

# Removal of an Umbilical Catheter Migrated into the Neck in a Neonate: Report of Case

\*Mehran Hiradfar, MD<sup>1</sup> Marjan Joodi, MD<sup>2</sup>  
Mohammad Gharavi, MD<sup>3</sup> Reza Shojaeian MD<sup>4</sup>

1,2- Endoscopic and Minimal Invasive Research Center, School of Medicine, Mashhad University of Medical Sciences, mashhad, Iran

3- Anesthesiologist, Endoscopic and Minimal Invasive Research Center, School of Medicine, Mashhad University of Medical Sciences, mashhad, Iran

4- Resident of pediatric surgery, sheikh Hospital, Mashhad University of Medical Sciences, mashhad, Iran

## Abstract

Umbilical and supraumbilical catheter insertion is a common procedure performed in the NICU. It is a safe and usually easy procedure devoid of serious mishaps, morbidity and mortality. Complications such as hemorrhage, infection, hernia, evisceration, omphalitis, portal vein thrombosis and portal hypertension may occur after umbilical catheter insertion. Other uncommon and rare complications reported in the literature includes: Hepatic laceration, pleural effusion, necrosis of the buttock, severe ischemic injury of the extremities, gastric outlet obstruction, cardiac tamponade, pericardial effusion, atrial flutter, liver abscess, neonatal bladder rupture and intrahepatic hematoma. In this article we present a case of catheter migration in a preterm infant into the neck removed successfully via jugular venotomy.

### Keywords

Umbilical catheter, migration, venotomy

## Introduction

Umbilical venous catheterization is frequently used in neonatal intensive care units. It is a safe and amenable venous access for administration of fluids and parenteral nutrition, when peripheral venous access is not feasible. Although it is a safe and usually easy procedure it may be associated with a number complications i.e. hemorrhage<sup>(1)</sup> infection, hernia, evisceration, omphalitis, portal vein thrombosis and portal hypertension.<sup>(2)</sup>

Other unusual complications reported in the literature includes: Hepatic laceration<sup>(3)</sup>, pleural effusion<sup>(4)</sup>, necrosis of the buttock, diffuse and severe ischemic injury of the extremities<sup>(5)</sup>, gastric outlet obstruction<sup>(6)</sup>, cardiac tamponade, pericardial effusion<sup>(7)</sup>, atrial flutter, liver abscess, neonatal bladder rupture<sup>(8)</sup> and intrahepatic hematoma. In this article we present a rare complication of umbilical catheter insertion.

## Case report

A ten day-old premature neonate (34 weeks, 1.8 Kg) was referred to our department due to accidental cutting of the umbilical catheter

during catheter removal (Fig.1). Before referral the neonate had been admitted in NICU because of respirator disease and received antibiotics, O<sub>2</sub> therapy via oxyhood and other supportive measures for 1 week. A size 5 (French size), polyvinylchloride catheter was placed in inferior vena cava at sub diaphragmatic level through the umbilical vein.

During removal, a part of the catheter remained in the umbilical vein.

Ultra-sonography was performed and showed the missed part of the catheter in the liver.

Imaging studies just prior operation, showed migration of the catheter into the neck (Fig. 2).

Successful removal of the 8 cm part of the umbilical catheter was performed via internal jugular venotomy (Figs.3 and4). He was discharged from the hospital in good condition.

## Discussion

Although umbilical catheter insertion is a common and usually safe procedure, it may be followed by important and sometimes serious complications.

\*Corresponding author : Mehran Hiradfar, Associate professor of pediatric surgery  
Mashhad University of Medical Sciences, Iran, Email: HiradfarM@mums.ac.ir

Part of the catheter may remain if it not removed with great care.

Migration of the segment may occur rapidly as in this case.

Removal the catheter must be done with great care to prevent such a complication.

### References:

1. Kanto WP Jr, Parrish RA Jr. Perforation of the peritoneum and intra-abdominal hemorrhage: a complication of umbilical vein catheterizations. *Am J Dis Child.* 1977 Oct;131(10):1102-3
2. WG Holcomb. *Ashcraft's Pediatric surgery.* fifth ed. New York: Lippincott; 2010.
3. Yigiter M, Arda IS, Hiçsönmez A. Hepatic laceration because of malpositioning of the umbilical vein catheter: case report and literature review. *J Pediatr Surg.* 2008 May;43(5):E39-41.
4. Pabalan MJ, Wynn RJ, Reynolds AM, Ryan RM, Youssfi M, Manja V, Lakshminrusimha S. Pleural effusion with parenteral nutrition solution: an unusual complication of an "appropriately" placed umbilical venous catheter. *Am J Perinatol.* 2007 Nov;24(10):581-5.
5. Ancora G, Soffritti S, Faldella G. Diffuse and severe ischemic injury of the extremities: a complication of umbilical vein catheterization. *Am J Perinatol.* 2006 Aug;23(6):341-4.
6. Pratap A, Tiwari A, Agrawal CS, Kaur N, Kumar M, Shreshta P, Singh SN. Gastric outlet obstruction: an unusual complication of umbilical vein catheterization. *J Pediatr Gastroenterol Nutr.* 2006 Jul;43(1):113-5.
7. Traen M, Schepens E, Laroche S, van Overmeire B. Cardiac tamponade and pericardial effusion due to venous umbilical catheterization. *Acta Paediatr.* 2005 May;94(5):626-8.
8. Lam HS, Li AM, Chu WC, Yeung CK, Fok TF, Ng PC. Mal-positioned umbilical venous catheter causing liver abscess in a preterm infant. *Biol Neonate.* 2005;88(1):54-6.



Fig1. Umbilical catheter



Fig2. Chest X-ray just before the operation revealed migration of the catheter toward the neck.



Fig3. Internal jugular venotomy.



Fig4. Removed catheter.