Entrapment of delivery catheter: an unusual complication during deployment of biliary self-expandable metallic stent

Entrapment of delivery catheter during deployment of self-expanding metallic stent (SEMS) in the biliary tract is an unusual complication that has been reported with the Wallstent (Boston Scientific, Microvasive®). We report such a complication with the use of the Diamond biliary stent (Boston Scientific, Microvasive®).

A 62-year-old woman with unresectable cancer of gall bladder was taken for endoscopic palliation of jaundice by placement of biliary SEMS. At ERCP, cholangiogram showed Bismuth type 2 stricture; this was dilated and the stent assembly (8 cm long and 9F delivery system) was passed over a stiff guidewire into the right hepatic duct. After releasing the stent, the delivery catheter could not be withdrawn despite applying forceful traction. Fluoroscopic image showed that the expanded olive-shaped upper end of the delivery catheter was entrapped in the strictured segment (Fig).

Dilating the stent using a biliary balloon was attempted after pushing the olive up, but was unsuccessful. The endoscope was removed, leaving behind the delivery catheter, which was re-routed through the nostril to function as a nasobiliary drain. The next day the patient was taken for a repeat procedure to remove the entrapped catheter. Fluoroscopic image showed that the upper end of the stent had partially expanded and the delivery catheter could be pulled out with gentle traction.

The assembly of biliary SEMS has the stent constrained by a sheath over a delivery catheter that has a lumen for a 0.035-inch guidewire. The diameter of the delivery catheter is smaller than that of the collapsed stent, except at the tip, where it has an expanded olive shape. Thus, some expansion of the stent is required to allow the removal of the delivery catheter.

In this case the upper end was trapped in the strictured segment of the bile duct. Since full expansion of the stent can take 24-48 hours, waiting for this period can allow expansion of the stent and removal of the impacted catheter, as happened in this case. Similar observation has been reported in one of the five patients with impacted delivery catheter reported by Jowell et al. Re-routing the catheter, as a nasobiliary drain is a good option to allow biliary drainage while one awaits expansion of the stent.

To solve the problem immediately, one can try balloon dilation of the stent, which was unsuccessful in this case. Dividing the catheter at its duodenal end using electrocautery or cutting the nasal end of the catheter and leaving it coiled in the stomach are other options. Cutting the delivery catheter using monopolar current is difficult because it is not in direct continuity with tissue, and leaving the catheter may impair stent patency.

To conclude, in case of entrapment of delivery catheter of SEMS due to positioning in a strictured segment, waiting for stent expansion is usually rewarding. In the interim the catheter can be re-routed as a nasobiliary drain.

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Reference

Fig: Diamond biliary stent with dilated olive-shaped upper end of delivery catheter entrapped in stricture