

# Esophageal Tandem Stenting above the Lower Esophageal Sphincter



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Received 2 August 2012; Revision submitted 2 August 2012; Accepted 19 August 2012

## Abstract

Fully covered esophageal metal stents can be used for the conservative management of esophageal leaks, perforations, and fistulas. However, the risk of stent migration is high. The authors present a case of tandem esophageal stenting above the lower esophageal sphincter (LES) by taking advantage of the natural anchorage offered by the LES, with additional radial expansile force provided by the inner stent holding the outer stent in place. Besides tandem stenting, endoclip application is another option to reduce the risk of stent migration. The authors advocate the choice between tandem stenting versus endoclip application depending on the underlying pathology and endoscopist's preference. After distal migration, esophageal stents usually stay within the stomach due to their long length and large stent flanges. However, there are rare reports of small bowel obstruction, ileus, or perforation from migrated esophageal stents, usually above the ileocecal valve or within the duodenum. Our case also stresses the importance of timely stent removal and patient follow-up. This article is part of an expert video encyclopedia.

## Keywords

Complication; Duodenum; Endoscopy; Esophageal tandem stenting; Esophagus; Fistula; Lower esophageal sphincter; Small bowel; Standard endoscopy; Stent migration; Stenting; Video.

## Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70031-1

## Materials

- Endoscope: GF260V; Olympus, Tokyo, Japan.
- Fully covered stents: Evolution<sup>®</sup> stent; Cook Medical, Winston-Salem, NC, USA.
- Endoscopic grasping device: Raptor<sup>®</sup>; US Endoscopy, Mentor, OH, USA.
- Guidewire: Savary-Gilliard; Cook Medical, Winston-Salem, NC, USA.

## Background and Endoscopic Procedure

Fully covered esophageal metal stents can be used for conservative management of esophageal leaks, perforations, and fistulas. However, the stent migration risk is high. The authors present a case of tandem esophageal stenting above the lower esophageal sphincter (LES) by taking advantage of the natural anchorage offered by the LES, with additional radial expansile force provided by the inner stent holding the outer stent in place.

During endoscopy and under fluoroscopy, the fistulous opening is located and marked by a paper clip over the skin. A fully covered stent (Evolution<sup>®</sup> stent; Cook Medical, Winston-Salem, NC, USA) is placed above the LES to minimize

the risk of distal stent migration. The distal fully covered stent is placed first, and the second or overlapping stent is then placed inside the first stent to hold the first stent in place, minimizing the risk of distal migration of both stents. The distal end of the distal stent is placed above the LES, preventing distal migration of both stents. Two to three days after stenting, the patient undergoes a contrast esophagogram to rule out a leak. Liquid diet can be started if the contrast study shows no leak.

After distal migration, esophageal stents usually stay within the stomach due to their long length and large stent flanges. However, there are rare reports of small bowel obstruction, ileus, or perforation from migrated esophageal stents, usually above the ileocecal valve or within the duodenum. The authors present a case that stresses the importance of timely stent removal and patient follow-up. In this case, both stents were able to be easily removed simultaneously using an endoscopic grasping device (Raptor<sup>®</sup>, US Endoscopy, Mentor, OH, USA) to close (pull) the stent closure lasso of the outer stent.

## Key Learning Points/Tips and Tricks

- Fully covered esophageal metal stents can be used for conservative management of esophageal leaks, perforations, and fistulas. However, the risk of migration is high.
- Tandem esophageal stenting above the LES takes advantage of the natural anchorage offered by the LES, with additional radial expansile force provided by the inner stent holding the outer stent in place.
- After distal migration, esophageal stents usually stay within the stomach due to their long length and large stent flanges. However, there are rare reports of small bowel obstruction, ileus, or perforation from migrated esophageal stents, usually above the ileocecal valve or within the duodenum.

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## Complications and Risk Factors

Stent migration, stent-induced ulceration, and bleeding.

## Alternatives

Conservative management, tissue adhesive, tissue approximation devices, endoclip, and surgery.

## Scripted Voiceover

Time (min:sec)	Voiceover text
00:03	Fully covered esophageal metal stents can be used for the conservative management of esophageal leaks, perforations, and fistulas. However, the risk of stent migration is high.
00:19	Tandem esophageal stenting above the LES takes advantage of the natural anchorage offered by the LES, with additional radial expansile force provided by the inner stent holding the outer stent in place.
00:36	A 22-year-old woman with AIDS, substance abuse, and non-adherence to medical treatment, developed disseminated MAC infection.
00:49	Despite treatment for MAC, she could not tolerate an oral diet due to a bronchoesophageal fistula.
00:57	On contrast esophagram, the fistula communicates between the left main bronchus and the mid esophagus.
01:10	During upper endoscopy, the fistulous opening is seen in the mid-esophagus without associated stricture or other mucosal abnormality.
01:27	To assist esophageal stenting, under fluoroscopic guidance, 3 paper clips were placed on the chest wall to mark the locations of LES, fistula, and cervical esophagus.
01:42	A Savary wire guide is being deployed for stent deployment.
01:50	A 20 mm × 12 cm fully covered Evolution <sup>®</sup> stent is placed above the LES to minimize the risk of stent distal migration.
02:03	The stent is now successfully deployed.
02:10	Unfortunately, the stent migrated into the stomach 2 day after stent deployment.
02:17	We then performed tandem stenting above the LES.
02:24	Then chose two fully covered Evolution stents, 10 cm and 8 cm in length.
02:31	The distal stent was placed first and the second, or overlapping, stent was then placed inside the first stent

to hold the first stent in place, minimizing the risk of distal migration of both stents.

02:48	Two days later, the patient was started on an oral diet after a contrast esophagogram revealed no evidence of a leak or fistula. The patient was discharged home.
03:06	Due to patient's non-compliance, she was lost to follow-up until 12 months later.
03:12	She denied any weight loss, abdominal pain, nausea or vomiting.
03:19	During upper endoscopy, the esophageal fistula had completely healed with granulation tissues at the mid esophagus and a granulation polyp at the GE junction.
03:39	The overlapping stents had migrated into the descending duodenum and were seen to be impacted just distal to the duodenal sweep.
03:51	This is the pyloric channel.
03:55	Considering the Evolution stent has a strong closure lasso, we decided to remove the stent endoscopically.
04:09	The gastroscope is then advanced inside the stent.
04:19	Using an endoscopic grasping device, the closure lasso of the stent is first grasped, and then pulled, into the endoscopic channel.
04:34	The proximal flange of the stent collapsed and the conjoint stents were removed easily.
04:47	Both stents appeared to be intact on <i>ex vivo</i> examination.
04:55	Within the duodenum, there are some stent-induced ulcerations and granulation tissue formation.
05:05	This case illustrates the importance of timely stent removal and patient follow-up.
05:10	Thank you for your attention.

## Further Reading

- Henne, T. H.; Schaeff, B.; Paolucci, V. Small-Bowel Obstruction and Perforation. A Rare Complication of an Esophageal Stent. *Surg. Endosc.* **1997**, *11*, 383–384.
- Kim, H. C.; Han, J. K.; Kim, T. K.; *et al.* Duodenal Perforation as a Delayed Complication of Placement of an Esophageal Stent. *J. Vasc. Interv. Radiol.* **2000**, *11*, 902–904.
- Macdonald, A. J.; Drummond, R. J.; Wright, D. M. Migration of a metal esophageal stent presenting as obstruction at the ileocecal valve 2 years post insertion. *Endoscopy* **2007**, *39*(Suppl 1), E190.
- Tang, S. J.; Singh, S.; Wait, M. A.; Mullican, M. A.; Scott, D. J. Endotherapy for a 5-cm Mid-Esophageal Perforation with Tandem Stenting above the Lower Esophageal Sphincter (With Videos). *Surg. Endosc.* **2009**, *23*, 2836–2841.
- Vanbiervliet, G.; Filippi, J.; Karimjee, B. S.; *et al.* The Role of Clips in Preventing Migration of Fully Covered Metallic Esophageal Stents: A Pilot Comparative Study. *Surg. Endosc.* **2012**, *26*, 53–59.
- Zhang, W.; Meng, W. J.; Zhou, Z. G. Multiple Perforations of the Jejunum caused by a Migrated Esophageal Stent. *Endoscopy* **2011**, *43*(Suppl 2 UCTN), E145–E146.