

# Endoscopic internal drainage as a novel approach for the management of esophagogastric anastomotic leakage

Fabio Staderini, MD PhD<sup>1</sup>, Francesco Coratti, MD<sup>1</sup>, Giuseppe Barbato, MD<sup>2</sup>, Benedetta Badii MD<sup>2</sup>, Damiano Bisogni, MD<sup>2</sup>, Roberto Manetti, MD<sup>2</sup>, Luca Talamucci, MD<sup>2</sup>, Michele Rossi, MD<sup>2</sup>, Cristina Maggioni, MD<sup>1</sup>, Andrea Bottari MD<sup>1</sup>, Giuliano Perigli, MD<sup>1</sup>, Fabio Cianchi, MD<sup>1</sup>, Riccardo Naspetti MD<sup>2</sup>.

<sup>1</sup>Department of Clinical and Experimental Medicine, University of Florence, Florence, Italy; <sup>2</sup>Interventional Endoscopy, Department of Oncology and Robotic Surgery, Careggi University Hospital, Florence, Italy

**Background:** Esophagogastric anastomotic leakage (EGAL) after Ivor-Lewis esophagectomy can lead to increased rates of morbidity and mortality, a prolonged hospital stay and a rise in hospital costs. Surgical repair of the leak has resulted in a high mortality rate. The most common endoscopic approach after EGAL is the placement of a fully- or partially-covered self-expandable metal stent (SEMS) over the leakage. However, this procedure has some limits. Other techniques have been proposed for the management of EGAL, such as endoscopic clipping endoscopic vacuum therapy and endoscopic suturing of the defect. Nevertheless, the majority of EGALs are still managed with surgical drainage/repair, gastrointestinal decompression by a nasogastric tube, radiological drainage of mediastinal abscess or endoscopic stent. The endoscopic internal drainage procedure (EID) consists in the endoscopic positioning of a double pigtail drain straddling between the internal and the external lumen of the leakage orifice to internally drain the abscess content and to stimulate granulation tissue formation into the abscess cavity. While EID is a standardized technique for the treatment of leakages after bariatric surgery, its use in the management of EGAL has not been explored yet. Our aim is to report preliminary data on safety, feasibility and efficacy of EID in the treatment of EGAL after Robotic Ivor Lewis esophagectomy for cancer.

## Methods.

A total of 4 patients with EGAL were included in the therapeutic protocol and treated in our endoscopic unit by means of EID. Injection of diluted water-soluble contrast agent with a catheter of 5.5 Fr (Tandem®, Boston Scientific®, MA, USA) through the tip of the endoscope was firstly carried out to accurately evaluate the leakage orifice and the associated abscess cavity. Under fluoroscopic guidance, a guidewire (HydraJagwire®, Boston Scientific®, MA, USA) was passed through the orifice into the cavity (Fig1), in order to achieve the release of a 5 cm long, 10 Fr double pigtail plastic stent (Advanix®, Boston Scientific®, Boston, MA, USA). (Fig.2). Whenever feasible, more than one stent was placed across the fistula, in order to achieve an optimal drainage of the collection (Fig.3). A feeding jejunostomy, already placed in each patient as a standard surgical protocol for UGI surgery, allowed us to guarantee a correct enteral nutrition (Impact® Enteral, Nestlé Health Science, Lausanne). Endoscopic check was scheduled every 2 weeks for each patient

**Results.** All four patients had a successfully recovered after the endoscopic double pigtail placement. Complete healing of EGAL was achieved after 4 weeks and one pigtail substitution in the first patient and after 10 weeks and 4 pigtail substitutions in the second patient (Table 1). The third and the fourth patients underwent EID as the first therapeutic approach after the occurrence of EGAL. Complete healing was achieved after 6 weeks and two pigtail substitutions in the third patient and after 10 weeks and three pigtails substitutions in the fourth patient.

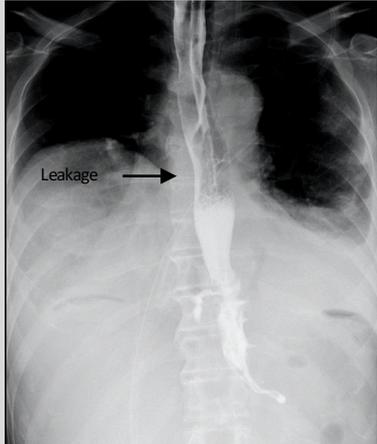


Fig. 1 Anastomotic leakage diagnosis

Table 1. (results)									
Patient no.	Sex	Age	Leak Localization	Previous endoscopic treatments	1 <sup>st</sup> check endoscopy	2 <sup>nd</sup> check endoscopy	3 <sup>rd</sup> check endoscopy	4 <sup>th</sup> check endoscopy	5 <sup>th</sup> check endoscopy
1	M	66	Intra thoracic	OTSC	3 Pigtails (30x12mm)	Healing			
2	M	67	Intra thoracic	OTSC	2 Pigtails (30x12mm)	2 Pigtails (20x12mm)	1 Pigtail (45x7mm)	2 Pigtails (30x3mm)	Healing
3	M	56	Intra thoracic	None	2 Pigtails (30x15mm)	1 Pigtail (25x5mm)	Healing (3x3mm)		
4	M	82	Intra thoracic	None	2 Pigtails (45x12mm)	2 Pigtails (30x9mm)	1 Pigtail (25x6mm)	1 Pigtail (15x3mm)	Healing

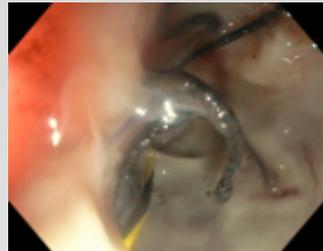


Fig. 2 Guidewire insertion

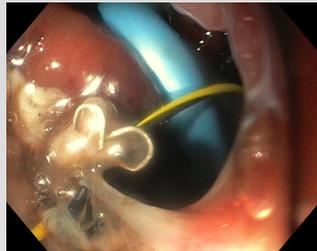


Fig. 3 Pigtail positioning

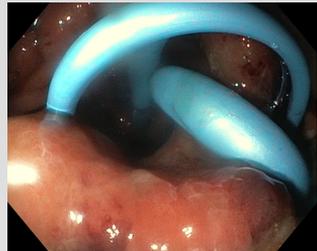


Fig. 4 Procedure complete

**Conclusions.** Even with the limitations of a small number of cases and the lack of sufficient statistical power we show that the use of EID for the management of intrathoracic EGAL may be safe, feasible and effective. A higher number of patients is necessary to confirm our results and definitively validate this technique.