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**INTERNATIONAL JOURNAL OF  
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/19046  
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/19046>



### RESEARCH ARTICLE

#### A PAINLESS FRACTURE TREATED IN THE EMERGENCY DEPARTMENT

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#### Manuscript Info

##### Manuscript History

Received: 07 May 2024  
 Final Accepted: 14 June 2024  
 Published: July 2024

#### Abstract

Intravenous cannulation is a routine procedure done in healthcare settings to gain access to superficial veins for intravenous fluid, medication, and blood product administration. As a rare occurrence, part of the cannula catheter can break and be retained within a vein which may lead to disastrous complications. Here we report a case of a young male, known to be diabetic, who presented to us with a retained foreign body in his forearm causing him a lot of discomfort. On examination in the emergency department, the patient had stable vitals; a long, linear, hard object could be palpated under the skin on the radial aspect of the right forearm near the elbow. On taking a detailed history, it was ascertained that the catheter of the cannula had broken during cannula removal and had been retained within the vein. After consent, a procedure under local anaesthesia was performed in the emergency department for the retrieval of the foreign body, with no post-procedure complications. The patient was discharged home in satisfactory condition the same day. This case tells us how a simple routine procedure can get complicated and how early and prompt intervention can avert possible venous embolization of broken segment and sepsis, among other complications.

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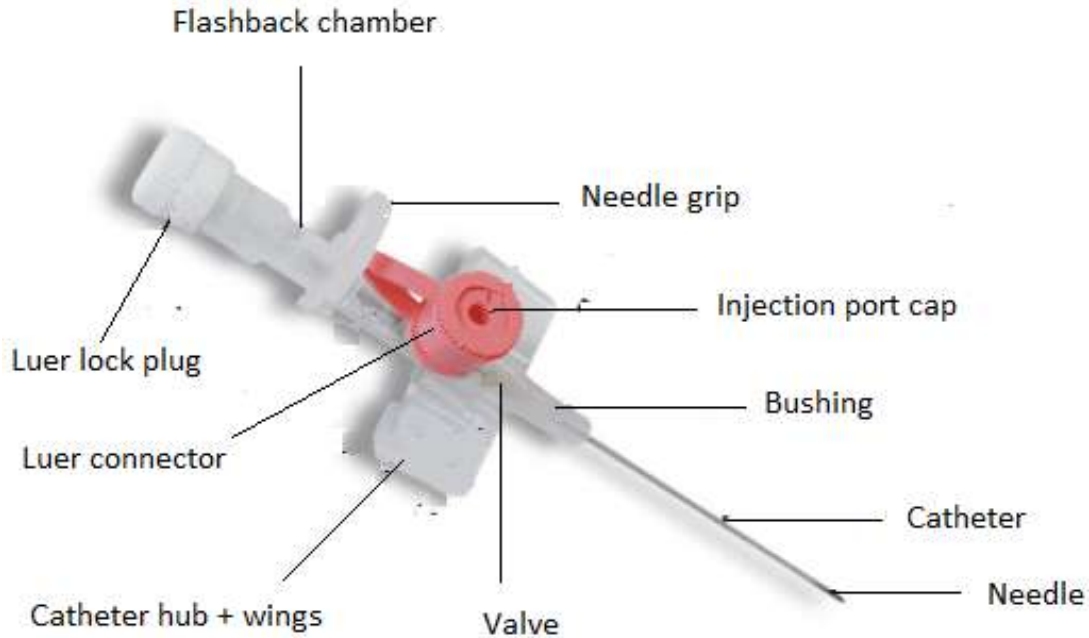
#### Introduction:-

Intravenous cannulation is a procedure that involves the insertion of a cannula through the skin into a superficial vein in order to gain access to the superficial vein. This procedure is done strictly in a healthcare setting by a trained professional and the cannula can be kept in situ for 3-5 days, depending on usage. In certain instances, during the removal of the cannula, its catheter can break or fracture from its attachment at the bushing of the cannula and be retained within the vein.

This retained catheter can lead to many complications, some serious, some not so. Frequently seen complications are local infiltration of fluids or medications, infection, bleeding, venous spasms, and foreign body reactions. Rare but serious complications include thrombosis, air embolization, and embolization of the broken segment, possibly to the pulmonary vessels.

#### Case Presentation

A male patient in his 20s presented to our ER with complaints of pain and discomfort over his right forearm. The patient was being given domiciliary intravenous ceftriaxone therapy (for a lower respiratory tract infection) through a 20-gauge intravenous cannula on their right wrist (cephalic vein).



**Fig 1:-** Parts of an intravenous cannula.

On completion of intravenous therapy, the cannula was removed from the above-mentioned location, and the nurse noted that the catheter of the cannula was not retrieved. A hard linear object was palpable under the skin immediately proximal to the site of insertion.

6 hours later, the patient presented to our emergency department looking for help once the nurse realised that the linear object was not palpable at the cannulation site.

On presentation to our Emergency Department, the patient was conscious and oriented with stable vitals. Local examination revealed an approximately 3 cm long linear hard object palpable under the skin on the radial aspect of the right forearm, around 2 cm below the elbow (ventrally).

The local examination made us believe that the inorganic foreign body had migrated proximally from its original point of insertion within a span of 6 hours. In order to determine the exact location of the foreign body, a CT scan was advised, which was refused by the patient. Fearing further migration and possible embolization of the foreign body, a retrieval procedure was planned in the emergency department minor OR. Written consent was obtained from the patient and one attendant, explaining in detail all possible complications. The procedure was performed by the ER attending consultant in coordination with the vascular surgeon. An approximate location of the foreign body was determined using bedside ultrasonography and a venous cutdown-like procedure was performed under local anaesthesia. A 29mm-long linear object made of polytetrafluoroethylene material was retrieved. The patient was kept under observation for two hours and discharged on oral antibiotics and analgesic with no post procedure complications. The patient was then advised to follow up in the vascular surgery outpatient department.

### **Discussion:-**

Insertion of an intravenous cannula is an integral part of treatment delivery. It serves the purpose of collecting blood samples and administering medications, fluid therapy, blood, and parenteral nutrition. Using the right technique of insertion is of utmost importance while performing this procedure. It seems like a minor procedure, yet it most certainly is a core skill that needs to be mastered. A very important pre-requisite of the procedure is to closely inspect parts of the cannula prior to insertion in order to ensure its satisfactory condition.

Like every procedure, intravenous cannulation has its complications—local and systemic. Local complications include infiltration of fluids or medications, infection, bleeding, venous spasms, and foreign body reactions. Systemic complications include sepsis, thrombosis, air embolization, and embolization of the broken segment, especially to the pulmonary vessels. The risk of breakage of a cannula part is small but present. This can happen

mostly due to incorrect insertion techniques, especially if

1. Repetitive attempts at cannulation were done using the same intravenous cannula
2. if parts of the cannula were not visually inspected prior to insertion
3. if an older cannula was used

In order to avoid this, single-use intravenous cannulas are now being widely used, but not exclusively.



**Fig.:-**Broken Catheter of the intravenous cannula retrieved from the patients forearm.

In our patient, the retained catheter could be the result of incorrect insertion techniques used, an inferior-quality cannula, or multiple insertion attempts. The retained broken segment of the catheter posed a major risk of being a free floating embolus in the veins, which could have lodged anywhere in the body. The most serious complication would have been embolizing to the pulmonary artery. Timely diagnosis and intervention in the emergency room by a professional trained to identify possible life-threatening situations is what helped avoid a catastrophic and avoidable complication. Retrieval of the broken segment averted another possible complication as a possible source of sepsis was removed, especially because said patient was diabetic. If left untreated, this could have adversely affected the patients quality of life as well as his physical and mental health by virtue of delayed healing, prolonged hospital stay and recovery.

### **Conclusion:-**

Early suspicion and intervention are of utmost importance in an emergency department. It is of significant importance to note that emergency physicians should have a broad yet focused outlook while assessing patients; sometimes the simplest cases can have catastrophic outcomes if not averted timely. It is noteworthy to mention that safe patient care should be our utmost priority as emergency physicians, taking into consideration our limitations and weaknesses, but it is equally essential to identify our strengths and practice confident decision-making.

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