

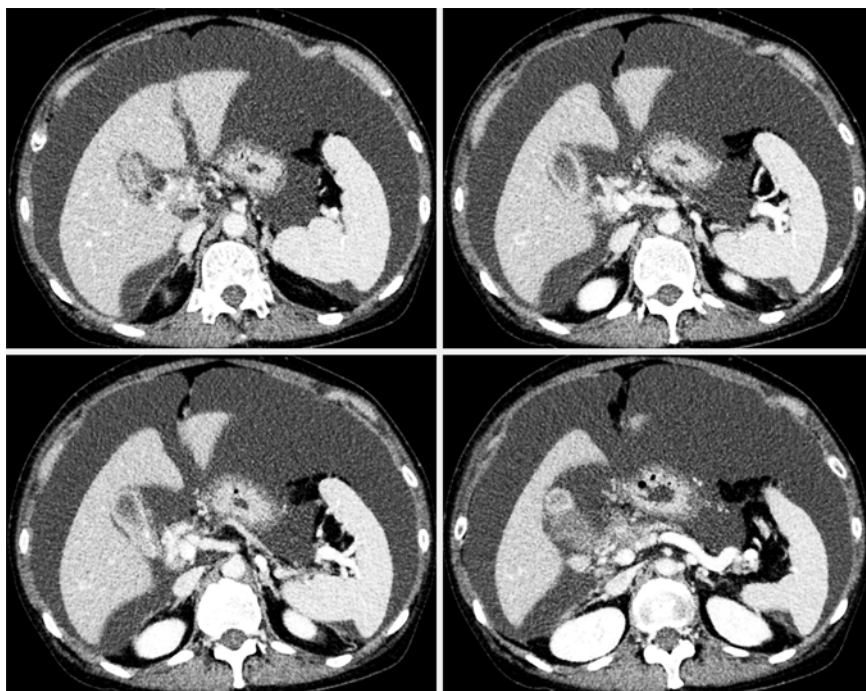
## Rescue technique using a diathermic dilator for an unremovable stent in malignant perihilar biliary obstruction

Endoscopic biliary stenting is a useful and safe technique for malignant biliary obstructions. A plastic stent is frequently used because of its low cost and ease of deployment. However, it is occasionally difficult to remove a plastic stent because of severe stricture. We describe a rescue technique for immovable plastic stents, using a diathermic dilator in a case of perihilar biliary obstruction.

A 63-year-old woman with jaundice due to hilar biliary obstruction was referred to our hospital. A diagnosis of gallbladder cancer was made from findings of a thickened gallbladder wall and massive ascites revealed by computed tomography (► Fig. 1) and magnetic resonance cholangiopancreatography (► Fig. 2). For biliary decompression and pathological confirmation, endoscopic retrograde cholangiography (ERC) was performed, and a 7-Fr plastic stent was placed (► Fig. 3, ► Video 1).

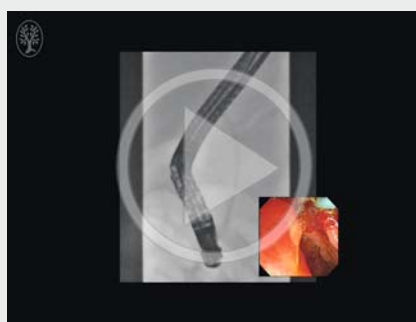
The patient underwent a second ERC 4 days later because of elevated biliary enzymes. The plastic stent could not be removed using forceps and snares, and the torn-off stent was left in place (► Fig. 4). Although needle-knife sphincterotomy was performed to expose the residual plastic stent, the stent could not be grasped. A 0.025-inch guidewire could be advanced alongside the plastic stent, but a sphincterotome (CleverCut 3V; Olympus, Tokyo, Japan) could not. Successful dilation of the perihilar biliary stricture was achieved by advancing a 6-Fr wire-guided diathermic dilator (Cysto-Gastro-Set; Endo-Flex GmbH, Voerde, Germany) (► Fig. 5). However, the remaining plastic stent also migrated. Thus, a 10-mm lumen partially covered, self-expandable, metallic stent (WallFlex biliary stent; Boston Scientific Japan, Tokyo, Japan) was deployed alongside the plastic stent (► Fig. 6).

In cases of malignant biliary stricture, removal of a plastic stent is time-consuming and might cause complications. The

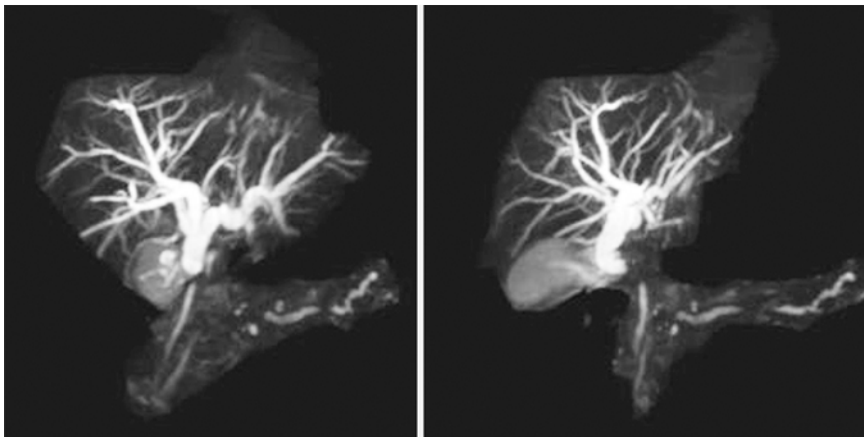


► Fig. 1 Contrast-enhanced computed tomography showed a thickened gallbladder wall and massive ascites.

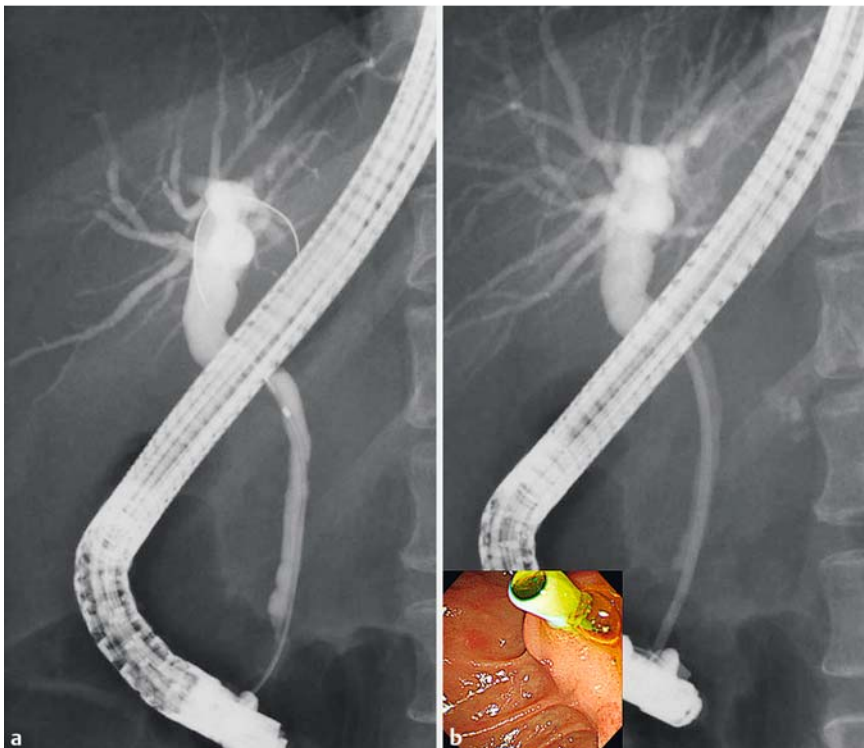
### ► VIDEO 1



► Video 1: A plastic stent was placed during the first endoscopic retrograde cholangiography (ERC) for malignant perihilar biliary obstruction. At the second ERC, the plastic stent could not be removed and a sphincterotome could not be advanced through the perihilar biliary obstruction. However, a 6-Fr diathermic dilator could be advanced beyond the perihilar biliary obstruction. Finally, a partially covered, self-expandable, metallic stent was placed successfully alongside the plastic stent.



► **Fig. 2** Magnetic resonance cholangiopancreatography showed a perihilar biliary stricture with dilation of the intrahepatic bile duct.



► **Fig. 3** Radiographic images. **a** The perihilar biliary stricture. **b** A 7-Fr plastic stent was placed across the perihilar biliary stricture (inset: endoscopic view of the plastic stent through the ampulla of Vater).

usefulness of a diathermic dilator for severe biliary strictures has been reported [1–5]. The use of diathermic dilation is also an effective rescue technique for unremovable occluded plastic stents.

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## Competing interests

None

## The Authors

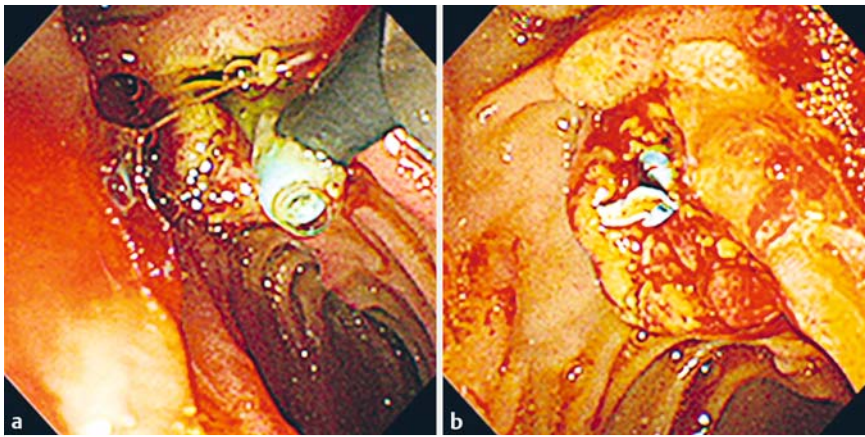
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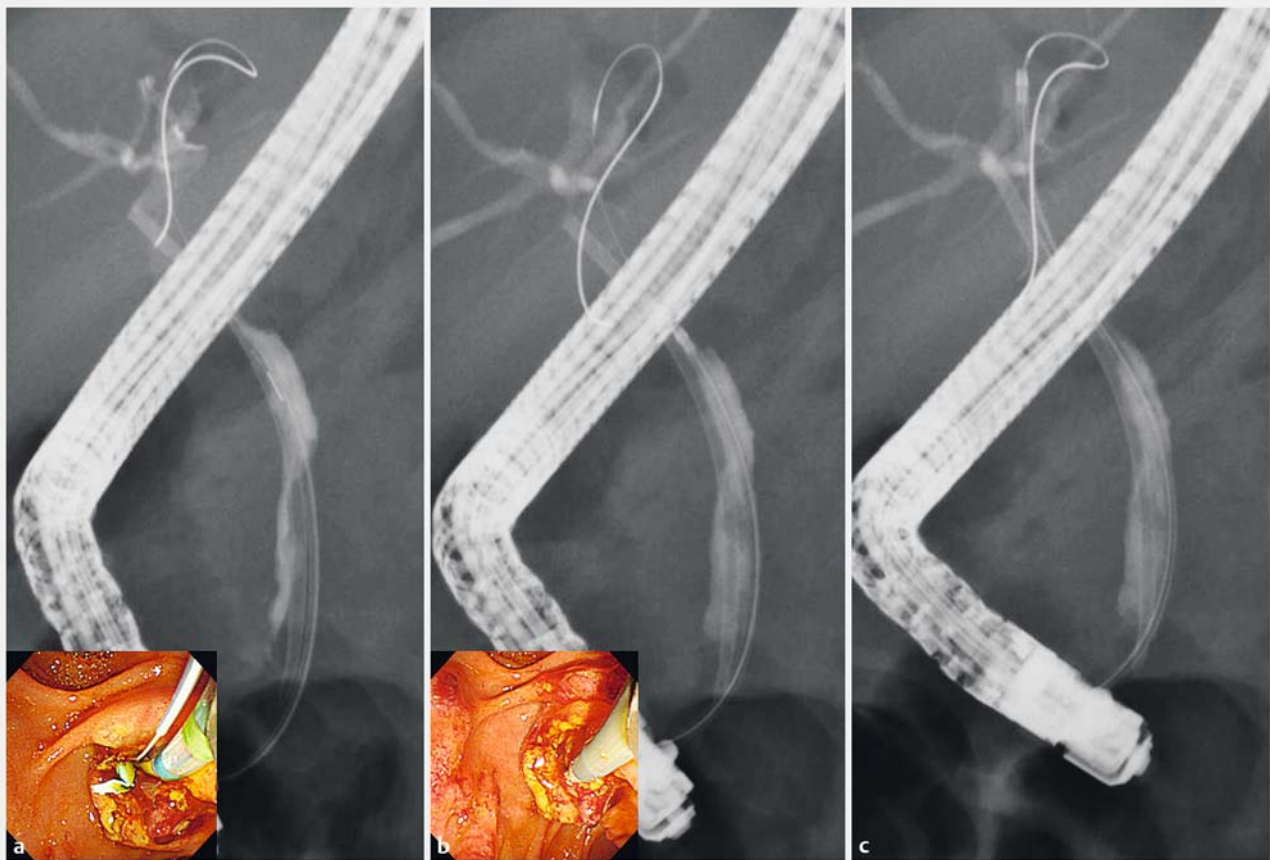
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► **Fig. 4** Endoscopic images. **a** Snaring of the plastic stent after precut sphincterotomy with a needle-knife. **b** The torn-off plastic stent was left in place.

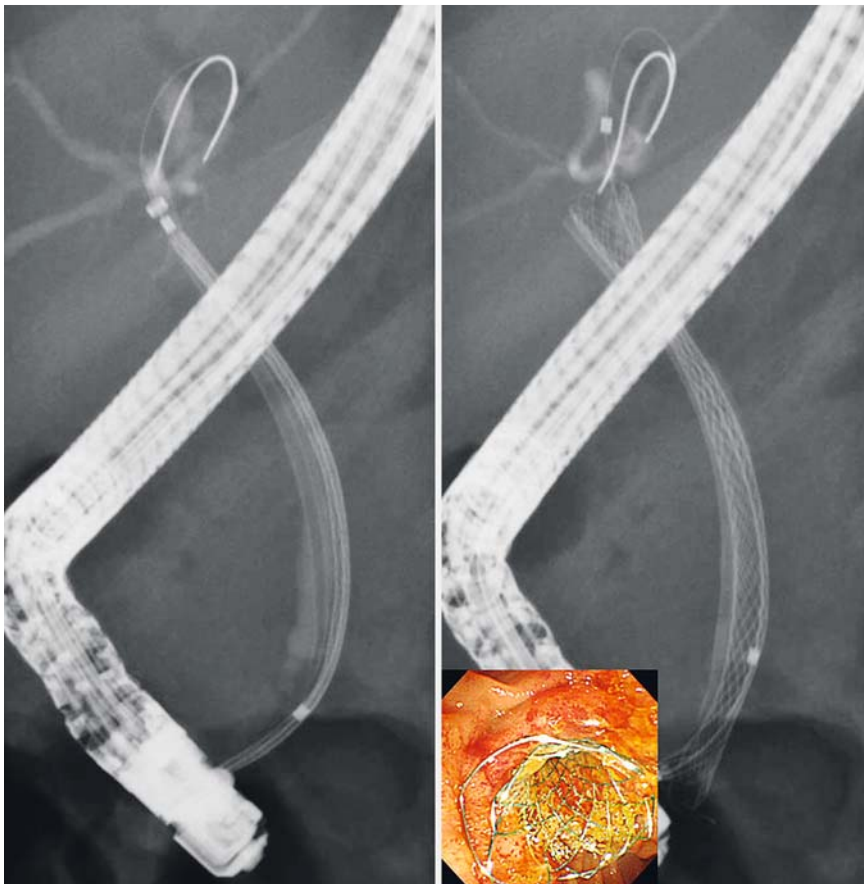
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► **Fig. 5** Radiographic images. **a** A 0.025-inch guidewire was advanced alongside the plastic stent (inset: endoscopic view). **b, c** A 6-Fr diathermic dilator was advanced alongside the perihilar biliary stricture (inset: endoscopic view).





► **Fig. 6** Radiographic images showing the partially covered, self-expandable, metallic stent placed over the stricture alongside the plastic stent.

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