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**Biomarkers in bile-complementing advanced endoscopic imaging in the diagnosis of indeterminate biliary strictures**

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#### Abstract

Biliary strictures present a diagnostic challenge and a conundrum, particularly when an initial work up including abdominal imaging and endoscopic retrograde cholangiopancreatography (ERCP) based sampling are non-diagnostic. Advances in endoscopic imaging have helped us diagnose these strictures better. However, even with modern technology, some strictures remain a diagnostic challenge. The proximity of bile fluid to the bile duct epithelia makes it an attractive option to investigate for bio-markers, which might be representative of the functions/abnormal changes taking place in the biliary system. A number of biomarkers in bile have been discovered recently in approaching biliary strictures with their potential future diagnostic utility, further supported by the immunohistochemical analysis of the resected tissue specimens. Novel biliary biomarkers especially carcinoembryonic cell adhesion molecule 6 (CEAM6) and neutrophil gelatinase-associated lipocalin (NGAL) seem promising in differentiating malignant from benign biliary strictures. Recent developments in lipidomic profiling

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