

## Novel kissing catheter technique for foreign body retrieval

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### ABSTRACT

We report a novel technique 'the kissing catheter technique' for retrieval of a broken catheter fragment in a patient undergoing closure of a patent ductus arteriosus.

**Keywords:** Foreign body retrieval, gooseneck snare, novel kissing catheter technique

### INTRODUCTION

Transcatheter retrieval of foreign body remains a challenging task.<sup>[1,2]</sup> Various devices are being used including dormia baskets, snares, and tip-deflecting wires.<sup>[3-5]</sup> The introduction of gooseneck snares has simplified transcatheter retrieval of foreign body. Some situations continue to be challenging and innovations and improvisations have to be made on the spot.<sup>[6,7]</sup> We used a novel technique called 'Kissing catheter technique' for retrieval of a broken catheter tip.

### CASE REPORT

The patient was a 1-year-old male child with history of recurrent respiratory tract infections. Echocardiogram (ECG) showed a 3.5 mm patent ductus arteriosus with continuous flow with peak systolic gradient of 70 mm Hg.

Aortogram revealed a type E duct (Krichenko Classification)<sup>[8]</sup> [Figure 1], hence a decision of PDA coil closure was taken. A 6F JR 3.5 was used to cross the duct. During crossing of the duct over the wire, proximal tip of the catheter broke and was stuck into the duct at the pulmonary artery end. The proximal end of catheter was stuck to the anterior right ventricle (RV) wall [Figure 2]. We attempted to retrieve this with a standard routine approach with

a 10 mm gooseneck snare. After multiple attempts, we could not succeed. The impinging of the proximal end of broken catheter against the RV anterior free wall prevented looping of catheter with the snare. We also unsuccessfully tried to dislodge the broken catheter from the RV end by whipping it with a 4F Pigtail catheter. Considering the anatomy, and as the pulmonary arterial end of the duct was holding the catheter, we decided to cross the catheter from the aortic end to make an atrio-ventricular (AV) loop and then capture (monorail) arteriovenous loop with the snare over the wire [Figures 2 and 3 and Video 1]. A 4F JR 3.5 was passed through right femoral artery over 035 exchange length straight tip Terumo guidewire. After ensuring that both the tip of broken catheter and 4F JR 3.5 were facing each other the 035 exchange length straight tip terumo was probed into the tip of the broken catheter and brought down in the RV. Through a 10 mm snare this Terumo guidewire was exteriorised out through right femoral vein (RFV) forming an AV loop [Video 2].

The snare was mono-railed and the broken catheter tip was grabbed and snared out of RFV [Figures 4 and 5].

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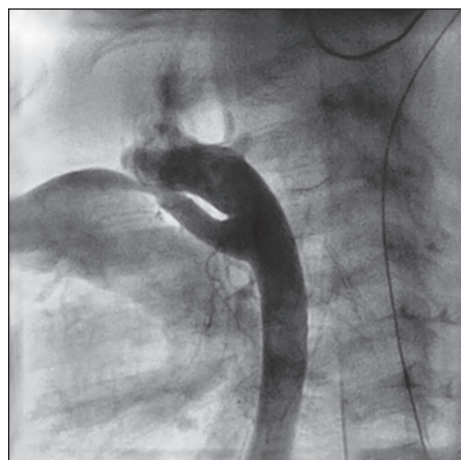
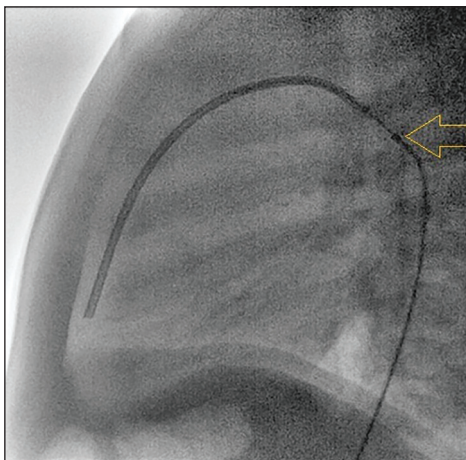
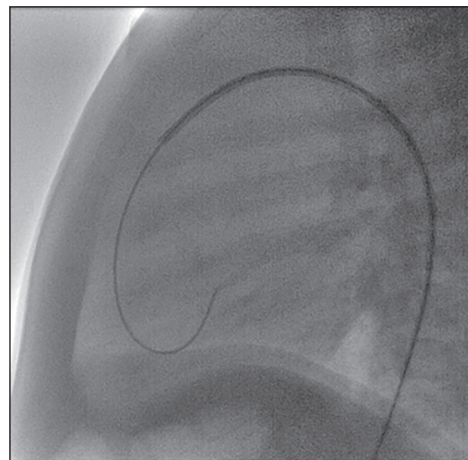


Figure 1: Showing patent ductus arteriosus type E

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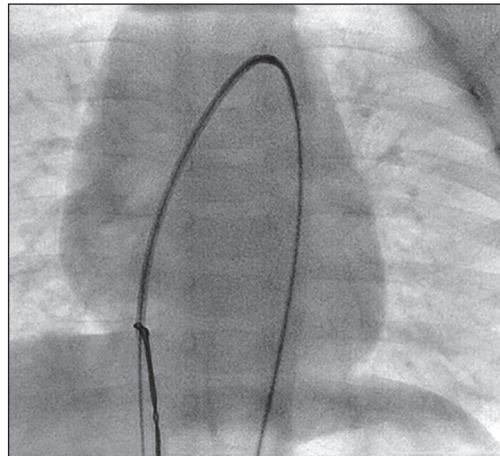
**Figure 2:** Shows the kissing catheter technique (arrow) i.e. broken catheter tip was probed from the aortic end with an exchange length straight tip terumo wire



**Figure 3:** Broken catheter tip was probed from the aortic end with an exchange length straight tip terumo wire which is seen in RV



**Figure 4:** Showing terumo wire being exteriorised with a snare through right femoral vein forming an AV loop



**Figure 5:** Broken catheter tip snared through right femoral vein by monorailing the snare on the AV loop



**Figure 6:** Shows 052" gianturco coil *in situ* with no residual shunt

Subsequently, PDA was closed with 052" Gianturco coil. Post procedure aortogram showed no residual shunt [Figure 6].

## DISCUSSION

We postulate that the reason behind breaking of catheter could be, first, a complex anatomical subset of the duct where the distal end of the catheter got stuck at the narrow pulmonary artery end. Secondly the application of inappropriate force and rotation resulted in breaking of the catheter. The distal end facing the aortic lumen was relatively immobile which enabled the kissing and advancing a straight tip guidewire. While we recognize that such instances, where one end of broken catheter is immobile would be rare in clinical practice, this report illustrates a useful improvisation to enable safe retrieval.

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