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Re-Intervention and Avoiding It

Endoscopic (ERCP and EUS) revision of occluded biliary stents

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Introduction

In patients with unresectable malignant distal biliary obstructions (MDBO), covered/uncovered self-expandable metallic stents (SEMS) are widely used. However, frequent stent reintervention is often required due to short stent patency and increased survival related to advances in anticancer treatment. Thus, we aim to compare the 2nd stent patency and to describe an effective therapeutic strategy following the occlusion of primary SEMS.

Endoscopic Revision Method for Occluded Primary Biliary SEMS

1. In stent RFA

Several previous studies have demonstrated the safety and effectiveness of endobiliary RFA. We considered this locoregional therapy could improve the time to recurrent biliary obstruction (TRBO), and investigated the efficacy and safety of in-stent RFA (IS-RFA). To analyze the exact effect of IS-RFA, we enrolled the patients who received uncovered SEMS to treat the tumor in or overgrowth. The only difference between the two groups was whether or not RFA was performed.

A total of 48 patients with recurrent biliary obstruction due to tumor ingrowth or overgrowth after SEMS placement were enrolled in three tertiary hospitals. To alleviate the imbalance of the RFA and control groups, propensity score matching was performed. The median TRBO was significantly longer in RFA group (117 days vs. 82.5 days; $P = 0.029$). The difference in overall survival between both groups was not significant (170 days vs. 72 days; $P = 0.902$). No significant adverse events were reported after the second SEMS placement in either group. RFA session was interrupted in five of 14 patients. All of the RFA interruption cases were caused by in-stent contact. And the interruption could be overcome by repeating RFA in the same session in most patients. In the Cox regression analysis, IS-RFA was significantly associated with improved TRBO in both the univariable (HR, 0.17; 95% CI, 0.03–0.96; $P = 0.045$) and multivariable (HR, 0.11; 95% CI, 0.02–0.74; $P = 0.024$) analyses.

We demonstrated that IS-RFA with an uncovered SEMS may reduce the recurrence of biliary obstruction when used to treat oc-

cluded SEMSs in distal MBO caused by pancreatobiliary cancers. Sufficient ablative energy could be delivered in most patients. The rate of postprocedural adverse events did not differ between the RFA and control groups, and no serious adverse events were reported. As a treatment for occluded SEMSs in pancreatobiliary cancer, IS-RFA with uncovered SEMSs is safe and feasible and may improve TRBO. Well-designed larger prospective studies are required to evaluate the efficacy of IS-RFA.

2. Removal of covered SEMS

In order to verify the usefulness of FC-SEMS removal method for stent malfunction, we did a retrospective multicenter study. Patients with MDBO who underwent primary FC-SEMS removal were retrospectively enrolled between June 2009 and February 2022. A total of 102 patients were included and stent patency and survival time were analyzed.

In 97 patients with FC-SEMS stent malfunction, complete removal of FC-SEMS was possible in 62 patients. The median duration time from FCSEMS insertion to removal was 6 months. In the comparison between the stent-removed group ($n = 62$) and the non-removed group ($n = 35$), the technical success of 2nd stent insertion was 98% (61/62) and 100% ($P = 0.99$), and clinical success was 100% in both groups. The mean patency times of 2nd stent following primary FC-SEMS removal were 169, 124, and 92 days (covered, uncovered, and plastic stents), however those of non-FCSEMS removal were 66, 92, 53 days (covered, uncovered, and plastic stents) ($P = 0.0386, 0.0632, \text{ and } 0.0310$). In addition, there is no difference of the 2nd stent related complication between two groups. In patients with occluded primary FC-SEMS, the removal of FC-SEMS could provide the longer stent patency compared to classical endoscopic revision methods.

3. EUS intervention

Endoscopic ultrasound (EUS)-guided biliary drainage has been introduced as an alternative to classical biliary drainage method such as percutaneous transhepatic biliary drainage (PTBD) or ERCP. In our retrospective study that aim to evaluate long term outcomes and predictors of adverse events of EUS guided hepaticogastrostomy, hilar malignant biliary obstruction was only po-



tential risk factor for stent dysfunction and late AEs. Depending on the location of biliary obstruction, the choice of EUS-CDS or EU-HGS may be determined, but EUS intervention is also an important alternative treatment for primary occluded biliary SEMS.

Conclusions

Although both plastic stents and SEMS are frequently used to relieve malignant biliary obstruction, many studies have shown that the use of SEMS is associated with better stent patency, and lower rate of complications. But tumors continue to grow after biliary stenting, and that is leading to stent re-obstruction. In addition, as new anti-cancer treatments showed improved survival outcomes, the problem of stent re-obstruction has become more important. To date, there have been new attempts such as the use of IS-RFA, removal of covered SEMS, and the introduction of

interventional EUS for treatment of primary SEMS occlusion, but there are few comparative studies, so the effectiveness should be verified through further research.

References

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