

Fracture of an indwelling biliary catheter : a word of caution

Sandra Cornelissen¹, Chris Verslype², Geert Maleux¹

Department of (1) Radiology, (2) Hepatology, University Hospitals Leuven, Leuven, Belgium.

Key words : biliary drainage catheter, fracture, percutaneous trans-hepatic cholangiography.

To the Editor,

A 52-year-old patient was referred for percutaneous biliary drainage because of biliary obstruction, associated with recurrent malignant disease. She had a history of a hilar cholangiocarcinoma for which a hepaticojunos-tomy was performed 4 years previously. Under general anaesthesia an 8.5 French (F) biliary drainage catheter

(Expel™, Boston Scientific Europe, Voisins-le-Breton-neux, France) was inserted for internal and external drainage (1).

After 75 days she presented with bile leakage along the biliary catheter through the skin entry site. An abdominal X-ray showed that the drain had come out by a few centimetres. Additionally, a clear sharp bend was identified at the distal part of the drainage catheter (Fig. 1a). It was decided to perform a standard catheter exchange. When the catheter was withdrawn over a guidewire, the distal fragment of the catheter remained in place due to a catheter fracture (Fig. 1b). We retracted the

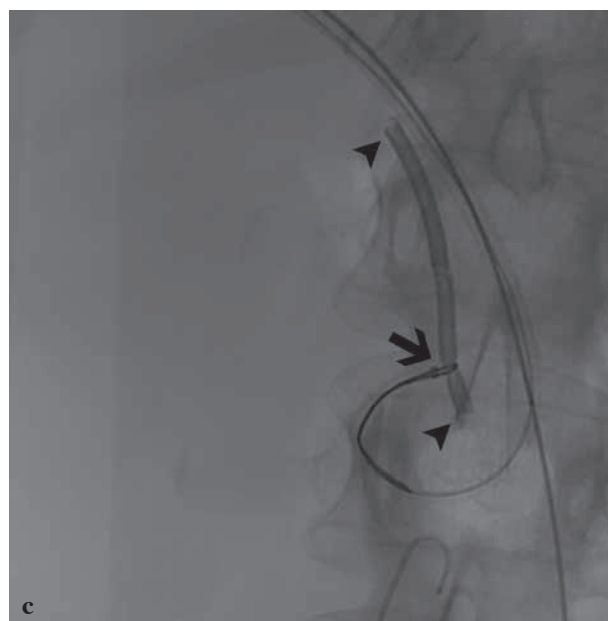
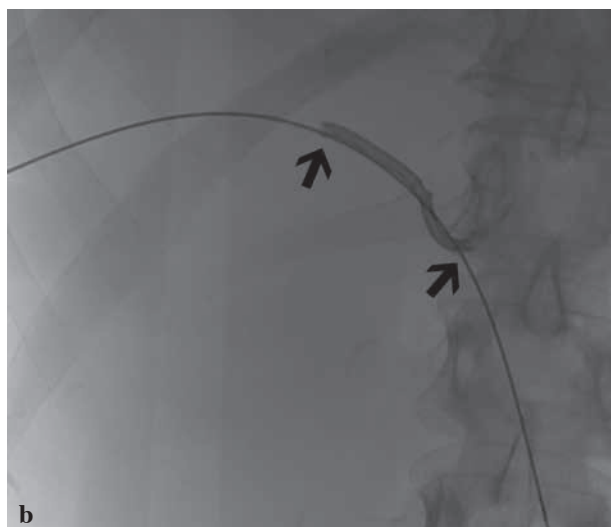
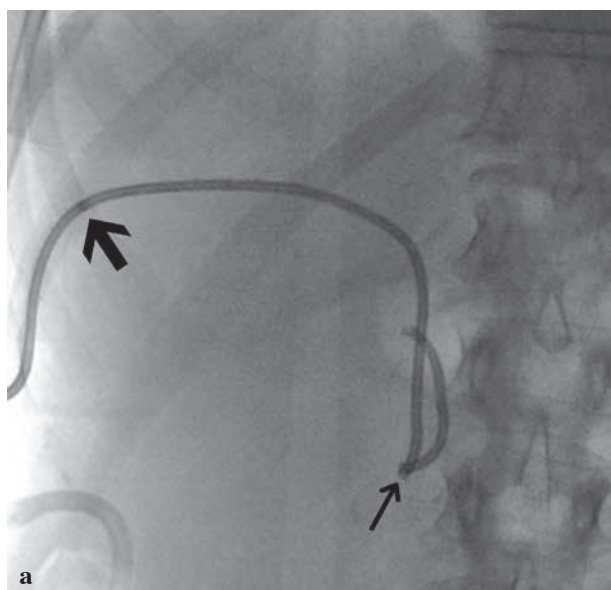


Fig. 1a-b-c. — (a) Plain X-ray of the indwelling catheter showing a sharp bend (arrow) in the enteric part of the catheter ; note also the proximal, radio-opaque end of the catheter (bold arrow) close to the skin due to proximal migration ; (b) After removal of the Expel™ drainage catheter over a stiff Amplatz guidewire, the distal part of the catheter was completely broken (arrows) ; (c) The broken catheter fragment (arrowheads) was snared with a Gooseneck snare catheter (arrow).

Correspondence to : Geert Maleux, M.D., Ph.D., Department of Radiology, University Hospitals Leuven, Herestraat 49, 3000 Leuven, Belgium.
E-mail : geert.maleux@uzleuven.be

Submission date : 07/09/2015

Acceptance date : 27/11/2015

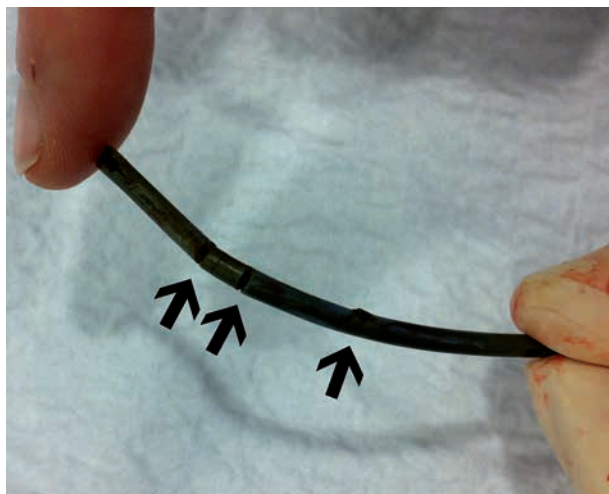


Fig. 2. — The broken and snared fragment reveals several areas of partial and near complete fracture close to and between the distal side holes (arrows).

catheter fragment using the snare (Amplatz Goose Neck, EV3, Plymouth, MN, USA) out of the patient leaving the wire in place (Fig. 1c). A new biliary drainage catheter (Cook Medical, Bjæverskov, Denmark) was placed over the guidewire with the tip in the afferent loop.

The removed catheter fragment was eroded and showed multiple subtotal breaks and defects close to and between the distal side holes (Fig. 2).

In contrast to biliary stent fracture, which may occur in up to 8% of cases (3), fragmentation of indwelling biliary drainage catheters is very rare (2). Kinking of the

catheter during placement should be avoided, as this might be a risk factor for catheter fracture. Jensen et al. (4) reported a series of 6 out of 25 placed Navilyst Exodus biliary drainage catheters presenting with fragmentation 44-59 days after placement. In the presented case the drainage catheter, made of Flexithane™ catheter material, was in place for 75 days and on the plain film, a severe bend probably associated with at least partial fracture of the drainage catheter was identified.

Catheter fractures are reported to take place in the enteric part of the catheter, most likely because of the aggressive nature of gastric or enteric caustic contents. Also in our case the fracture had occurred in the enteric part of the catheter.

Finally, we also communicated the catheter failure to the manufacturer. Further production of this drainage catheter will be stopped and potentially, all patients with an indwelling biliary catheter of this type may be contacted to evaluate catheter integrity using plain film radiography.

References

1. Expel™ biliary drainage catheter (product information). Available at : www.bostonscientific.com/en-US/products. Accessed February 1st, 2015.
2. MAHER M.M., KEALEY S., MC NAMARA A., O'LAOIDE R., GIBNEY R.G., MALONE D.E. Management of visceral interventional radiology catheters : a troubleshooting guide for interventional radiologists. *Radiographics*, 2002, **22** (2) : 305-322.
3. RASMUSSEN I., DAHLSTRAND U., SANDBLOM G., ERIKSSON L., NYMAN R. Fractures of self-expanding metallic stents in periampullary malignant biliary obstruction. *Acta Radiol.*, 2009, **50** : 730-737.
4. JENSEN L.E., COLLINS Z., LEMONS S., JOHNSON P.L. Fracture of Navilyst Exodus biliary catheters. *J. Vasc. Interv. Radiol.*, 2011 Feb, **22** (2) : 261-262.