

Malpositioning of pulmonary artery catheter into the inferior vena cava in a liver transplant recipient

Sir,

Pulmonary artery catheter (PAC) is commonly used during liver transplant surgery for real-time hemodynamic monitoring. PAC was inserted in a 45-year-old male patient with end-stage liver disease posted for the liver transplant at our center. PAC insertion was guided by real-time pressures waveform. After obtaining pulmonary artery (PA) pressure waveform (systolic-36, diastolic-14, mean-21), the catheter was successfully wedged and fixed at 52 cm at skin.

Two hours into the surgery, after obtaining adequate surgical exposure, it was pointed out by the operating surgeons that they could feel the catheter in the inferior vena cava (IVC). At the same time, PA waveform on the monitor was noticed to have changed from arterial to a nonspecific waveform (Pr - 8 mm of Hg). There was continuous monitoring of the PA pressures till this time. Doubt about the migration of the PAC led us to plan a fluoroscopy prior to attempting withdrawal of the PAC. The fluoroscopy revealed that the PAC had migrated into the IVC. The catheter was successfully withdrawn uneventfully.

Pulmonary artery catheter insertion is associated with complications including arrhythmias, pulmonary infarction,

catheter knotting, catheter entanglement, and PA rupture.^[1,2] Literature search revealed one previous report of migration of the PAC into the IVC.^[3] The catheter in that report had gone into the IVC after passing through the RA. From the IVC, the catheter looped back into the RA then to the RV and finally exiting into the PA. The authors in that report postulated that interaction of the PAC with the IVC filter *in situ* might have been the cause of the catheter looping back into the RA from the IVC. However, an alternate hypothesis of looping of the PAC on its own in the IVC was not negated by the authors. The findings in our patient can most closely be explained by a similar hypothesis. We suspect that the PAC migrated into the IVC and looped on itself before going into the PA (hence, explaining the long length required for obtaining the PA trace and wedge initially), and later with surgical retraction slipped out of the PA.

Traditionally, anesthesiologists have not used fluoroscopy for confirmation of PA placement. Continuous PA pressure monitoring at the time of PAC insertion is considered the gold standard for PAC placement confirmation. Fluoroscopic confirmation of PAC placement has, however, always been done by hepatologists and intervention radiologists while doing trans jugular intra-hepatic porto systemic shunting, hepatic vein pressure gradient etc., We propose confirmation of the PA placement using fluoroscopy at the start of the surgery as a rule to prevent such misadventures, especially where it is easily available.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Shweta A. Singh, Anshuman Singh,

Mandeep Dhankhar

Department of Anesthesiology, Institute of Liver and Biliary Sciences,
New Delhi, India

Address for correspondence: Dr. Shweta A. Singh,
D7/7364 Vasant Kunj, New Delhi - 110 070, India.
E-mail: drshwetasingh29@gmail.com

References

1. McGee DC, Gould MK. Preventing complications of central venous catheterization. *N Engl J Med* 2003;348:1123-33.
2. Stawicki SP, Sims CA, Sharma R, Weger NS, Truitt M, Cipolla J, et al. Vena cava filters: A synopsis of complications and related topics. *J Vasc Access* 2008;9:102-10.
3. Kor DJ, Keegan MT, Kruse KW, Bazzell CM. Malposition of a pulmonary artery catheter in a patient with an inferior vena cava filter. *Anesth Analg* 2004;99:307.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/0970-9185.173373

How to cite this article: Singh SA, Singh A, Dhankhar M. Malpositioning of pulmonary artery catheter into the inferior vena cava in a liver transplant recipient. *J Anaesthesiol Clin Pharmacol* 2016;32:407-8.