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**Name of Journal:** *World Journal of Clinical Cases*

**Manuscript NO:** 79517

**Manuscript Type:** CASE REPORT

**Double pigtail catheter reduction for seriously displaced intravenous infusion port catheter: A case report**

Yu Liu, Duan-Ming Du

**Abstract**

**BACKGROUND**

Implanted intravenous infusion port (TIAP) is mainly used for patients who need central venous infusion and poor peripheral vascular conditions. With the advantages of easy to carry, long maintenance cycle, few complications and excellent quality of life, it has been widely used in the fields of malignant tumor chemotherapy, parenteral nutrition support and repeated blood collection. Implanted intravenous infusion port (IVAP) dislocation can have significant complications if not recognised and reinstated immediately

**CASE SUMMARY**

A 24-year-old man was treated with adjuvant chemotherapy for osteosarcoma. Severe displacement of IVAP catheter was found by chest X-ray examination. The IVAP cannot be used normally. Therefore, we conducted an emergency procedure to reset the catheter through double pigtail catheters, the operation was successful and the infusion port was restored.

**CONCLUSION**

When IVAP catheter displacement cannot be reset by conventional techniques, two pigtail catheters can be successfully used instead.

## **INTRODUCTION**

Implanted intravenous infusion port (IVAP) catheters are mainly used for patients who need central venous infusion therapy and have poor peripheral vascular conditions. It has been widely used in malignant tumour chemotherapy, parenteral nutrition support treatment, and repeated blood collection in various nations because of the benefits of easy carrying, extended maintenance time, few complications, and excellent quality of life<sup>[3,4]</sup>. Inadequate care can lead to complications such as catheter displacement, obstruction, infection, pneumothorax, haemothorax, vascular damage, thrombus, and catheter rupture. Among them, catheter displacement of the infusion port has become a critical complication as it affects the chemotherapy effect on patients and it can be life-threatening if the displacement is not recognised and repositioned promptly.

We describe a case with catheter displacement that could not be solved by conventional procedures which is a single pig tail catheter reduction or surgical removal of the port. Hence, we used the double pigtail catheters to reset the displaced catheter. Such interventional reduction surgery is rarely reported.

## **CASE PRESENTATION**

### ***Chief complaints***

Our patient was a 24-year-old male with osteosarcoma at the distal end of the left calf. After the second chemotherapy round, the patient developed severe cough and vomiting, and it was difficult to push the catheter when using normal saline. Chest X-ray showed that the catheter had been displaced into a loop.

**1**

### ***History of present illness***

Osteosarcoma following chemotherapy

### ***History of past illness***

On December 23, 2021, the patient experienced resection of a lesion of the distal left fibula, ankle fusion and microwave ablation.

#### **1** *Personal and family history*

The patient denied having any specific family or personal history of any illnesses.

#### *Physical examination*

The patient's vital signs at the point of presentation were 36.4°C for body temperature, 114/73 mmHg for blood pressure, 96 beats per minute for pulse, and 20 breaths per minute for respiratory rate. During the physical examination, the patient cooperated and was conscious. A 15-cm surgical incision in the left leg was visible, skin temperature was normal, the plantar flexion and extension of the left ankle were limited, and movement and sensation of the left lower limb were normal.

#### *Laboratory examinations*

D-dimer dynamic: 0.57 mg/L

#### *Imaging examinations*

Chest X-ray indicated that the catheter was displaced into a loop (Figure 1A).

#### **FINAL DIAGNOSIS**

The final diagnosis result is that ectopic catheter in infusion port.

#### **TREATMENT**

After consulting with the appropriate departments, we prepared to reset the IVAP using an interventional approach. The patient lay flat on the digital subtraction angiography examination bed during the procedure. Digital subtraction angiography fluoroscopy showed that the catheter was displaced into a loop. We used the modified Seldinger puncture to puncture the right femoral vein, and 5F vascular sheath was

successfully implanted. Using a long exchange guide wire, we guided the 5F pigtail catheter (Yixinda SCW-StraightPigtail-05110) to the right jugular vein, through the natural bending at the front end of the catheter, trapped the middle and long section of the infusion port catheter, and reset the infusion port catheter by slightly rotating and pulling down<sup>[5,6]</sup>. Due to the severe displacement of the infusion tube, we failed to reset the catheter using one pigtail. Therefore, we used the same method to puncture the left femoral vein and successfully reset the displaced infusion port catheter using the double pigtail catheter (Figure 1B and C).

### **OUTCOME AND FOLLOW-UP**

Post-operation, the patient did not complain of discomfort and successfully completed the third chemotherapy in the ward.

### **DISCUSSION**

IVAP chemotherapy can give patients continuous venous access and shield their peripheral blood vessels from harm from irritating medications<sup>[7]</sup>. Because of the benefits of easy carrying, long maintenance period, few complications and high quality of life of patients, it has been widely used in malignant tumour chemotherapy, parenteral nutrition support treatment and repeated blood collection. Increased attention has been paid to complications related to transfusion port such as thrombosis, infection, displacement, pneumothorax and others. Among them, the displacement of transfusion port pipeline is a significant complication of transfusion port implantation, as it affects chemotherapy effectivity and can be life threatening<sup>[8]</sup>. Catheter displacement may be caused by (1) A catheter that is too short, and its end position is 1/3 above the superior vena cava; (2) strenuous exercise of the arm or shoulder; (3) severe cough; and (4) repeated vomiting. The catheter displacement in our patient may have been due to repeated vomiting during the second chemotherapy session<sup>[9,10]</sup>.

### **CONCLUSION**

When the catheter is displaced into a loop, the general interventional reduction surgery may not be sufficient to reset the displaced catheter. Thus, we can adopt the method of co-reduction using double pigtails to increase the traction force of the catheter reduction and make the pull-down force stronger.

#### **ACKNOWLEDGEMENTS**

We thank the patient for participating in the study and for agreeing to undergo follow-ups.

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SIMILARITY INDEX

PRIMARY SOURCES

1

Gui-Qin Chen, Yang Wu, Kai-Fei Zhao, Rong-Shu Shi. "Removal of "ruptured" pulmonary artery infusion port catheter by pigtail catheter combined with gooseneck trap: A case report", World Journal of Clinical Cases, 2021

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