

EUS-guided gastroenteric anastomosis: A first-line approach for gastric outlet obstruction?

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Gastric outlet obstruction (GOO) is common in patients with malignant disease and is usually secondary to gastric, pancreatic, ampullary, or biliary cancers.^[1] However, many patients with GOO are poor candidates for surgical resection due to the presence of advanced or metastatic disease. Therefore, these patients are typically managed with palliative interventions such as surgery (open or laparoscopic gastroenterostomy [GE]) or endoscopy.^[2]

Endoscopic approaches, until recently, entailed placement of an enteral stent.^[3] The debate over whether patients should undergo surgery or stent placement is longstanding. However, current data indicate that clinical outcomes of operative gastrojejunostomy and stent placement are comparable, though stenting appears to be associated with a shorter length of stay.^[4]

With the advent of lumen-apposing metal stents (LAMS), EUS-guided placement has been used in the creation of luminal anastomoses of various kinds, with EUS-guided GE being relevant to patients with GOO.^[5] To this end, EUS-guided gastroenteric

anastomosis (EUS-GEA) uses an LAMS to create a gastric-enteric conduit.

Recently, an international, multicenter, retrospective analysis showed that EUS-GEA was comparable to laparoscopic GE with regard to technical and clinical success rates.^[6] However, EUS-GEA was associated with reduced time to oral intake, shorter median hospital stay, and a lower rate of adverse events. While data have accumulated on the efficacy of EUS-GEA, several considerations must be kept in mind in evaluating this technique and its practical application.

Most studies reporting on outcomes of EUS-GEA are limited by small sample sizes and restricted to highly specialized referral centers. As a result, these outcomes lack external validation and cannot be generalized. This creates significant bias and should be carefully interpreted within the context of clinical research.

Recently, the learning curve for a single operator performing EUS-GEA was evaluated which demonstrated

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that 25 procedures were required to achieve proficiency and 40 cases needed for mastery.^[7] While this was the first study to report on the learning curve of EUS-GEA, and its technical requirements, the study was limited to a tertiary academic center. The study also noted that the endoscopist had experience with 11 cases of EUS-GE with noncautery-assisted LAMS before performing freehand EUS-GE with cautery-assisted LAMS. Hence, this analysis may underestimate the number of procedures needed for proficiency and mastery of EUS-GEA for operators with no prior LAMS experience. In addition, it may overestimate the number needed for experienced endosonographers who are familiar with the operation of LAMS. Overall, it remains unclear how generalizable these procedure numbers actually are.

The above study, like others, does not account for variations in endoscopic technique. To this end, EUS-GEA lacks widespread training and procedural standardization. Since there is no uniformly agreed upon approach for performing EUS-GEA, it is difficult to standardize the procedure.^[8] As a result, the true learning curve for EUS-GEA among a broad range of physicians remains unknown, and the rate of adverse events might be higher in the hands of less experienced endoscopists.

Due to this lack of standardization and technical skills required to perform EUS-GEA, many may simply prefer to fall back on existing and proven techniques and proceed with placing an enteral stent, and they may not be wrong to do so. Enteral stenting is technically straightforward and relatively simple to perform. It can also be performed in patients who are anticoagulated as there is no cutting or cautery involved.

However, enteral stenting is associated with a higher rate of repeat interventions, particularly due to stent obstruction (usually due to tissue ingrowth and/or overgrowth, resulting in recurrent GOO).^[9] To this end, among patients with a shorter anticipated survival time (less than 3 months), placement of a duodenal stent may be preferred by some over EUS-GEA.^[10] Despite the relative ease of stenting, EUS-GEA might also be appropriate in this setting.

We advise endoscopists seeking to perform this technique to first be very comfortable with LAMS placement as EUS-GEA is associated with a high rate of stent mis-deployment. A retrospective study from 16 tertiary care medical centers from the United States and Europe included 467 EUS-GEs performed for gastric GOO. During a period of 5.5 years, the study noted

that stent mis-deployment occurred in 10% of the study cohort – a number worthy of notice.^[11] Despite using various rescue techniques to alleviate the severity of adverse events, six patients required surgery and intensive unit care, and one fatal outcome was reported.

In summary, EUS-GEA represents advancement within the field of therapeutic EUS. However, its adoption within the US has been hampered by variations in endoscopic technique, lack of standardization, research bias, the relatively high cost of performing the procedure, and the comparative ease of alternative endoscopic approaches (*i.e.*, stenting). As a result, endoscopists wishing to perform this procedure face significant challenges. Even with these impediments, and with time, EUS-GEA will likely continue to gain acceptance. Nonetheless, it is fully within the standard of care to simply place an enteral stent.

Conflicts of interest

Douglas G. Adler is a Co-Editor-in-Chief of the journal. The article was subject to the journal's standard procedures, with peer review handled independently of this editor and his research groups.

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