# JCINCR Journal of OPEN ACCESS Clinical Images and Medical Case Reports

ISSN 2766-7820

### **Clinical Image**

**Open Access, Volume 6** 

## A case of central venous catheter rupture due to Pinch-off syndrome

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Received: May 07, 2025 Accepted: May 29, 2025 Published: Jun 05, 2025 Archived: www.jcimcr.org Copyright: © Takeuchi S (2025). DOI: www.doi.org/10.52768/2766-7820/3622

**Keywords:** Central venous port; Chemotherapy; Left subclavian vein; Catheter fracture; Catheter migration; Pinch-off syndrome.

#### Description

A 68-year-old woman with lymphoma underwent central venous (CV) port placement via the left subclavian vein for chemotherapy administration. However she achieved remission, the port was retained due to the disease recurrence risk. After 10 months post-insertion, contrast-enhanced computed tomography (CT) revealed catheter fracture with distal fragment migration into the right ventricle (Figure 1). She remained asymptomatic, and no immediate action was taken. One month later, retrospective review identified catheter fracture, leading to vascular surgery referral.

A 6-Fr sheath via the femoral vein enabled pigtail-assisted catheter fragment retrieval from the right ventricle. She recovered uneventfully and was discharged on day 3. Pinch-off syndrome, a known complication of subclavian CV catheterization, is caused by compression between the clavicle and first rib, leading to catheter deformation or rupture. The incidence ranges from 0.1% to 1.0%, typically occurring 3.5 years post-in-

sertion [1]. Herein, rupture occurred at 10 months, likely due to catheter placement within the midclavicular line and increased patient activity.

Ultrasound-guided insertion and placement lateral to the midclavicular line are advised to minimize compression risk. Embolized catheter fragments can lead to severe complications [2]. Signs of pinch-off include impaired blood return, slow infusion, injection resistance, and pain. Hinke et al.'s grading system supports regular imaging for catheter deformation [3]. With the pinch-off phenomenon in mind, there is no recommendation on the follow-up examination frequency. If pinch-off occurs, in principle, the catheter needs to be removed. However, CV port placement and management guidelines show catheter retention not causing clinical problems when it cannot be removed even with the use of a guidewire, and from a clinical risk-benefit perspective, leaving the catheter in situ is an acceptable option. In case of infection, catheter removal is essential, and in such cases, catheter removal by surgical vascular resection or vascular incision should be considered [2].

**Citation:** Takeuchi S, Tokunaga H, Hayashi E. A case of central venous catheter rupture due to Pinch-off syndrome. J Clin Images Med Case Rep. 2025; 6(6): 3622.



**Figure 1:** Catheter before rupture. This catheter placement is within the midclavicular line.

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**Figure 2:** Lateral chest radiograph showing a fractured catheter segment in the right ventricle (left) and contrast-enhanced computed tomography scan (transverse view) demonstrating the catheter port positioned within the left subclavian vein (right).