a learning opportunity to everybody. Complications during the insertion of a haemodialysis catheter can be avoided by following preventive measures.

CONCLUSION

To conclude, complication associated with migration of guidewire can be prevented by adequate supervision and timely intervention.

CONSENT

Written and well-informed consent was obtained for publication of clinical details and clinical images of the patient.

REFERENCES

1. Khasawneh FA, Smalligan RD. Guidewire-Related Complications during Central Venous Catheter Placement: A Case Report and Review of the Literature. *Case Rep Crit Care*. 2011;2011:287261. [DOI]
2. Abuhasna S, Abdallah D, Ur Rahman M. The forgotten guide wire: a rare complication of hemodialysis catheter insertion. *J Clin Imaging Sci*. 2011;1:40. [DOI]
3. Shrestha GS, Thakur A, Parajuli BD, Bista NR, Acharya SP. Accidentally Missed Guidewire during insertion of a Dialysis Catheter. *Indian J Vasc Endovasc Surg* 2016;3:136-7. [DOI]
4. Brahim B, Abderrahim Eb, Nawfal H, Hamid J, Hicham S, Nabil K. Accidental migration of a guidewire during femoral venous catheterization- A case report. *Archives of Medicine* 2014;6(1):3. [Full Text]
5. Sadek BH, Hanin H, Batta FZ, Arrayhani M, Hussaini TS. Unrecognized migration of an entire guidewire during hemodialysis catheter placement. *Saudi J Kidney Dis Transpl* 2012;23(5):1059-60. [DOI]
6. Pokharel K, Biswas BK, Tripathi M, Subedi A. Missed Central Venous Guide Wires: A Systemic Analysis of Published Case Reports. *Crit Care Med* 2015;43(8):1745-56. [DOI]
7. Kute VB, Patel MP, Shrimali JD, Gumber MR, Shah PR, Patel HV, et al. Loss of dialysis catheter guide-wire: How to prevent? *Indian J Crit Care Med* 2012;16(2):114-6. [DOI]
8. Ghatak T, Azim A, Baronia AK, Ghatak NK. Accidental guide-wire loss during central venous catheterization: A report of two life-threatening cases. *Indian J Crit Care Med* 2013. 17(1): 53-4. [DOI]