Fracture of an intravenous cannula in the vein due to reinsertion of the guide needle: A case report

Oguzhan Arun1*, Bahar Oc1, Ergun Gunduz1, Mehmet Oc2, Ates Duman1

1Department of Anesthesiology and Reanimation, Selcuk University, Faculty of Medicine, Konya, Turkey; 2Department of Cardiovascular Surgery, Selcuk University, Faculty of Medicine, Konya, Turkey
*Corresponding Author: Department of Anesthesiology and Reanimation, Selcuk University, Faculty of Medicine, Konya - 42100, Turkey
Phone: 00903322245164 Fax: 00903322416065
E-mail: oguzaran@gmail.com

Key words: Anesthesia; catheter; intraoperative complications

Received: 05.02.2014 Accepted: 29.04.2014 e-published: 19.07.2014

Abstract

Catheter fracture is a well-known complication of placement of plastic catheters. We introduce the fracture of a peripheral intravenous (IV) cannula after re-insertion of the guide needle during IV cannulation inside the blood vessel. Peripheral venous cannulation was attempted with an 18G cannula in a patient for anesthesia induction undergoing endovenous laser ablation. Under sterile conditions, the broken piece of the cannula was removed from a vein with a surgical incision and the skin was sutured.

Introduction

Insertion of peripheral intravenous (IV) lines is a key component for almost every patient who arrives in the operating room for a surgical procedure. Although placement of these invasive devices is seen as a benign part of the daily practice particularly by junior medical staff, many complications such as infiltration, thrombophlebitis, venous spasm, hematoma, air embolism, catheter-associated blood stream infection, and nerve, tendon and ligament injury can occur [1]. We introduce the fracture of a peripheral IV cannula after re-insertion of the guide needle during IV cannulation inside the blood vessel.

Case Report

A 31-year-old male patient was undergoing endovenous laser ablation. After standard monitoring with electrocardiogram, SpO₂, and non-invasive blood pressure, a tourniquet was applied to the right wrist. After disinfection of the dorsum of the hand, cannulation was attempted with an 18G cannula (Bıçakcılar B-CAT2, Istanbul, Turkey). The guide needle was withdrawn, and the cannula was introduced into the vein after the back flash of blood. Despite the tourniquet, it was realized that there was no further backflow of blood from the cannula. The guide needle was reinserted into the cannula in order to reattempt cannulation. When the cannula was withdrawn from the skin, it was realized that a 1 cm-long distal piece of the cannula was broken and left in the vein. Following palpation of the cannula under the skin it was decided to remove of the broken piece surgically. The patient then underwent anesthesia and surgery uneventfully by means of another peripheral IV cannula. Under sterile conditions, the broken piece of the cannula was removed from a vein with a surgical incision and the skin was sutured (Figures 1 and 2).

Discussion

Peripheral venous catheters are not without risk during both placement and while in situ. Catheter fracture is a well-known complication of placement of plastic catheters. Although the history of over-the-needle type peripheral catheters starts in 1950s [2], the reports regarding catheter fracture in the literature are related to the central venous catheters with the complications such as sepsis, perforation, thrombosis, dysrhythmia, air embolism, pneumothorax and myocardial infarction [3]. Turner et al. had reported the first case of an intravascular embolization of catheter fragments in 1954 as a complication of central venous catheterization [4]. To the best our knowledge, there are two reports regarding embolism of fractured peripheral IV catheters in the literature [5,6]. Significant complications with an embolic catheter fragment include sepsis, endocarditis, cardiac perforation, and atrial or ventricular arrhythmias [7].
Fracture of an intravenous cannula in the vein due to reinsertion of the guide needle: A case report

Arun et al.

Catheter fracture is uncommon and usually occurs during insertion and removal [8]. The probable cause of the catheter fracture is trying to reinsert the needle into the already advanced catheter, which may have been curved due to the anatomy of the vein or the insertion angle. The needle may have completely or partially transect the plastic catheter. Attempts to remove the catheter likely completed the transaction, leaving the intravascular distal fragment.

**Conclusion**

As a conclusion, it should be considered that re-inserting the sharp guide needle into the plastic IV cannula possesses the risk of splitting the cannula within the vein or adjacent tissue. Medical staff must remember that although peripheral venous catheters are frequently used and provide an easy means of venous access for the administration of drugs and fluids, even the simplest invasive procedures such as peripheral IV cannulation possess risks. All medical interventions should be performed after adequate training and experience. Health care providers who insert peripheral IV lines must be familiar with the proper emergency interventions in case of catheter fracture within the vein and/or adjacent tissue.

**References**


**Figure 1.** The fractured part of the peripheral intravenous cannula.

**Figure 2.** Sutured surgical incision after removing of the broken piece of the peripheral intravenous cannula.