

## Early malfunction of self-expandable metal stent with anti-reflux valve in bile duct obstruction

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**Introduction:** Biliary drainage is essential to resolve jaundice in patients with malignant biliary obstruction. Recently, a biliary self-expandable metal stent (SEMS) with an anti-reflux valve was developed to prevent enteric-biliary reflux. Its anti-reflux valve was made of expanded polytetrafluoroethylene (ePTFE), a biostable and biocompatible material. Early changes of the ePTFE membrane in medical devices are rarely reported in malignant bile duct obstruction. Here, we present a case of early biliary stent occlusion induced by a hardened anti-reflux valve made of ePTFE. **Case:** A 59-year-old woman was admitted with a complaint of jaundice. On the computed tomography scan, a pancreatic head mass with lung nodules was detected. The initial laboratory findings were as follows: aspartate aminotransferase level, 275 IU/L; alanine aminotransferase level, 413 IU/L; total bilirubin level, 14.9 mg/dL; and direct bilirubin level, 8.7 mg/dL. The mass was confirmed to be pancreatic adenocarcinoma. She underwent endoscopic biliary stenting using a SEMS with an anti-reflux valve (Figure 1A and 1B). After 1 month, she was admitted due to severe abdominal pain and shock. In the endoscopic view, hardened and tightly stuck anti-reflux valve was found (Figure 2A). It was removed using endoscopic forceps (Figure 2B). Figure 3A is a normal e-PTFE membrane before use, and Figures 3B is a stiffened and changed e-PTFE membrane in the electron microscopic study. The normal e-PTFE membrane has a fiber-form surface; however, the stiffened e-PTFE membrane lost its form because of environmental exposure to bile juice. **Discussion:** Although the ePTFE membrane is widely used to make medical devices, unexpected changes could occur after the membrane is exposed to bile juice in the duodenum. When performing biliary stenting using a SEMS with an anti-reflux valve, both the risk of early malfunction and the benefit of the anti-reflux effect should be considered.

