



Bigger is not always better for the endoscopic treatment of sleeve gastrectomy (SG) leaks using fully covered stents

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Received: 27 December 2021 / Revised: 4 January 2022 / Accepted: 14 January 2022
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To the Editor,

We congratulate Billmann et al. [1] on their study entitled “Endoscopic Stent Placement Can Successfully Treat Gastric Leak Following Laparoscopic Sleeve Gastrectomy If and Only If an Esophagoduodenal Megastent Is Used.” Although the authors report a clinical success of 91% in 23 consecutive patients treated with a megastent (MS) when compared to 50% when a conventional esophageal stent (CES) was used, we would like to share our reservations with an emphasis on the title of the manuscript, which we believe it can be misleading to our readers, but also to the technical success of CES versus MS for the treatment of leaks in this setting.

The high efficacy of fully covered stents for post sleeve gastrectomy (SG) leaks and fistulas, regardless of the stent type/size, is related to its mechanism of action which includes sealing the leak, reducing intraluminal pressure, reshaping of the stomach, and finally, one of the most important factors is the treatment—sometimes achieved by the stent itself and/or endoscopic dilation—of a downstream stenosis [2, 3].

The reported success rate of 50% when the CES was used by Billmann et al¹ does not negate the fact that at least half of the included patients still successfully benefited from a CES in the management of post-SG leaks. In our opinion, this fact by itself would make the title (specifically the wording “If and Only If”) and conclusion proposed by the

authors potentially, although not intentionally, misleading to our readers.

The use of the fully covered CES, despite its high rates of migration, is described as an acceptable treatment for the management of post-SG leaks and fistulas, with an overall success rate of fistula closure of 72.8% as demonstrated in a meta-analysis including 24 studies, having 187 patients in the SG group [3]. Other recent systematic review and proportion meta-analysis published by Hamid et al. [4] comparing CES and customized bariatric stents (CBS), such as the MS for the treatment of post-SG leaks showed, unexpectedly, a very low level of evidence of superiority (in terms of clinical success and migration rates) of CES over CBS. Moreover, the larger length and larger flanges of MS/CBS have not been shown to decrease the migration risk [4, 5] and may be associated with a higher risk of adverse events (AEs), such as perforation and severe chest pain, with some authors recommending against placement in the post-pyloric position to decrease the risk of migration [5].

Therefore, based on our experience and on previously published high-quality data, the size of a fully covered stent for treatment of a post-SG leak should be individualized in every clinical setting (i.e., a small-caliber esophagus and no distal stenosis may be better served by a CES) with no particular “one-size-fits-all” approach. Additionally, it is very important to state that there are several endoscopic therapies for the treatment of post-SG leaks and fistulas (Figs. 1, 2, 3, and 4 summarize our experience in the management of post-SG leaks and fistulas), and an individualized approach is required since there is no data to support a precise algorithm for this condition [2]. Furthermore, usually more than one approach is required. Personal and local experience must be considered when choosing the most appropriate endoscopic therapy. We welcome the author’s view on this.

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Fig. 1 Endoscopic closure techniques for the treatment of a post-SG leak/fistula

CLOSURE TECHNIQUES			
Endoscopic Technique	Indications / Advantages	Not Indicated / Disadvantages	Our Experience
Tissue Sealants	<ul style="list-style-type: none"> ✓ Acute/early/late/chronic ✓ Low output (<200cc/24h) ✓ <10 mm defect diameter ✓ Safe 	<ul style="list-style-type: none"> × Multiple sessions required × High-cost × Need for external drainage × Variable efficacy 	<ul style="list-style-type: none"> - Low efficacy - Multiple sessions - High-cost - Late/chronic - Combined approach - Can be used in selected cases
Over-the-scope Clips (OTSC)	<ul style="list-style-type: none"> ✓ Acute/early/late/chronic ✓ <20 mm defect diameter ✓ Safe 	<ul style="list-style-type: none"> × >20 mm defect diameter × Need for external drainage × Variable efficacy 	<ul style="list-style-type: none"> - Low efficacy - Late/chronic - Can be used in selected cases
Endoscopic Suturing	<ul style="list-style-type: none"> ✓ Acute/early/late/chronic ✓ Safe 	<ul style="list-style-type: none"> × Need for external drainage × Challenging – need previous experience with the device × Low efficacy × High cost 	<ul style="list-style-type: none"> - High-cost - Very poor long-term clinical success - We do not recommend it
Through-the-scope clips (TTS) are not indicated for leaks and fistulas after bariatric surgery			

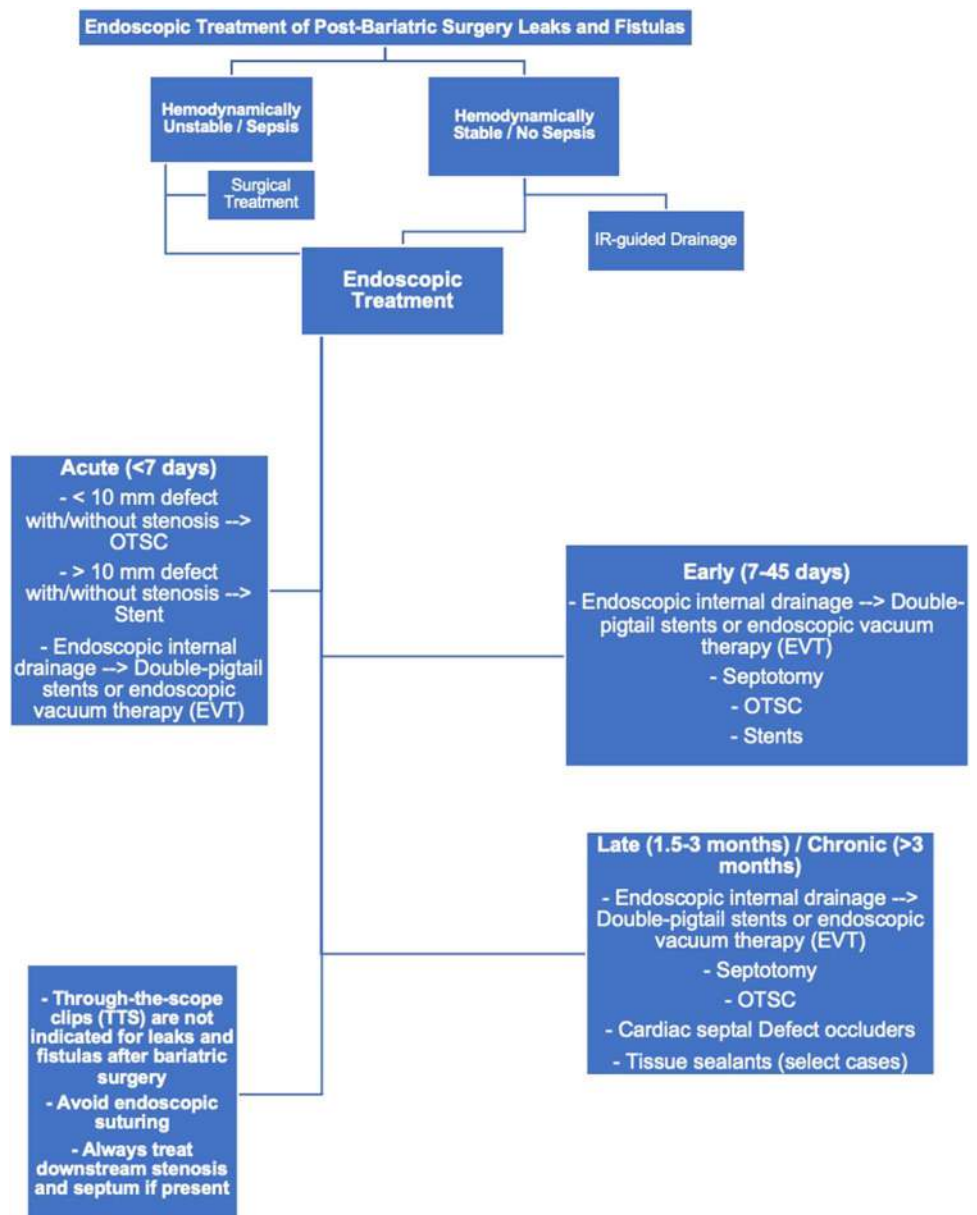
Fig. 2 Endoscopic covering techniques for the treatment of a post-SG leak/fistula

COVERING TECHNIQUES			
Endoscopic Technique	Indications / Advantages	Not Indicated / Disadvantages	Our Experience
Fully covered stents (conventional esophageal or bariatric stents)	<ul style="list-style-type: none"> ✓ Acute/early ✓ Widespread use ✓ >70% efficacy ✓ Conventional stent = bariatric stent ✓ Early PO intake ✓ Lower number of repeat sessions 	<ul style="list-style-type: none"> × High rates of migration (up to 30%) × Need for external drainage × Symptoms related to stent × Late/chronic × Defect can persist after removal of stent 	<ul style="list-style-type: none"> - High rates of migration - Partially covered > fully covered (challenging to remove – no more than 3 weeks) - High-cost - Bariatric stents: <ul style="list-style-type: none"> • Similar efficacy but more serious adverse events (AEs) • Pre-pyloric --> More symptoms • Post-pyloric --> More migration - We try to avoid stents, especially bariatric ones
Cardiac septal defect occluders	<ul style="list-style-type: none"> ✓ Late/chronic ✓ >95% efficacy ✓ Safe 	<ul style="list-style-type: none"> × Off-label use × Acute/early × High-cost × Need for external drainage 	<ul style="list-style-type: none"> - High efficacy in late/chronic fistulas with an epithelized tract without an associated collection - Safe - Good option after failure with other conventional techniques

Fig. 3 Endoscopic drainage techniques for the treatment of a post-SG leak/fistula

DRAINAGE TECHNIQUES			
Endoscopic Technique	Indications / Advantages	Not Indicated / Disadvantages	Our Experience
Septotomy	<ul style="list-style-type: none"> ✓ Consider when septum is identified ✓ Early/late/chronic ✓ 80-100% efficacy ✓ Safe 	<ul style="list-style-type: none"> × Can only be performed when a septum is identified 	<ul style="list-style-type: none"> - Very high clinical success rates - Septum is the most common cause of late/chronic leaks/fistulas in unexperienced centers
Endoscopic vacuum therapy (EVT)	<ul style="list-style-type: none"> ✓ Acute/early/late/chronic ✓ High (>90%) efficacy in leaks with/without an associated collection ✓ No need for external drainage ✓ Superior to stents in the upper GI tract 	<ul style="list-style-type: none"> × Patient discomfort related to NG tube × Repeat sessions needed (more when sponge is used) × Respiratory/cutaneous fistula × Longer hospital stay? × High-cost? 	<ul style="list-style-type: none"> - Very high clinical success rates - Modified EVT: easy placement, decreased procedure time/sessions, lower costs/AEs - Modified Trelumina EVT: Drainage and nutrition with only one NG tube
Double-pigtail plastic stents (DPPS)	<ul style="list-style-type: none"> ✓ Acute/early/late/chronic ✓ High (>85%) efficacy in leaks/fistulas with an associated collection ✓ Easy placement (7Fr – gastroscope) ✓ No need for external drainage ✓ Decreases length of hospital stay 	<ul style="list-style-type: none"> × Longer period for complete healing × Risk of migration and bleeding × Not viable in small collections × Usually, fluoroscopy is needed 	<ul style="list-style-type: none"> - Very high clinical success rates - Shorter length of hospital stay - Faster PO intake - Better tolerance by patients - Use of soft ureteral DPPS associated with less trauma to adjacent structures

Fig. 4 Proposed algorithm for the treatment of a post-SG leak/fistula based on our experience and literature data



DTHM: BariaTek, advisory board member (consulting fees).

Declarations

Ethics Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Informed consent does not apply.

Conflict of Interest SASL: Recipient of the 2021 American Society for Gastrointestinal Endoscopy (ASGE) Endoscopic Training Award by the ASGE and Fujifilm.
EGHM: Olympus, consultant (consulting fees); Boston Scientific, consultant (consulting fees).

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