

PICC rupture as a clinical presentation of pinch-off syndrome

Vertakova Krakovska B¹, Kunderlik M¹

¹ St.Elizabeth Cancer Institute, Bratislava, Slovakia

INTRODUCTION

Peripherally inserted central catheters (PICC) are very common catheters used in oncological patients to deliver chemotherapy and other medications. We report a rare, but potentially critical complication - catheter rupture as a result of the pinch-off syndrome (POS). POS is defined as a compression of the catheter in the space anterior to the first rib and posterior to the clavicle. The compression is rated on a scale of 0 to 3 (Grade 0 - a regular catheter course without luminal narrowing; grade 1-an an altered catheter course without luminal narrowing; grade 2- luminal narrowing; and grade 3 exhibits catheter fracture). Early detection of POS requires only catheter removal, while no intervention may result in life-threatening complications caused by catheter fragmentation.

CASE-PRESENTATION

56- year old female with duplex carcinoma (breast and ovarian cancer), requiring intravenous chemotherapy had her single lumen 4F PICC placed via the left vena basilica in July 2018, ECG navigation (picture 1) as well as chest X-ray (picture 2) showed catheter position in cavo-atrial junction, no complications were described. The PICC line was used for intravenous chemotherapy application for 18 months, with no complications. Later on, in January 2020 (18 months later), the patient experienced a catheter occlusion. When attempting to flush the catheter (not successful), the patient experienced sharp pain under her left clavicular bone. A catheter rupture has been suspected. Chest X-ray and fluoroscopy with intravenous contrast was performed (picture 3 and 4).

The suspected PICC rupture was confirmed. The catheter was successfully removed under fluoroscopy control without complications. Examination of the catheter showed a big rupture (7mm), the integrity has been maintained (picture 5). The patient recovered without any complications.

DISCUSSION AND CONCLUSION

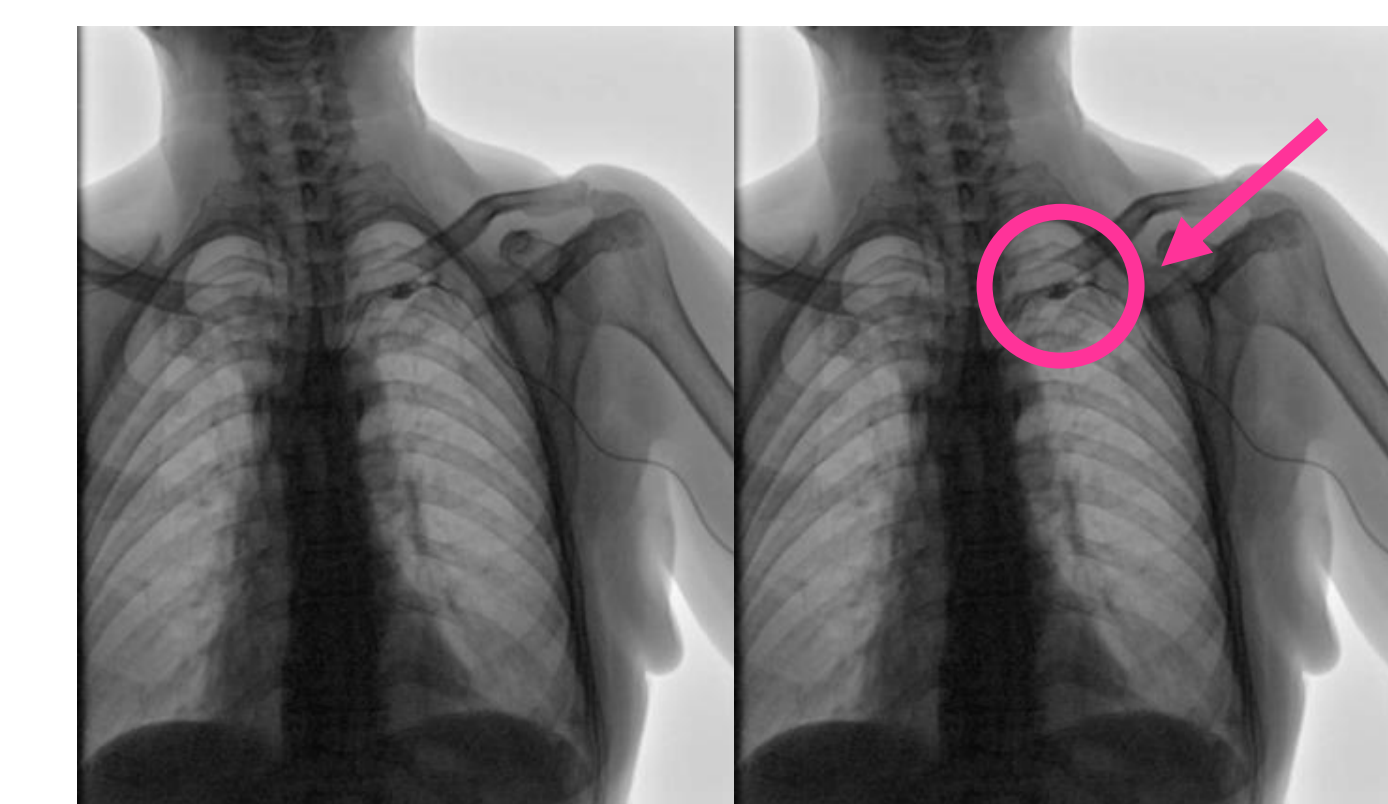
The pinch-off syndrome can present with pain or swelling of the shoulder, but patients can also be asymptomatic and the syndrome can be accidentally identified on a chest X-ray. In our clinical case, the pain mentioned by the patient and X-ray led us to the rare diagnosis of POS. The potentially dangerous situation was resolved successfully. We implanted 1512 PICC catheters during a 6 year period (2015-2020). Only one catheter rupture was diagnosed (0.066%). It is very important to control the catheter before every chemotherapy administration. It is mandatory to check free aspiration of venous blood and smooth administration of rinsing to avoid the potentially life-threatening situation (paravazation of cytostatics). Early detection of POS requires only catheter replacement, but no intervention may result in life-threatening complications caused by catheter fragmentation. Catheter fragmentation is a condition when pieces of the catheter may break off to cause ventricular tachycardia, vessel embolization, and cardiac perforation.

LITERATURE: Timothy D et al. Pinch-off syndrome: a simple test is the best. Internal and emergency medicine, 2012; Hanzou L et al. Imaging evaluation of catheter integrity prevent potentially fatal complication of pinch-off syndrome: illustration of two cases. Quantitative Imaging in Medicine and Surgery, 2017; Cho JB et al. Pinch-off syndrome. J Korean Surg Soc 2013; Mery M et al. Fracture and atypical migration of an implantable central venous access device. Quant Imaging Med Surg 2016; Biswas S, McNerney P. Ventricular Tachycardia from a Central Line Fracture Fragment Embolus: A Rare Complication of a Commonly Used Procedure-A Case Report and Review of the Relevant Literature. Case Rep Crit Care 2015; Ghaderian M, Sabri MR, Ahmadi AR. Percutaneous retrieval of an intracardiac central venous port fragment using snare with triple loops. J Res Med Sci 2015

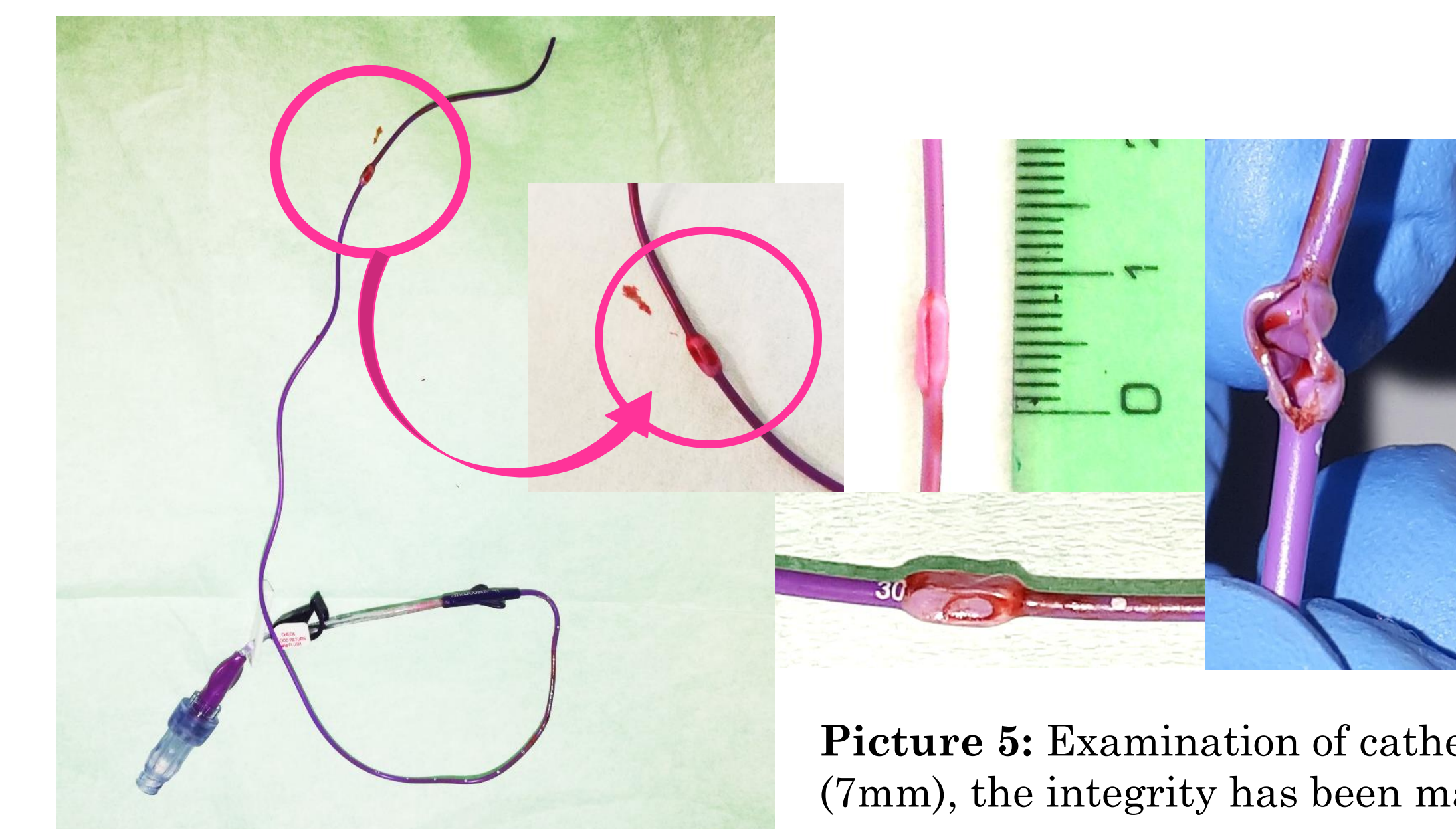
Picture 1: ECG navigation showing optimal position - the tip of PICC is in cavo-atrial junction



Picture 2: X-ray after PICC implantation showing good position of catheter



Picture 3 and 4: X-ray with contrast showing catheter rupture and small leak of contrast, a compression of the catheter in the space anterior to the first rib and posterior to the clavicle was described



Picture 5: Examination of catheter showed a big rupture (7mm), the integrity has been maintained