

## PICC'ing Your Way into the Pericardium: A Potential Catastrophic Complication of a PICC Line

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### Abstract

This is a rare case of a peripherally inserted central catheter (PICC) that was found to be in the pericardiophrenic vein on a post-procedure chest X-ray. An 82-year-old man was admitted to the medical ICU for severe sepsis with shock and a PICC was placed for vasopressor support. Malpositioning of a central venous catheter can lead to catastrophic results including, perforation, pericardial effusion and tamponade.

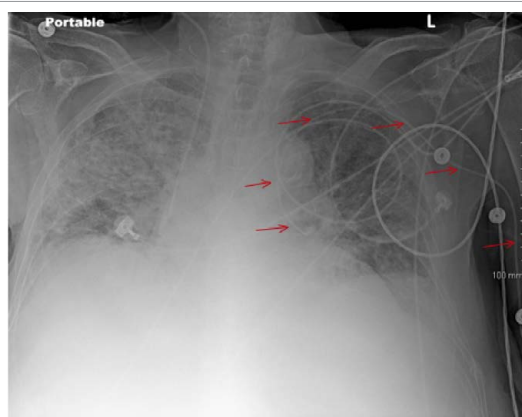
**Keywords:** Peripherally inserted central catheter; PICC; Pericardium; Central venous catheter

### Introduction

There is an epidemic increase in use of central venous catheters. Malposition of these catheters can lead to catastrophic results [1]. Obtaining a post-procedure chest radiograph is common practice in an attempt to prevent these disasters. However with ultrasound guidance and EKG confirmation, more hospitals are moving away from obtaining post-procedure radiographs. This is a rare case demonstrating the importance of a confirmatory radiograph post-procedure.

### Case Report

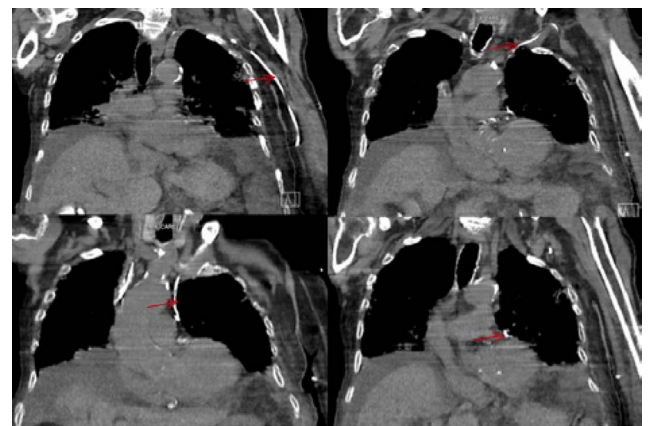
An 82-year-old man was admitted to the medical ICU for severe sepsis with shock due to Gram-negative pneumonia. Attempts to establish peripheral venous access were unsuccessful and thus a peripherally inserted central catheter (PICC) was placed using ultrasound guidance for prolonged antibiotic administration. A subsequent chest radiograph demonstrated the PICC traversing the left hemithorax and terminating in a position overlying the left ventricle. An arterial placement was initially suspected but venous placement was confirmed by measuring central venous pressure of 8cm H<sub>2</sub>O and pO<sub>2</sub> of 32 mmHg from the PICC line while simultaneous peripheral arterial O<sub>2</sub> saturation on pulse oximetry was 97%. A computed tomogram (CT) confirmed the PICC terminating in the pericardiophrenic vein. The PICC was not used and removed without incident (Figures 1 and 2).



**Figure 1:** PICC line coursing through the left mediastinum with tip near the paracardiac space.

### Discussion

Complications related to PICC lines can occur during insertion, while indwelling or after discontinuation. This case is a complication related to the insertion of the PICC into the pericardiophrenic vein. The pericardiophrenic vein traverses the mediastinum with its accompanying artery and phrenic nerve; it is a branch of the internal thoracic vein, draining into the brachiocephalic vein. Infusion of medications or fluids in a malpositioned central venous catheter may result in perforation and possible pericardial hemorrhage and tamponade [2]. These complications from malpositioned catheters are mostly described in literature relating to neonates. The incidence of this complication for adults is unknown. Although our patient developed no problems during a one-day cannulation, it is important to recognize the possibility of PICC



**Figure 2:** Computed tomogram demonstrating the PICC coursing through the central venous system with its tip in the pericardiophrenic vein.

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placement in the left paramediastinal space and its consequences even with ultrasound guidance [3,4]. This emphasizes the importance of radiography after insertion. A CT may be helpful to differentiate central venous line malposition, such as described in our case, from occasionally noted venous anomalies such as an aberrant left-sided superior vena cava. In the latter case, the central venous line may be used safely.

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