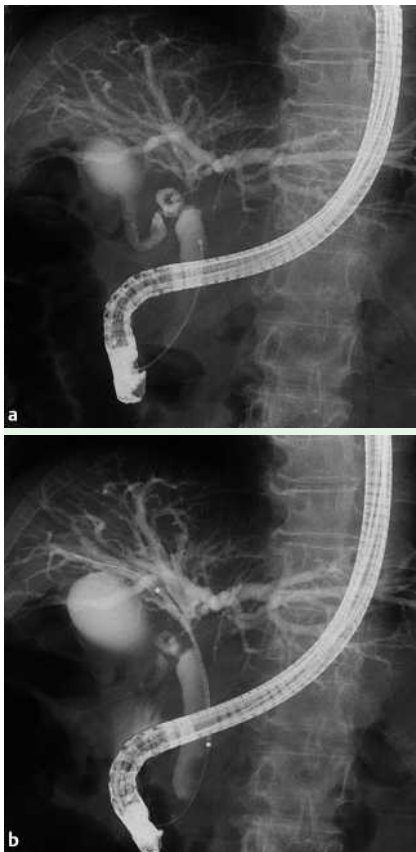
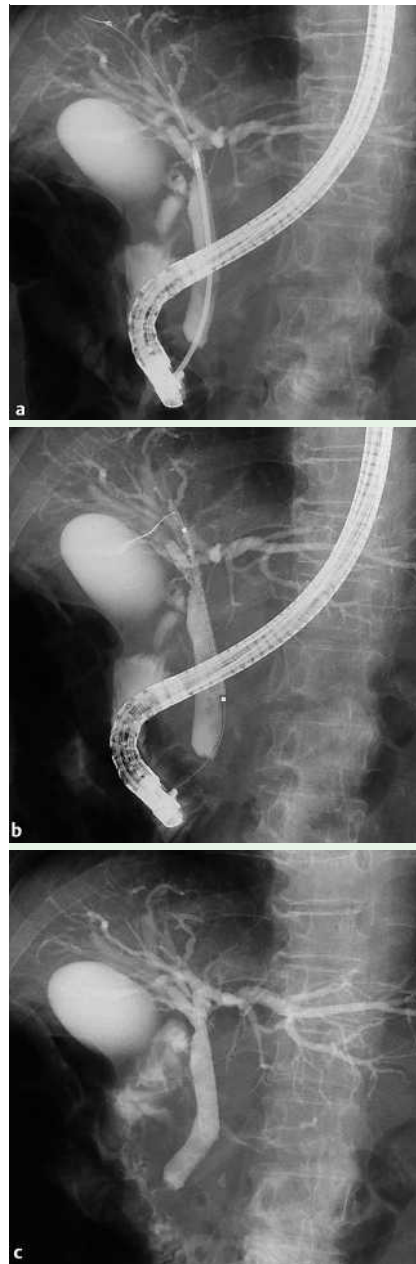


## Expansion of metallic mesh stent hole using a Soehendra stent retriever in multiple stenting of biliary hilar obstruction



**Fig. 1** **a** Cholangiogram showing a Bismuth type III hilar stricture. **b** A metallic mesh stent was placed in the right biliary tree.

A malignant hilar biliary stricture is usually unresectable at the time of diagnosis and requires multiple biliary stentings. Metallic mesh stents remain patent for a relatively long time in the biliary stricture compared to tube stents [1]. However, employing multiple metallic mesh stents is sometimes very difficult because of their small lumen, which impedes the delivery of a catheter. The Soehendra stent retriever (Soehendra SR; Wilson-Cook Medical Inc., Winston-Salem, North Carolina, USA) is useful for dilating a stenosed biliary or pancreatic duct [2–4]. We used it to expand the mesh holes in metallic mesh stents placed in patients with malignant biliary hilar stricture who were undergoing multiple stenting.



**Fig. 2** **a** A Soehendra stent retriever was advanced along the guide wire to expand the mesh holes of the first metallic mesh stent. **b** A metallic mesh stent delivery catheter was then easily introduced into the left biliary tree. **c** Multiple stenting was successfully accomplished.

We used the retriever in three patients with unresectable hilar biliary carcinoma.

• **Fig. 1a** shows the endoscopic cholangiogram of a patient with a Bismuth type III stricture. A guide wire was negotiated into the right biliary tree and a metallic mesh stent inserted (JoStent SelfX stent; Abbott Vascular Devices, Redwood City, California, USA) (• **Fig. 1b**). Then, a second guide wire was negotiated into the left biliary tree through a mesh hole in the first stent. Despite several attempts using dilation catheters, it was not possible to insert them into the left biliary tree because of the small mesh holes of the stents. We therefore introduced a Soehendra SR and advanced it along the guide wire, turning it clockwise to allow the threads at the end of the device to engage the mesh and expand the stent hole (• **Fig. 2a**). After expansion, a metallic mesh stent delivery catheter was easily introduced into the biliary tree (• **Fig. 2b**) and multiple stenting was achieved (• **Fig. 2c**). We successfully carried out multiple stenting using metallic mesh stents in two other patients and no relevant complications were encountered. Our results indicate that the Soehendra SR was useful in expanding the mesh holes of a metallic stent in patients requiring multiple stenting with metallic mesh stents.

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