Broken Umbilical Vein Canula- A Rare Unavoidable Complication

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Abstract: *Back ground:* Sick neonate requires many procedures in neonatal intensive care unit for the survival. Umbilical vascular catheterization is one such procedure. This procedure though easy and safe, it is not without complications. If not detected in time it may cause morbidity and mortality.

Characteristics: A term (40 weeks) male baby on ventilator for meconium aspiration syndrome was catheterized with umbilical venous and arterial canula for fluid management. After stabilization the canulae were about to be removed. While retrieving umbilical venous canula, a distal part of it got fractured and stayed deep within the umbilical vein. X ray abdomen demonstrated the broken canula in inferior vena cava below the liver margin.

Message: Utmost care should be taken while retrieving umbilcal canulae. Early retrieval of broken canula with the help of pediatric surgeon saves baby.

Keywords: Umbilical cannulation, Retrieval, Broken canula, Parenteral nutrition, Neonates.

INTRODUCTION

Umbilical venous canulation has become an integral part in the management of sick neonates. They are crucial in enabling parenteral nutrition, intravenous medications and blood sampling in the neonatal intensive care unit. Even though the procedure is generally safe and effective it is associated with complications like infection, thrombus formation and fractured catheterfragments. All of these mandate catheter removal from the body, but the fractured catheterfragment requires supra umbilical percutaneous retrieval. The risks of leaving catheterfragments in the patient include pulmonary embolism, sepsis, arrhythmias, and cardiac perforation. We report a neonate with a broken UVC lodged in the umbilical vein deep and its successful retrieval by supra umbilical approach.

CASE REPORT

A 40-week term neonate weighing 4 kg was admitted in our neonatal intensive care unit in view of respiratory distress due to meconium aspiration syndrome. A 5 Fr Umbilical venous catheter was inserted in the referring hospital for fluid and inotrope administration. On day 2 of admission in NICU, it was planned to remove Umbilical Venous Catheter as it was not required.

During catheter removal, the catheter got divided by a scalpel at the skin level while removing the suture. It was tried unsuccessful to remove the broken piece of catheter and end had retracted into the lumen of the umbilical vein and was invisible. Roentgenogram performed showed the broken catheter in the lumen of umbilical vein below the liver (Figure **1**).

Figure 1: Broken cannula in the umbilical vein.

An exploration by supra umbilical transverse incision was performed after Roentgenogram confirmation and retrieved the umbilical venous canula (Figure **2**) through supra umbilical approach (Figure **3**). Post procedure the patient did not develop any complications and got discharged home safely.

DISCUSSION

The Umbilical Venous Canula has contributed a great deal in managing critically ill patients and extremely preterm babies in Neonatal Intensive Care Unit. The arterial line is preferred for invasive monitoring and sampling while the vein is used as an access for administration of medications and

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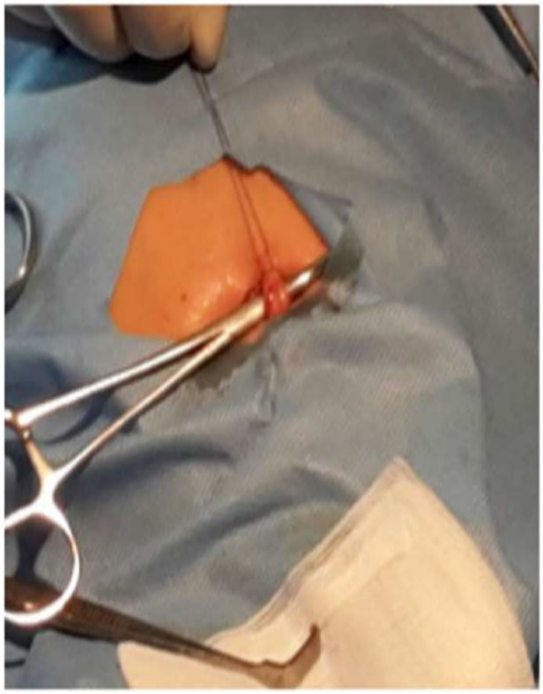

Figure 2: Umbilical cannula being retrieved.

Figure 3: Umbilical cannula retrieved.

intravenous fluids [1]. These are used for the shortest time period till one has an alternative peripheral access especially in the light of various complications that have been described in the literature. These complications include nosocomial sepsis, vasospasm, vascular perforation [2], thrombosis and emboli (air) [3].

With the widespread use of central venous catheters for long term parenteral nutrition, prolonged antibiotic infusion, pain therapy, chemotherapy or for hemodialysis in the adult population complications like catheter fracture with embolization have been increasingly reported [4, 5]. This phenomenon however, has been very uncommonly reported with the Umbilical Venous Canula in the newborn period. Lackey *et al* [6] described a 3-day old neonatein whom the umbilical catheter broke during catheter insertion in the umbilical artery and migrated to the thoracic aorta. This was subsequently retrieved by open exploration.

The mechanism of umbilical venous canula breakage has been proposed and discussed by Choi *et al* [7]. He reported two cases of broken umbilical canula and proposed that it is possible that the UVC can get inadvertently damaged by needles or scissors during catheter insertion and fixation. Subsequent attempts of removal of this weakened catheter may cause breakage. He also suggested that overzealous tightening of a purse string type suture used to secure a catheter can also weaken the wall of UVC. In our case, the catheter was divided by a surgical blade while attempting suture removal. This underscores the importance of using fine suture removal scissors especially in an active neonate who may be difficult to restrain. This would prevent similar complications and also decrease chances of personnel and patient injuries.

Mitchell *et al* [8] while describing their experience with a broken UVC in the umbilical artery had lucidly described various steps to avoid this type of complication. As a standard practice one should always inspect the tip of the removed catheter for checking that its intactness and also insist for a check radiograph, since small broken fragment tip from these long catheters can be overlooked and missed.

This report is intended to highlight that even a trivial procedure of removal of umbilical cannula must be taken seriously and done carefully with appropriate instrumentation to prevent this kind of a rare situation.

CONCLUSION

In the advanced care of very low birth weight neonates, umbilical venous catheterization is a necessity. Even with utmost care, few complications cannot be avoided. Fractured and retained catheter fragment is one of them.

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