CASE REPORT

Successful retrieval of a fractured and embolised Judkin's catheter during a coronary angiogram

Soumya Patra,¹ K S Sadananda,² Navin Agrawal,¹ Cholenahally Nanjappa Manjunath¹

¹Department of Cardiology, Sri Jayadeva Institute of Cardiovascular Sciences & Research, Bangalore, Karnataka, India

²Department of Cardiology, Sri Jayadeva Institute of Cardiovascular Sciences & Research, Mysore, Karnataka, India

Correspondence to

Dr Soumya Patra,
dr_soumyapatra@rediffmail.com

SUMMARY

We report the successful retrieval of a large broken segment of right Judkin's catheter using a snare catheter by a retrograde approach. A 69-year-old woman presented with an anterior wall myocardial infarction. A coronary angiogram revealed severe stenosis of distal left main coronary artery, ostio-proximal portion of the left anterior descending artery and the ostial left circumflex artery. During right shoot, the Judkin's right catheter was broken at almost 15 cm from the distal end. The distal end of the broken catheter was lying in the ascending aorta, whereas proximal end was in the left subclavian artery. First, we snared the distal end and pulled out the catheter in right common iliac artery but owing to the curvature of the fragment, this attempt was unsuccessful. Finally, we were successful in removing the fractured segment retrogradely through the arterial sheath placed in left femoral artery.

BACKGROUND

Coronary angiography (CAG) is a widely used diagnostic method for coronary artery disease.¹

In clinical practice, complications of this procedure most often involve the vascular access point.¹

An intravascular foreign body embolisation is a rare but possible complication of percutaneous procedures.² Although, there are few reported cases of fracture of either pigtail catheter,¹ central venous catheter,³ Swan Ganz catheter⁴ or intravascular ultrasound (IVUS) catheter tip,² fracture and embolisation of the distal portion of a Judkin's catheter during a diagnostic CAG has never been reported. We are reporting a successful removal of broken Judkin's catheter during CAG by a snare catheter using a retrograde approach.

CASE PRESENTATION

A 69-year-old woman presented with a 2-day history of acute onset chest pain. She had a history of hypertension and diabetes mellitus. ECG showed features of an evolved anterior wall myocardial infarction. After stabilising medically, she underwent CAG which showed severe stenosis of distal left main coronary artery ostio-proximal portion of the left anterior descending and ostial left circumflex coronary artery (figure 1) with no significant involvement of the right coronary artery (RCA). A 7 French Judkin's right (JR) 3.5 diagnostic catheter (Cordis, Miami, Florida, USA) was used to engage RCA. After taking one contrast shoot, we realised that about 15 cm of distal portion of JR catheter had broken off and the fragment was lying between the ascending aorta and left subclavian

Figure 1 Coronary angiography showed severe stenosis of distal left main coronary artery, ostio-proximal portion of the left anterior descending and ostial left circumflex.

artery (figure 2). An attempt was made to catch the free distal end of the broken catheter using a loop snare, as the broken fragment was in the ascending aorta. We pulled the broken distal fragment to the right common iliac artery, but we realised that we were not able to remove the catheter by holding the distal end owing to the curved tip (figure 3). We had tried to rotate it by pulling it out with the

Figure 2 Fluoroscopy showed that the distal portion of Judkin's right catheter had broken off and was placed between the ascending aorta and the left subclavian artery.

To cite: Patra S, Sadananda KS, Agrawal N, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009848

Figure 3 Fluoroscopy showing that the broken Judkin's right catheter could not be removed by snaring the distal end as it had a curved tip.

snare holding the proximal end but as the broken portion of the catheter was too long, we were not able to rotate it within the abdominal aorta. Therefore, we put a 12 French arterial sheath into the left femoral artery and held the proximal straight portion of the broken fragment of the JR catheter by another snare loop. Finally, we successfully retrieved the broken JR catheter through the arterial sheath on left side (figure 4). In the subsequent follow-up, she underwent coronary artery bypass grafting.

OUTCOME AND FOLLOW-UP

Postprocedural hospital stay was uneventful.

Figure 4 Successful retrieval of the distal fragment of the broken Judkin's right catheter retrogradely through the arterial sheath on left side.

DISCUSSION

Percutaneous retrieval of intravascular foreign bodies was first described in 1964 by Thomas *et al.*⁵ Percutaneous retrieval of intravascular foreign bodies has since become a common practice with many case reports and studies published.^{1–5} A number of different devices and techniques have been utilised to retrieve foreign bodies, including snare catheters, basket catheters, biopsy forceps and filter devices.² The choice of device and technique used to perform foreign body retrieval is dependent on the circumstances and size of the foreign body, and the expertise of the operator. Considerable innovation has been shown in this choice.²

Dislodged coronary stents and uncoiled guide wires, catheter tip are thrombogenic when left in the coronary artery, aorta, renal artery or central vein and may result in complications like myocardial infarction, cerebrovascular accident or venous thrombosis.³ Vigorous attempt should be made to remove it as early as possible by the interventional cardiologist.⁶ There are reports that describe non-surgical techniques used to remove foreign bodies, like fracture IVUS catheter tip or pigtail catheter by utilising a snare catheter or other devices.^{1 7 8}

Fracture and embolisation of Judkin's catheter followed by successful percutaneous retrieval using a retrograde approach have not been reported in the literature so far. Fractured small tip can cause embolisation to the brain, whereas fracture of a large segment of a catheter as in our case can injure the artery and can cause thrombogenic complications. It may be easy to snare a broken tip of catheter when there is fracture of large segment, but it is difficult to retrieve it through the sheath owing to its large size and possible curves as compared with a broken small segment.

Reuse of catheter could be implicated as a possible cause of this complication in our case.

Fracture of catheters owing to reuse of equipment is a common place occurrence in developing countries. Despite the strict instructions by the manufacturers to use equipment for single usage only, the high number of procedures in developing countries and the limited resources make such a practice unavoidable in order to make the procedures cost effective and to make percutaneous interventions available and accessible to the needy and the poor population. Although very rare but whenever such complications occur despite the maximal preprocedural precautions taken, we tend to rethink that we are actually risking the safety of our patients. We strongly advocate that reuse of devices and equipment during percutaneous procedures should be avoided as much as possible.

Learning points

- ▶ Reuse of devices and equipment during percutaneous procedures should be avoided as far as possible.
- ▶ Extra caution should be maintained while making use of reused catheters during percutaneous diagnostic or interventional procedures.
- ▶ Pulling the fragment retrograde with a snare catheter is an effective technique for retrieving an embolised cardiac catheter
- ▶ Use of a larger sheath can facilitate the retrieval of a large broken fragment.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Akpınar I, Dogan SM, Karabag T, *et al*. Pigtail catheter fracture and embolization into the abdominal aorta: an extremely rare angiographic complication. *J Cardiovasc Med (Hagerstown)* 2012;13:648–50.
- 2 Funatsu A, Kobayashi T, Nakamura S. Successful retrieval of a broken intravascular ultrasound catheter tip in the coronary artery. *J Invasive Cardiol* 2010;22:E197–200.
- 3 Helal I, Elyounsi F, Hamida FB, *et al*. Fracture and embolization of a temporary hemodialysis femoral catheter. *J Vasc Access* 2010;1174–5.
- 4 Racionero MA, Prados C, Acitores I, *et al*. An infrequent complication of Swan Ganz catheters. *J Cardiovasc Surg (Torino)* 1995;36:519–20.
- 5 Ozmen N, Uz O, Cingözbay BY, *et al*. Successful percutaneous retrieval of a broken intravascular ultrasound catheter tip from the renal artery. *Türk Kardiyol Dern Ars* 2011;39:505–7.
- 6 Iyisoy A, Celik M, Celik T, *et al*. Successful retrieval of a broken intravascular ultrasound catheter tip from a coronary artery. *Cardiovasc Revasc Med* 2012;13:238–40.
- 7 Thomas J, Sinclair Smith B, Bloomfield D, *et al*. Nonsurgical retrieval of a broken segment of steel spring guide from the right atrium and inferior vena cava. *Circulation* 1964;30:106–8.
- 8 Tagan D, Schaller MD, Feihl F, *et al*. Catheter breaking and embolization after right heart catheterization. *Intensive Care Med* 1995;21:192.

Copyright 2013 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit

<http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow