

## Accidental Placement of Central Venous Catheter into Internal Mammary Vein: A Rare Catheter Malposition

The Editor,

Central venous catheterization plays important roles in cardiac surgery. Although a relatively safe procedure, it is associated with multiple complications. Malposition of the catheter tip is one of them. This report presents a rare malposition of a catheter into left internal mammary vein (IMV). It also emphasizes the need for routine use of ultrasound to minimize such complication by locating the exact position of catheter in superior vena cava (SVC) and right atrium junction.

We present a case of a 45-year-old male, for coronary bypass graft surgery. Postinduction right internal jugular vein (IJV) cannulation was attempted with Arrow 7 French (F) triple lumen but failed due to inability to pass the guidewire in spite of free flow of blood.

Left IJV cannulation was then done successfully with Arrow 7 F triple lumen without difficulty and catheter was fixed at 14 cm after confirming free flow of blood through all three ports. Continuous pressure monitoring showed persistently high central venous pressure (18–22 cm of H<sub>2</sub>O) throughout surgery. During left internal mammary artery dissection it was found that the catheter had entered into the left IMV [Figure 1 - in figure it looks like the catheter had perforated the vein as it was very thin walled but lumen was intact and there was no bleeding]. This was confirmed in postoperative period by chest X-ray [Figure 2]. Repositioning of catheter was not done intraoperatively to prevent any possible trauma to mammary vein. Catheter was finally removed smoothly without any resistance at the end of surgery.

The ideal position of catheter for measuring central venous pressure is at the level of mid-lower SVC to cavoatrial junction.<sup>[1]</sup> Malposition means a catheter lies outside of SVC. The incidence of malposition during IJV cannulation is around 2%.<sup>[2]</sup> Malposition can be of two types, intracaval and extracaval on the base of the location of the catheter.<sup>[3]</sup> The latter includes various structures such as mediastinum, pleura, pericardium, trachea, esophagus, and subarachnoid space. Catheter malposition is usually associated with serious consequences resulting in incorrect diagnosis and delayed treatment. Complication related to IMV placement includes laceration of IMV with massive hemothorax and altered patency of the vein.<sup>[4]</sup>

Various factors responsible for malposition are variable venous anatomy, tortuosity, acute angulations, congenital anatomical variation, and vein stenosis.

Malposition can be identified by the absence of bloody aspirate from the ports, chest radiograph, and central venous pressure tracing.

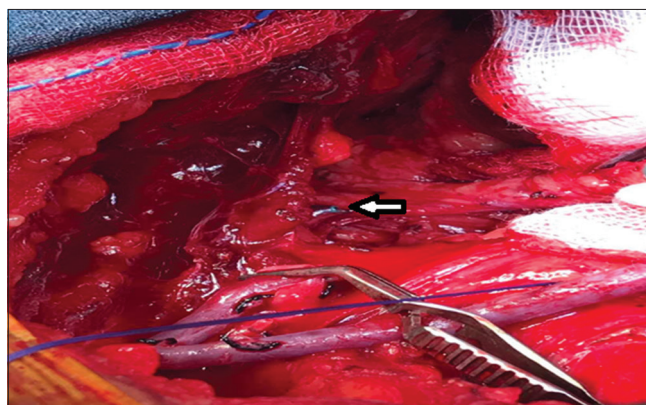


Figure 1: Catheter in left internal mammary vein

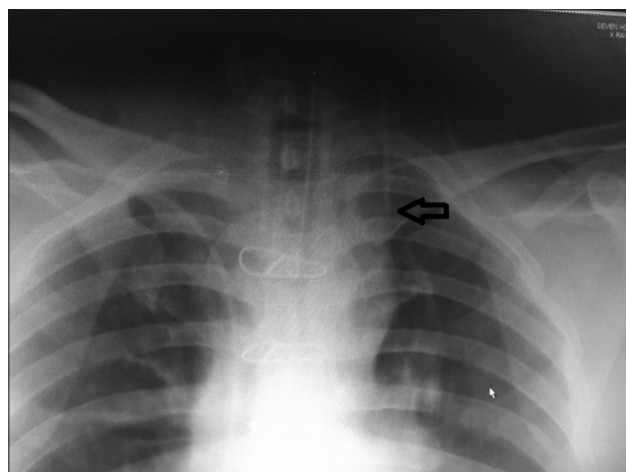


Figure 2: Chest X-ray showing catheter in left internal mammary vein

Turi reported a case of catheter placement at the anterior mediastinum, following SVC perforation. Trunjillo described two cases of accidental placement of a catheter in the left pericardiophrenic vein.<sup>[5]</sup> Leang reported a case of accidental placement of the catheter in the plural cavity.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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<b>Quick Response Code:</b> 	<b>Website:</b> www.annals.in
	<b>DOI:</b> 10.4103/aca.ACA_106_17

**How to cite this article:** Kela M, Munde H, Raut S. Accidental placement of central venous catheter into internal mammary vein: A rare catheter malposition. *Ann Card Anaesth* 2017;20:477-8.  
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