

Dislodged Endovascular Catheter of an Implanted Port Found in Right Hepatic Vein Branch – A Case Report

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KEYWORDS - central venous access device; endovascular catheter; dislodgment; interventional radiology; case report.

BACKGROUND

Central venous access devices (CVADs) are used to administer therapeutic agents, total parenteral nutrition, blood products or intravenous fluids. CVADs are divided into peripherally inserted central catheters, non-tunneled central venous catheters, tunneled central venous catheters, and implantable ports. Implanted ports are the most convenient option for patients and physicians alike, providing ease of access and lower risk of infection [1]. Complications related to CVADs can be classified into early complications, such as pneumothorax or hemothorax, and late complications, such as reservoir rotation or thrombosis, endovascular detachment or fracture, infection, or embolism [2]. Here, we report a case of a cancer patient undergoing chemotherapy treatment via a right internal jugular Port-A-Cath who presented to the emergency department (ED) after failure to access the CVAD due to detachment of the tube into one of the hepatic vein branches. Subsequently, it was percutaneously retrieved under fluoroscopy guidance.

CASE PRESENTATION

A 41-year-old female patient with a history of hypothyroidism and thalassemia trait, presented to King Hussein Cancer Center for the management of palate carcinosarcoma. Upon initial investigations, she was found to have a soft tissue lesion at the left side of the soft palate originating from the interface between the hard and soft palate, measuring 3 cm in maximum diameter. After counseling the patient and her family, she underwent left hard and soft palate resection with left neck dissection, radial forearm free flap for defect closure, and temporary tracheostomy. She had a smooth post-operative course but was found to have few suspicious bilateral pulmonary nodules on follow-up computed tomography (CT) scan, that were later proven to be metastatic in etiology by Biopsy. A multidisciplinary team decision was made to go for palliative chemotherapy, for which a right internal jugular vein Port-A-Cath was inserted, and the patient was started on a regimen of Cisplatin 120mg, 5-Fluorouracil 1200mg, and Keytruda 116mg. This regimen was changed after the first cycle due

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to progression of the pulmonary nodules, to Paclitaxel 280mg and Carboplatin 500mg. She took the first cycle without any complications. When she presented for her second cycle of the new regimen, the nurse in charge reported difficult in-flow that was associated with pain, and without any backflow. The patient was transferred to the emergency department at our facility to assess the port catheter. Clinical assessment in the emergency department revealed heart palpitations that had started few weeks ago which she attributed to chemotherapy. Chest x-ray was done and showed a displaced Port-A-Cath tube (Figure 1).

Chest CT scan was done and showed dislodged right Port-A-Cath tube with its proximal end in the right atrium, and its distal end was seen within a right hepatic vein branch in the right hepatic lobe (Figure 2).

The patient was admitted to the surgical ward, and was started on continuous IV heparin infusion. She was then scheduled for a foreign body retrieval by the interventional radiology service. Her laboratory results on admissions were hemoglobin of 9.8 g/dl, white blood cell count of 4 103/ μ l, platelets count of 175 103/ μ l, creatinine level of 0.7 mg/dl, INR of 0.94, prothrombin time of 12.8 sec, and activated partial thromboplastin time of 34.7 sec. The heparin infusion was stopped 5 hours prior to the procedure. The endovascular retrieval was successfully done under conscious sedation and fluoroscopic guidance. The right common femoral (CF) vein was accessed under ultrasound guidance and a 7 Fr sheath was placed. Navigation to the inferior vena cava (IVC) – right atrial junction was done using vertebral catheter and hydrophilic guide wire. Single loop snare was used to engage the proximal end of the dislodged catheter segment (Figure 3, 4), and subsequently the whole segment was withdrawn and extracted via the right CF vein sheath. The patient was discharged on the same day with a smooth post-operative course.

DISCUSSION

The first description of a functional implanted central venous access device (CAVD) in oncology patients was described as a conical chamber connected to a silastic catheter by Niederhuber et al. in 1982 [3]. Multiple locations for insertion site were suggested, but the most common are subclavian vein with the reservoir fixated on the chest wall, jugular vein with the reservoir fixated on the chest wall, and cephalic or basilic vein with the reservoir fixated on the same limb [4].

An illustrative review by Machat et al. divided

CVADs complications into those that occur within 30 days of insertion and those that occur after 30 days of insertion. Early complications include malpositioning, minor bleeding and vascular injury, and pneumothorax. Delayed complications include reservoir rotation and occlusion, endocatheter pinch-off or fragmentation and migration, venous thrombosis, infection, and air embolism [2].

The narrowing of an endovascular catheter as it passes over the first rib and beneath the clavicle, as it was demonstrated by Aitken and Minton [5], in combination with catheter malfunction is termed Pinch-off syndrome. This syndrome is associated with an increased risk of fracture and embolization, which is commonly seen if the subclavian vein was accessed [6].

We present a case of a middle-aged woman who underwent intraoperative internal jugular vein Port-A-Cath insertion to receive chemotherapy, and was then found to have an endocatheter dislodgement that was detected after investigating access failure of the CVAD. The incidence of detachment in the literature is reported to be 0.3%-1.5% in the adult population versus 1.4%-3.6% in the pediatric population. Weak linkage of the reservoir to the endocatheter and chemotherapy-induced damage to the catheter have been listed as culprits for such complication [7] but as previously published by de Oliverira et al., no obvious cause can explain complete detachment [4].

Disconnection of the catheter increases the risk of fatal tachycardia, myocardial puncture, or development of pulmonary pseudoaneurysm according to the migration site [8], with the most common location being between the right atrium and the inferior vena cava [9]. The safest method for extracting the detached portion is percutaneously via the femoral or internal jugular vein utilizing a snare, unless adhesions to the vessel or pericardium were present, then a more extensive approach is preferred [10].

CONCLUSION

Regardless of its low incidence, endocatheter detachment and fragmentation should be suspected as soon as access failure of CAVD is noticed. Adequate radiologic investigations, utilizing plain x-ray imaging or cross-sectional scans, with a thorough clinical examination can guide toward a proper diagnosis. Once confirmed, the patient should be scheduled for an urgent retrieval under fluoroscopic guidance or should be started on prophylactic anticoagulation protocol until a procedure is possible.

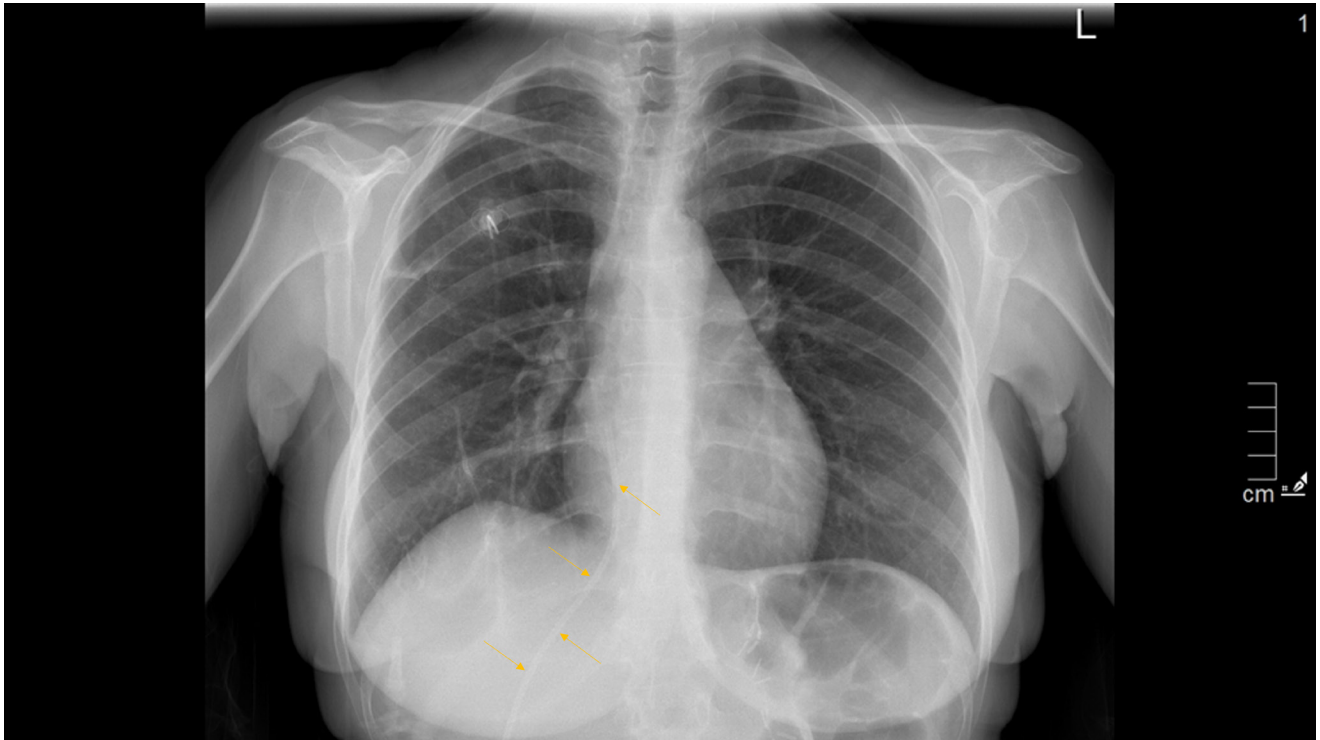


Figure 1. Anterior-posterior chest X-ray showing displaced Port-A-Cath tube bypassing the diaphragm.

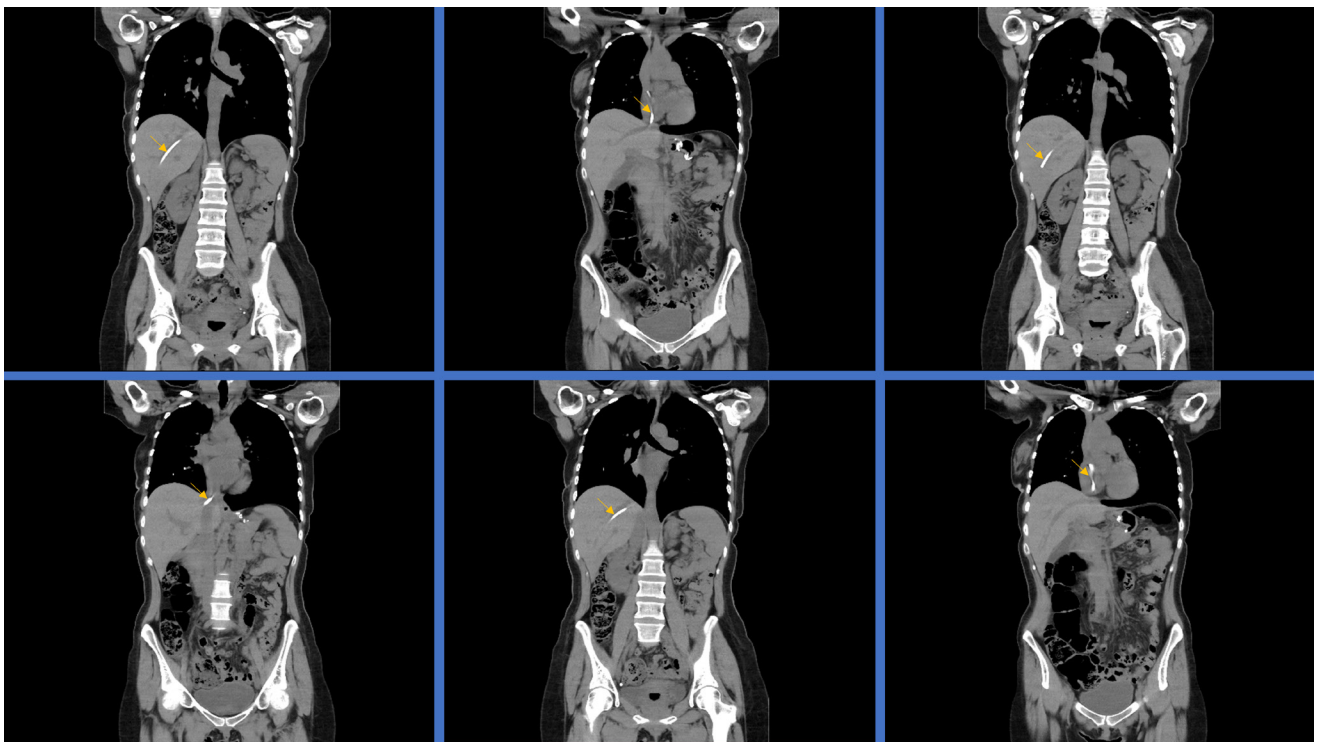


Figure 2. Chest, abdomen and pelvic CT scan without contrast, coronal view, sequential order, showing the dislodged Port-A-Cath tube with the proximal end in the right atrium and distal end seen within a right hepatic vein branch in the right hepatic lobe.

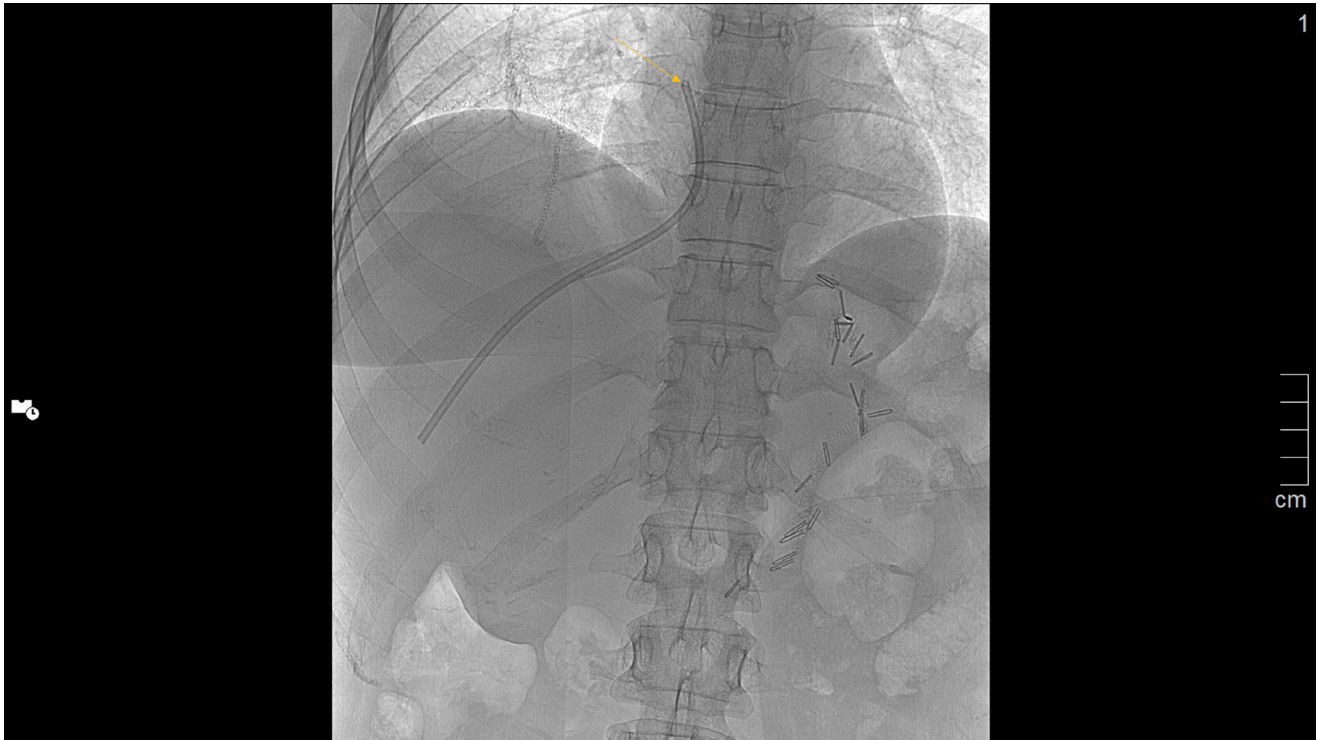


Figure 3. Initial image pre-retrieval procedure showing the dislodged catheter segment in the right atrium extending into the middle hepatic vein.



Figure 4. Fluoroscopic image showing the dislodged catheter segment after engagement by the snare.

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