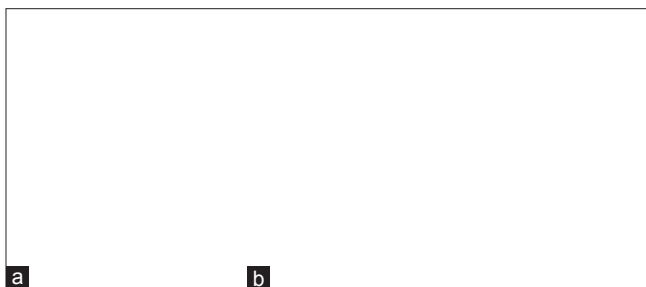


series of 378 radiographically controlled CVC placements and reported pure loop formations (coiling) in 2.9% of the cases. Supraclavicular subclavian approach was used in the majority of the patients and the authors explain this as a reason for relatively low incidence rates in their series as compared to other studies.<sup>[2]</sup>

We report a case of coiling of central venous catheter in right internal jugular vein (IJV) in a 36-year-old patient admitted postoperatively in intensive care unit (ICU) following evacuation of large extradural hematoma. The CVC was placed in the operation theatre under ultrasound guidance. Intraoperatively the waveform was damped, and the flow of fluids was slow, but it was considered secondary to rotation of the neck and labeled as "positional". Just after admission to the ICU a "flush test" was performed, and it was positive; 5–10 mL of normal saline was injected with force using a syringe and fluid thrill was felt in the ipsilateral neck region with the palmer aspect of the hand.<sup>[3]</sup> Subsequent chest X-ray confirmed coiling of CVC in right IJV [Figures 1a and b].

Factors predisposing to coiling and catheter malpositions are:

- Retrograde venous flow secondary to IJV valve incompetence in patients with chronic obstructive pulmonary disease, primary pulmonary hypertension and prior cannulations and catheterizations of the IJV<sup>[4,5]</sup>
- Retrograde venous flow in patients with high intrathoracic and intrabdominal pressures
- Seldinger technique: The catheter is inserted over the guidewire and placed in the central vein. During this procedure sometimes the guidewires are removed before the CVC are properly positioned in the superior vena cava. Resistance encountered in inserting the CVC then leads to excessive pressure applications, which then predisposes to malpositioning. Common sites of resistance are the junction of first rib and clavicle for the subclavian vein and the junction of



**Figure 1:** (a) Chest X-ray anteroposterior view with coiled central venous catheter in right internal jugular vein, (b) Coiled central venous catheter after removal

venous tributaries for the IJV and brachiocephalic vein.

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## References

- Goyal V, Sahu S. Coiling of central venous catheter in the left subclavian vein, a rare complication. *Indian J Crit Care Med* 2014;18:105-6.
- Malatinský J, Kadlic T, Májek M, Sámel M. Misplacement and loop formation of central venous catheters. *Acta Anaesthesiol Scand* 1976;20:237-47.
- Toshniwal GR, Rath GP, Bithal PK. Flush test: A new technique to assess the malposition of subclavian central venous catheter position in the internal jugular vein. *J Neurosurg Anesthesiol* 2006;18:268-9.
- Doepf F, Bähr D, John M, Hoernig S, Valdueza JM, Schreiber SJ. Internal jugular vein valve incompetence in COPD and primary pulmonary hypertension. *J Clin Ultrasound* 2008;36:480-4.
- Wu X, Studer W, Erb T, Skarvan K, Seeberger MD. Competence of the internal jugular vein valve is damaged by cannulation and catheterization of the internal jugular vein. *Anesthesiology* 2000;93:319-24.

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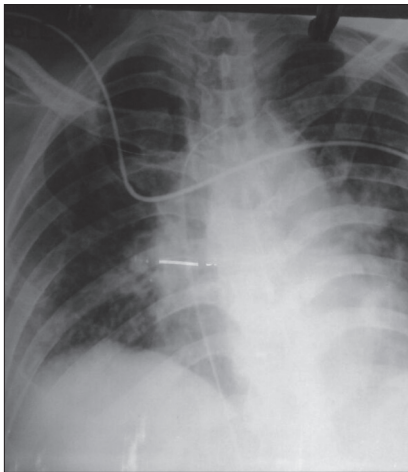
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## A case of guidewire embolism during central venous catheterization: Better safe than sorry!

Sir,

Central venous catheterization (CVC) is a routine procedure in intensive care unit as well as in surgical patients requiring monitoring of hemodynamic variables, for medications and parental nutrition, hemodialysis etc. The incidence of complications ranges from 5% to 29%<sup>[1]</sup> such as arterial puncture, hemothorax, pneumothorax, nerve injury, air embolism or dysrhythmias. Guidewire embolism during CVC is a rare iatrogenic complication.<sup>[2]</sup> The Seldinger technique is commonly used to cannulate the vessels.<sup>[3]</sup> We report a case of lost guidewire following



**Figure 1:** Chest X-ray showing guidewire

internal jugular catheter placement and its successful management.

A 64-year-old male, weighing 67 kg, 176 cm height had c/o hematuria since last 15 days. Patient was suffering from chronic obstructive pulmonary disease, diabetes and hypertension. Ultrasound showed bladder mass lesion, enlarged prostate, and hepatomegaly. His serum creatinine was 5.07 mg/dl, total cholesterol-18,170/cmm, serum glutamic-pyruvic transaminase-122.0 and serum glutamic oxaloacetic transaminase-118.0. In view of acute renal failure and septicemia, CVC for fluid management and drug administration was advised. During a busy night shift, a 2<sup>nd</sup> year resident was assigned to perform the procedure. The left internal jugular vein was cannulated using double lumen (Polymed Novocent Duo, 160 mm) polyurethane catheter by central approach after local infiltration, under ultrasound guidance. A J-tipped guidewire (0.035 mm, 50 cm) was introduced through the needle followed by dilatation of the tract with a dilator (8.5 Fr, 4 inches) and insertion of the catheter on the guidewire. During this procedure, the guidewire was inadvertently pushed further ahead into the vein. This went unnoticed by the resident, who tried to aspirate blood from both the lumen to confirm proper positioning of the catheter. Due to inability to aspirate free flow of blood from one of the lumen, the resident flushed saline through that lumen, which could have resulted in embolization of the guidewire. After completion of the procedure, he realized that the guidewire was missing and informed the seniors. An urgent chest X-ray [Figure 1] and X-ray kidneys, ureters, and bladder [Figure 2] were done in which guidewire was clearly visible. It was removed by gooseneck snare device through femoral percutaneous approach under local anesthesia and fluoroscopic guidance without any complication.



**Figure 2:** X-ray kidneys, ureters, and bladder showing embolized guidewire

For the management of guidewire embolism, if the guidewire has embolized systemically, chest X-ray and if required X-ray abdomen will determine the position of the guidewire. The percutaneous method of extraction has fewer complications for which interventional radiology techniques such as dormia basket, gooseneck snare, endovascular forceps are preferable.<sup>[4]</sup> Cheddie and Sing<sup>[5]</sup> describe a similar approach for guidewire extraction using a goose snare device.

Our take home message is that, the complications of CVC should be kept in mind during cannulation. The guidewire should not be inserted too far as average distance from all access site is 18 cm. One should hold the guidewire tip firmly while introducing the catheter and should check the guidewire outside before flushing the percutaneous catheter. Without free flow of blood during aspiration, one should not flush the catheter. Gooseneck snare technique is safe for removal of embolized guidewire.

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**References**

1. Eisen LA, Narasimhan M, Berger JS, Mayo PH, Rosen MJ, Schneider RF. Mechanical complications of central venous catheters. *J Intensive Care Med* 2006;21:40-6.
2. Schummer W, Schummer C, Gaser E, Bartunek R. Loss of the guide wire: Mishap or blunder? *Br J Anaesth* 2002;88:144-6.
3. Seldinger SI. Catheter replacement of the needle in percutaneous arteriography; a new technique. *Acta radiol* 1953;39:368-76.

4. Roye GD, Breazeale EE, Byrnes JP, Rue LW 3<sup>rd</sup>. Management of catheter emboli. *South Med J* 1996;89:714-7.
5. Cheddie S, Sing B. Guidewire embolism during central venous catheterization: Options in management. *Internet J Surg* 2013;30:1.

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