Epidural catheter as an alternative for umbilical vein catheterization

Sir,
Establishing a venous access is a crucial step for optimal resuscitation. However, the success rate and time to vascular cannulation vary significantly according to clinical expertise, especially in the pediatric population. The umbilical vein catheterization (UVC) provides an easy, reliable, and pain-free vascular access for infusing intravenous fluids, nutrition, and medications in neonatal intensive care. However, its routine use is limited to new-borns because of the poor patency of umbilical vein after the initial month of life. We report the use of an 18G epidural catheter for UVC of a 2-month-old infant, where other methods for intravenous cannulation were unsuccessful.

A 2-month-old male infant, born out of consanguineous marriage, underwent surgery for the ventriculoperitoneal shunt procedure, following the diagnosis of congenital hydrocephalus. After an uneventful intraoperative period, the patient was extubated and shifted to the post-anaesthesia care unit. Preoperatively, the patient had difficult intravenous cannulation. While shifting the patient, the peripheral intravenous cannula got mal-positioned due to movement by the patient. Subsequent attempts to peripheral intravenous cannulation and alternative approaches such as central venous catheterization and intraosseous line placement were unsuccessful. Meanwhile, the heart rate of the patient began to rise gradually. Thus, suspecting the emergent need for intervention, the UVC was attempted. We gained access to the umbilical vein through the surgical incision given for ventriculoperitoneal shunt near the umbilicus. Initially, we tried to catheterize the umbilical vein with a 5F umbilical catheter but could not place it into the narrow lumen of the umbilical vein. Consequently, we opted for 18G epidural catheter (Portex, 18G, Smiths Medical, Czech Republic) and it could be smoothly threaded into the umbilical vein [Figure 1]. Following the successful catheterization, we resuscitated the patient with fluids and his vitals returned to normal.

The difficult venous access is defined as the multiple attempts if required for intravenous cannulation and/or the
anticipated need for alternative approaches to place and maintain a peripheral venous catheter.[1] The patients under 2 years of age are at greatest risk for failed intravenous cannulation.[2] Various studies have reported a first attempt failure rate ranging from 10% to 40%, for peripheral intravenous cannulation in the pediatric age group.[3] Alternative strategies for securing intravenous access include ultrasound-guided intravenous access, central venous catheterization, intraosseous vascular access, subcutaneous rehydration therapy, and UVC. Above approaches have their individual risk of complications apart from varying technical skill required for the procedure. The urgency for intravenous cannulation also decides which method to choose. The use of UVC in neonatal care is well established.[4] The associated complications include bloodstream infection, thromboembolic episode, disorders in heart rhythm, pericardial/pleural effusion, difficult prone positioning, and extra care required for maintenance.[5] Thus, one needs to weigh the risk-benefit ratio, before performing such an intervention. We used an 18G epidural catheter for UVC of a 2-month-old infant, when other methods for venous cannulation were unsuccessful. This case highlights the challenges confronted by anesthetists in performing venous cannulation of the pediatric population.

**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.

**Conflict of interest**

There are no conflicts of interest.

**Amiya K. Barik, Gaurav Jain**

Department of Anaesthesiology, All India Institute of Medical Sciences, Rishikesh, Uttrakhand, India

**Address for correspondence:**

Dr. Gaurav Jain, Department of Anaesthesiology, All India Institute of Medical Sciences, Rishikesh - 249 203, Uttarakhand, India. E-mail: gauravhld@gmail.com

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