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## Challenges in ERCP post-Billroth II gastrectomy: Is it the scope, tools or technique?

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The performance of ERCP in patients with altered anatomy is challenging, time-consuming and less likely to result in successful cannulation of the duct of interest compared to conventional anatomy. The limitations inherent to altered anatomy include the inability to reach the papilla due to the surgically altered gastroduodenal anatomy, the failure to cannulate the desired duct or to provide therapy because of the change in orientation of the papilla, use of forward viewing scopes, lack of elevator, smaller therapeutic channel, difficult endoscope position and/or limited availability of devices.[\[1,2,3\]](#)

In Billroth II gastrectomy, the distal stomach is resected and the proximal stomach is anastomosed to the proximal jejunum in an end-to-side fashion. In certain cases, a side-to-side jejunum-jejunostomy between the afferent and efferent limbs is created (Braun procedure) in order to divert the bile away from the remainder of the stomach. When performing ERCP in patients with Billroth II anatomy, endoscopists face several challenges. These include recognizing the afferent loop, reaching the papilla, selective cannulation of the desired duct and performing the desired intervention.[\[4\]](#)

Therefore, good knowledge of postoperative anatomy and available tools and devices including endoscopes (side-viewing or forward-viewing) and accessories are required before performing ERCP procedures for post-gastrectomy patients. Presently, ERCP for post-gastrectomy patients is carried out with various devices including single-balloon enteroscopes, double-balloon enteroscopes, spiral enteroscopes, and cap-fitted upper endoscope. Preliminary data and some prospective studies suggest that the different device-assisted enteroscopy methods perform equally.[\[5\]](#) A systematic review and meta-analysis by Park *et al.*[\[6\]](#) indicates that the use of forward-viewing endoscope is as safe and

effective as conventional side-viewing endoscope for ERCP in patients with Billroth II gastrectomy. The meta-analysis included 25 studies (1 randomized, 18 retrospective, 1 prospective, and 5 case series studies) with 2446 patients (499 forward-viewing and 1947 side-viewing endoscopes). More recent data supported the use of cap-assisted ERCP with a forward-viewing gastroscopy as a rescue endoscopic intervention in patients with Billroth II anatomy.[7,8]

In this issue of *Saudi Journal of Gastroenterology*, Li *et al.*[9] studied the outcomes of ERCP in patients with Billroth II gastrectomy and identified factors for its technical success. The study expands the growing body of literature on this issue and summarizes the results of a single-center retrospective study that included 308 patients (391 procedures). Ampullary access, selective duct cannulation, and the accomplishment of expected procedures was 81.3% (318/391), 86.5% (275/318) and 97.3% (256/263), respectively. The technical success rate was 70.3% (275/391). The overall ERCP-related complication rate was 15.3% (60/391). Previous ERCP history, absence of Braun anastomosis and the use of a cap-assisted gastroscopy were the predictive factors for its technical success. We commend the investigators on their pursuit to answering this critical question, which continues to frequently impact our practices. The limitations of this study were well outlined by the authors. The study was retrospective with possibly underreported adverse events. Referral bias is a possibility as the study was conducted in a large single tertiary center that often treats patients with multiple comorbidities and complex surgical anatomies. Furthermore, the heterogeneous competency among performing endoscopists might have affected the success rate.

At our facility, and based on mounting evidence supporting the use of cap-assisted ERCP with a forward viewing scope in Billroth II gastrectomy patients, we have gradually embraced this approach. This technique has the advantages of improved technical and therapeutic success, better patient outcomes and shorter overall procedure times. The main question remains whether there is enough literature at this time supporting the use of one device-assisted technique over another? Head-to-head comparison of the various device-assisted methods may be difficult due to the time-consuming and difficult nature of ERCP particularly in a smaller cohort of patients like the one under discussion. We strongly believe that further adaptations of the different device-assisted methods are mandatory to facilitate ERCP procedures after Billroth II reconstruction to expand the biliopancreatic therapeutic indications and to reduce complications. Thus, future dedicated accessory material needs to be developed and validated in prospective cohorts.

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