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RESEARCH ARTICLE

FRACTURED INTRAVENOUS CANNULA-EARLY RECOGNITION AND PREVENTION OF COMPLICATION

Banupriya Ravichandrane, Rajasekar Ramadurai and Naveen Vivek Sakkanan

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Abstract

Introduction:-

Peripheral intravenous cannulation (PIVC) is the most common minimally invasive procedure done in hospital settings, yet the associated complication during the cannulation is underestimated. The most common early complications encountered during the insertion of a cannula are blockage, bruising or hematoma formation, and extravasation.

We had a 72-year-old male patient, with a case of carcinoma of the urinary bladder posted for elective Transurethral resection of bladder tumor (TURBT). After a thorough pre-anesthetic examination and obtaining informed written consent, the patient was taken inside the Operating Room for the scheduled procedure. After attaching standard monitors, the basilic vein in the left hand was prepared aseptically for peripheral venous cannulation with a 20G cannula. The cannula was inserted, piercing the skin and the vein in the direction of the vein and blood was visualized in the flash chamber. The guide needle was withdrawn and the sheath was advanced further without any resistance. Intravenous fluid was started after securing the cannula with a Dynaplastplaster. The flow of the fluid was not appropriate and there was a leak noted at the site of fixation. On removal of the plaster, the cannula was found to be broken at the hub, with the plastic sheath inside the vein.(Fig.1a) We promptly retrieved the broken fragment since the tip of the fragment was still visible and confirmed that it was removed in its entire length.(Fig.1b)

Spontaneous fracture and migration of intravenous cannula are rare and embolization of fractured catheter segment was first reported by Turner et al in 1954 during central venous catheterization. There are very few reports of embolization of fractured peripheral venous cannula and their retrieval.[1–3] Significant complications with an embolic catheter fragment include sepsis, endocarditis, cardiac perforation, and arrhythmias.[4]Fracture of the catheter is uncommon and mostly occurs during the insertion or removal of a cannula. In most of the reported cases, the probable cause was repeated attempts at cannulating with the same needle causing a split in the plastic cannula due to re-insertion of the needle.[2] Unlike in other reports, the fracture of the cannula happened with the first attempt of insertion in our case; most likely due to a manufacturing defect.

Blockage of the cannula due to clot or kinking of the cannula or infusion line will be the primary suspicion if the infusion is not running, and checking for any kinks or flushing the cannula can restore the patency of the cannula. The hand position will be adjusted to overcome the impingement of the tip of the cannula in valves or at the level of

Corresponding Author:- Banupriya Ravichandrane

tributaries if catheter blockade is suspected due to positional variation. In most of the cases, such minimal manipulation could restore the flow of infusion, if other causes of obstructions are ruled out. However, in our case we fear that even a minor manipulation of the hand or the cannula could have pushed the whole fragment inside and resulted in devastating complications. Distal migration of the fractured segment has been documented with patient movement.[1,5]In our case, prompt identification of the fluid extravasation from the dressing gave us a clue to remove the plaster and identify the cause.

Health care works should be aware of the complications of intravenous cannula fracture and migration, and precautions should be taken while insertion and removal of the catheters.Attaching the intravenous fluid tubing and confirming the patency before fixing the cannula could prevent such mishaps. A standardized protocolcan be formulated to help the doctors, nursing staff and other health care workers in management of fractured PIVC.

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.

Figure 1

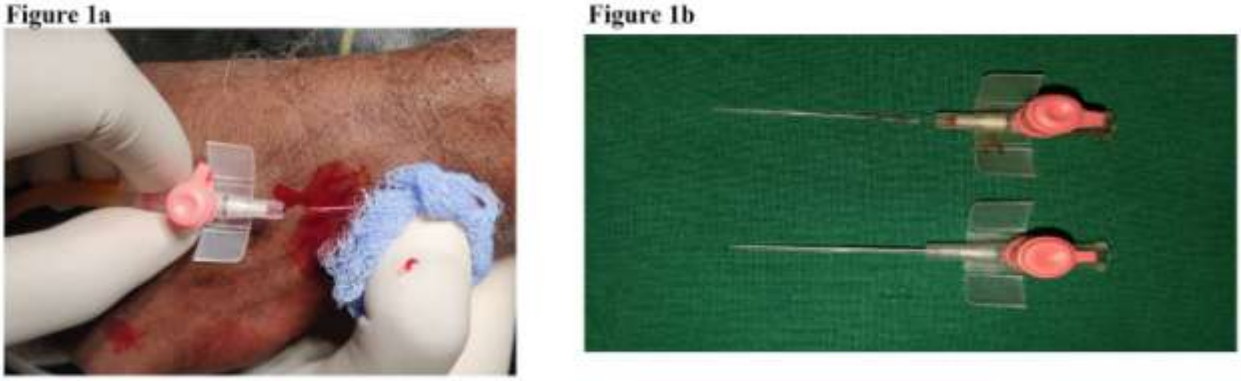

Figure Legends

Figure 1. Fractured cannula at the injection site (a); Fractured cannula against a fresh intact cannula (b)

References:-

1. Mohanty CR, Panda R. Fracture and embolization of intravenous cannula placed in external jugular vein: A rare complication. Saudi J Anaesth. 2018;12(3):504–5.
2. Arun O, Oc B, Gunduz E, Oc M, Duman A. Fracture of an intravenous cannula in the vein due to reinsertion of the guide needle: A Case Report. J-Cardiovasc Surg. 2014 Jan 1;2:28.
3. Singh A, Kaur A, Singh M, Kaur S. CT Guided Removal of Iatrogenic Foreign Body: A Broken Intravenous Cannula. J Clin Diagn Res JCDR. 2015 Sep;9(9):PD28-29.
4. Surov A, Wienke A, Carter JM, Stoevesandt D, Behrmann C, Spielmann RP, et al. Intravascular embolization of venous catheter--causes, clinical signs, and management: a systematic review. JPEN J Parenter Enteral Nutr. 2009;33(6):677–85.
5. Glassberg E, Lending G, Abbou B, Lipsky AM. Something's Missing: Peripheral Intravenous Catheter Fracture. J Am Board Fam Med. 2013 Nov 1;26(6):805–6.