Endoscopic four-branched stent-in-stent deployment of self-expandable metal stents in malignant hilar biliary obstruction

Malignant hilar biliary obstruction often requires multiple stents for biliary drainage [1,2]. However, deploying three or more self-expandable metal stents (SEMSs) is technically challenging [3]. The recently launched, novel uncovered SEMS with slim delivery system (Niti-S Large Cell SR Slim delivery; TaeWoong Medical, Seoul, South Korea) may be combined with a 6-mm balloon catheter (REH biliary dilation catheter; KANeka, Osaka, Japan) to facilitate the deployment of multiple SEMSs [4]. Here, we report a successful endoscopic four-branched deployment of SEMSs using the stent-in-stent (SIS) method. A 66-year-old man with metastatic hilar cholangiocarcinoma, who had been undergoing chemotherapy, was admitted to our hospital with acute cholangitis. Initially, 7 months previously, two plastic stents had been deployed for malignant hilar obstruction of Bismuth type 4 in the B2 and B8 bile duct segments above the sphincter of Oddi. However, owing to recurrent cholangitis and a liver abscess, a total of four plastic stents were deployed 4 months later in B2, B5, B6, and B8 (Fig. 1).

A computed tomography scan on admission showed dysfunctional plastic stents and deterioration of his cancer (Fig. 2). We attempted to deploy four SEMSs using the SIS method (Video 1). First, after removing the plastic stents, we deployed the first and second SEMSs in B6 and B2 using the SIS method. After dilating the mesh of the SEMSs using a balloon catheter, we deployed the third SEMS in B8 using the SIS method. Finally, an attempt was made to deploy a SEMS in B5, but the catheter could not be passed through the mesh of the SEMS. Therefore, a balloon catheter was used to dilate the lumen and mesh of the SEMSs, and the fourth SEMS was then successfully deployed in B5 using the SIS method (Fig. 3). There were no adverse events such as stent occlusion during the 2 months before the patient’s death, which was due to his primary disease.

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Competing interests

The authors declare that they have no conflict of interest.

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