Fluoroscopy-guided transhepatic vena cava cannulation with a peripherally inserted central venous catheter in a pediatric patient with difficult central venous access

Dear Editor,

In patients who require long-term central venous access, often change of multiple catheter sites are necessary. In these situations, alternative routes to access the central veins are selected.[1]

A 3-year-old male with retroperitoneal neuroblastoma under chemotherapy treatment underwent surgical excision of the mass. He developed chylous ascites postoperatively and the diagnosis of retroperitoneal lymphatic injury was made. He was posted for fluoroscopy-guided intranodal injection of lipiodol into iliac nodes. During pre-anesthetic check-up, the child had a left subclavian central line *in situ* through which he was receiving total parenteral nutrition. On ultrasonography, his bilateral internal jugular veins, femoral veins, and right subclavian veins were found to be thrombosed.

On the day of the procedure, general anesthesia (GA) was induced through a peripheral intravenous access. Postinduction, the left subclavian triple lumen catheter was found to be blocked, and an attempt to flush the line with heparinized saline failed. The line was removed. The surgeons and interventional radiologists proceeded with intranodal injection of lipiodol. After the procedure, the pediatric surgery team requested for central line placement for total parenteral nutrition administration. Repeat ultrasound confirmed thrombus in all previously accessed central veins, and hence none of the conventional sites for central access were an option. Among the alternatives, the radiology team decided to cannulate the inferior vena cava through the middle hepatic vein as it is relatively easier, and the team was well experienced with this approach.[1-4] However, the catheters used routinely for central venous access in children are typically shorter in length than needed for such an approach. The radiologists generally use a catheter with peel-off sheath with sequential dilatation method (Seldinger technique) in these situations. But in this case, the problem of catheter blockade was only diagnosed intraoperatively and

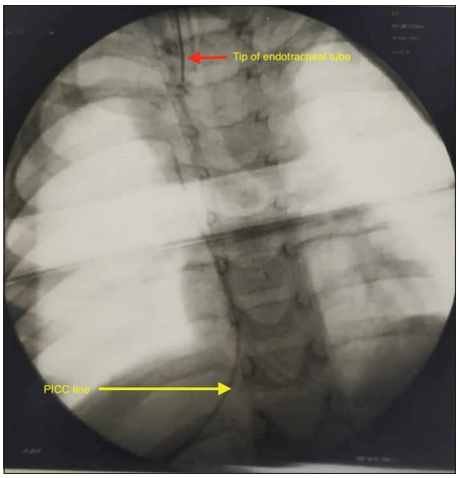

Figure 1: Intraoperative fluoroscopy image of the chest and upper abdomen showing the cannula inserted percutaneously via the right hepatic vein (yellow arrow) with its tip in the superior vena cava. In addition, the tip of the endotracheal tube is seen in situ (red arrow)

no such catheter was arranged beforehand. The anesthesia team provided the alternative with a longer peripherally inserted central catheter (PICC) to be optimally directed till the cavo-atrial junction through the small, middle hepatic vein of the child. The size of the middle hepatic vein was determined with ultrasound by the radiologists. Accordingly, a 32-cm long, 20 G PICC line with a 4-cm 18G introducer needle (B. Braun, Melsungen, Germany) was chosen. The middle hepatic vein was punctured under ultrasound guidance and the catheter was threaded over its in-built guidewire through the inferior vena cava and right heart chambers upwards till it reached the superior vena cavo-atrial junction (as described in literature) as confirmed by fluoroscopy [Figure 1].[3] Postoperatively the child was started on low molecular weight heparin injections to prevent further thrombosis of the new line. The catheter was successfully used for providing TPN in the postoperative period.

In this case, an intraoperative difficult conventional central venous access was overcome by close communication between radiologists and anesthesiologists. We believe that in addition to the conventional techniques and sites of central venous access, anesthesiologists should expand their knowledge and skill about such alternative techniques as difficult central venous access is not an uncommon problem.

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.

Sayan Nath, Priyanka Naranje[1], Devasenathipathy Kandasamy[1], Akhil Kant Singh

Department of Anaesthesiology, Pain Medicine and Critical Care, All India Institute of Medical Sciences, New Delhi, [1]Department of Radiodiagnosis, All India Institute of Medical Sciences, New Delhi, India

Address for correspondence: Dr. Akhil Kant Singh, Department of Anaesthesiology, Pain Medicine and Critical Care, Room 5011, 5th Floor, Teaching Block, All India Institute of Medical Sciences, New Delhi - 110 029, India.
E-mail: dr.akhilsingh@gmail.com

References

1. Lorenz JM. Unconventional venous access techniques. Semin Intervent Radiol 2006;23:279–86.
2. Yaacob Y, Zakaria R, Mohammad Z, Ralib AR, Muda AS. The vanishing veins: difficult venous access in a patient requiring translumbar, transhepatic, and transcollateral central catheter insertion. Malays J Med Sci 2011;18:98–102.
3. Azizkhan RG, Taylor LA, Jaques PF, Mauro MA, Lacey SR. Percutaneous translumbar and transhepatic inferior vena caval catheters for prolonged vascular access in children. J Pediatr Surg 1992;27:165-9.
4. Smith TP, Ryan JM, Reddan DN. Transhepatic catheter access for hemodialysis. Radiology 2004;232:246–51.

Access this article online

Quick Response Code:

Website: https://journals.lww.com/joacp

DOI: 10.4103/joacp.joacp_329_21

How to cite this article: Nath S, Naranje P, Kandasamy D, Singh AK. Fluoroscopy-guided transhepatic vena cava cannulation with a peripherally inserted central venous catheter in a pediatric patient with difficult central venous access. J Anaesthesiol Clin Pharmacol 2023;39:322-3.

Submitted: 24-Jun-2021 **Accepted:** 27-Aug-2021 **Published:** 21-Feb-2022