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IMAGES

Pinch-Off Syndrome and Fracture Embolization: a Preventable Complication of TIVADS

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Abstract
Totally implantable venous access device has become indispensable in oncology. One of the well-known complications of the subclavian approach is the pinch-off syndrome. We hereby describe how a case of pinch-off syndrome with catheter fracture and embolization into the heart was managed by prompt endovascular intervention.

Keywords Catheter fracture · Venous access device · Subclavian catheter

Introduction

Totally implantable venous access devices have become essential for administering chemotherapy for breast cancer patients to prevent extravasation and lymphoedema.

Subclavian vein used to be the preferred approach of cannulation for venous access device placement. Ever since the widespread use of sonosite and percutaneous approach, the jugular vein is preferred over other veins. One of the rare but well-known complications of subclavian approach is the pinch-off syndrome.

Case History

A 42-year-old lady diagnosed with triple negative breast cancer was on follow-up after completion of treatment. She had a chemoport in situ. She underwent regular port flushing and her backflow had been compromised for some time. But forward flow was present. Once during port flushing, she developed pain with swelling at local site. Chest X-ray showed that the catheter had fractured at the junction of the clavicle and first rib and embolized into the heart (Fig. 1). She was immediately taken to the angiographic suite, and the tip of the catheter was removed with a snare under fluoroscopic guidance and transfemoral approach (Fig. 2). The distal end of the port was removed under local anaesthesia (Fig. 3).

Discussion

Atkin and Minton first described the pinch-off sign on the X-ray in 1984 [1]. The pinch-off syndrome was subsequently elaborated by Hinke et al. [2] as follows:

Grade 0–No luminal narrowing
Grade 1–Catheter deviation
Grade 2–Luminal narrowing
Grade 3–Catheter transection and embolization

Mirza et al. [3] reviewed 112 cases of pinch-off syndrome reported in literature. Fisher et al. in his review reported a 71% complication rate including mortality with catheter fracture and embolization [4]. The pinch-off syndrome is almost the universal reason for catheter fracture and embolization through the subclavian approach. Hence, a high clinical index of suspicion can identify pinch-off syndrome early and prevent impending or future catheter fracture and embolization into the heart. Once identified, it warrants prompt removal of the port. Grade 3 requires prompt endovascular intervention and removal of both the fractured parts.

This is one of the prime reasons for jugular approach being preferred over the subclavian vein for implanting venous access devices. The other advantage of jugular approach is ease of

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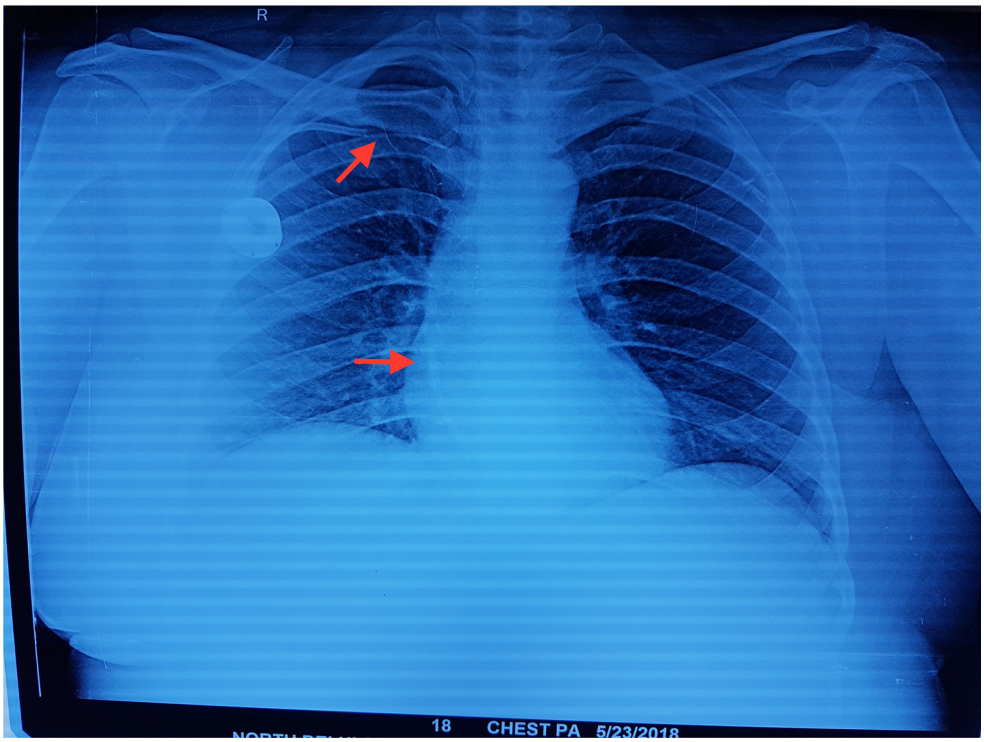

Fig. 1 Chest X-ray showed that the catheter had fractured at the junction of clavicle and first rib and embolized into the heart

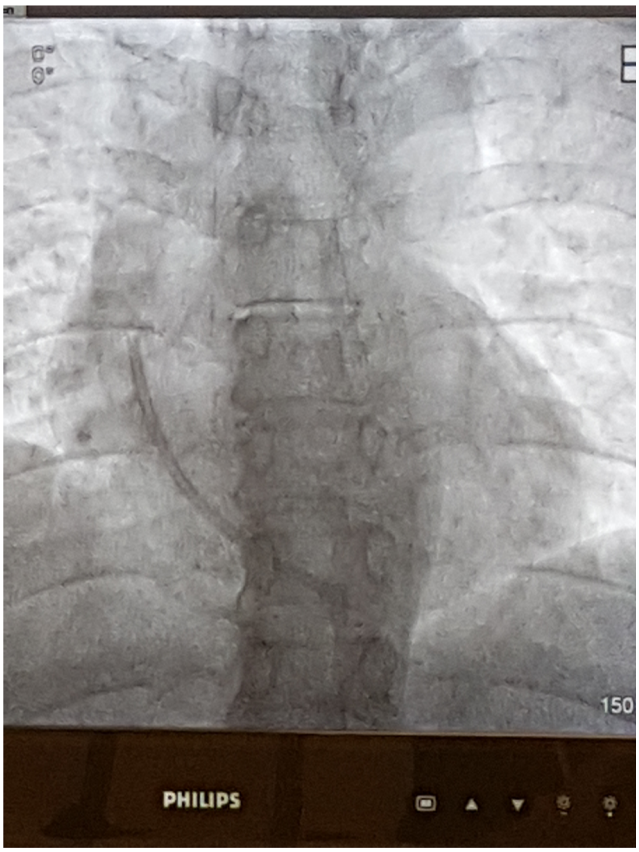

Fig. 2 Tip of the catheter was removed with a snare under fluoroscopic guidance and transfemoral approach

Fig. 3 Distal end of the port was removed under local anaesthesia

accessibility and feasibility of ultrasound guidance. Because pinch-off syndrome is not encountered in jugular approach, catheter fracture and embolization rates are much lesser than subclavian approach [5]. Cephalic vein cutdown is a reasonable alternative to the subclavian approach to avoid pinch-off syndrome.

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