Endoscopic Adjuncts: Unconventional Combinations For Management Of Upper Gastrointestinal Perforation

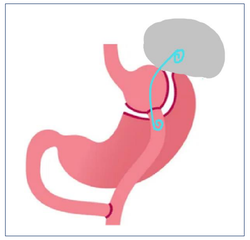
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Introduction

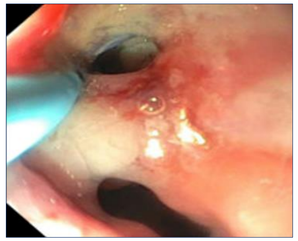
- Upper gastrointestinal leaks and perforations are challenging, especially in immediate post-operative patients.
- Minimally invasive approaches, usually a combination of radiological and endoscopic interventions are preferred, if the patient is hemodynamically stable.
- A combination of different endoscopic adjuncts can particularly be very useful, even if unconventional, to achieve the best possible outcome in a patient.
- Here, we describe the combined use of biliary double pigtail catheter, endoscopic vacuum therapy and covered stent to manage a complicated case of gastric pouch perforation post paraesophageal hernia repair.

Case Report

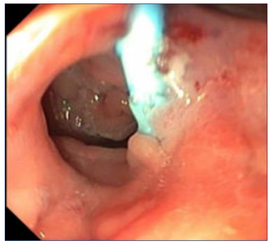
- 69 y/o female patient with history of Roux-en-Y gastric bypass, presented with a large paraesophageal hernia with the gastric pouch, entire alimentary limb , jejunojejunostomy and transverse colon in her chest.
- She underwent robotic PEH repair with mesh requiring extensive lysis of adhesions and mediastinal dissection.
- She was discharged but returned to ER on postoperative day 8 with shortness of breath and nausea.
- CT scan suggestive of a large mediastinal and abdominal fluid collection.
- Upper GI study confirmed a gastric leak .
- A differential of possible chyle leak was also ruled out with a lymphoscintigram.
- As the patient was hemodynamically stable, conservative approach was taken, starting with CT guided percutaneous drain placement.
- An endoscopy showed a small perforation of the cardia immediately proximal to the gastrojejunal (GJ) anastomosis.
- A biliary 7 Fr x 7 cm double pigtail catheter was deployed during EGD with one pigtail through the perforation and other through the alimentary limb for drainage, along with a nasojejunal tube for nutrition.
- Four weeks later, the pigtail catheter was replaced with an endoluminal vac. Subsequent EGD showed decrease in the size of perforation and the vac was again replaced.
- After 10 days since the first vac placement, it was exchanged for a covered stent extending from distal esophagus to proximal jejunum, to completely exclude the gastric pouch.
- A repeat evaluation four weeks post stent placement showed complete healing and the stent was removed.
- An upper GI contrast study also did not demonstrate any leak.
- Patient has been doing well since, tolerating oral diet and all drains removed.



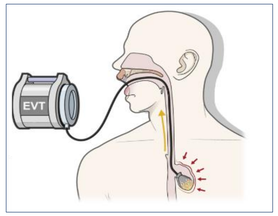
A: Pictorial representation of double pigtail between cavity and alimentary limb



B: Endoscopic view of double pigtail in gastric pouch perforation. Gastrojejunostomy is seen at the bottom of the image.

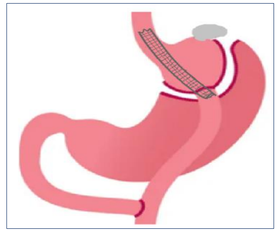


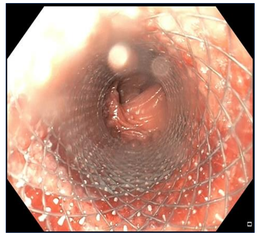
C: Internal portion of pigtail positioned through gastrojejunostomy and down the alimentary limb





D & E: Pictorial and Endoscopic view of Endoluminal Vacuum therapy at the perforation site





F & G: Pictorial and endoscopic view of stent between distal esophagus and proximal jejunum

Conclusion and Discussion

- A complicated case of gastric pouch perforation post hiatal hernia repair, highlights the importance of systematic and judicious use of following endoscopic adjuncts for management of upper GI leaks:

1. Double pigtail catheters: These multipurpose catheters with an extra coil in the middle of the shaft are very easy to place endoscopically, allow efficient internal drainage of collection, with low rate of complications and good tolerance by patients.

2. Endoluminal Vac: EVacs are being used for esophageal perforations, staple line leaks after laparoscopic sleeve gastrectomies and even complicated duodenal perforations to avoid surgery, assist early closure and safe healing. They consistently control leakage with suction as well as allow tissue debridement and granulation formation. This principle has been used for open wounds for quite some time and now can be translated safely and with minimal invasive approach to upper GI leaks with excellent success rates.

3. Covered stents: Fully covered stent to completely exclude the perforated gastric pouch acted as a barrier and allowed for healing of the perforation once the contamination was controlled and fistula site was clean with no purulence. Risk of migration can be reduced by placing a couple interrupted sutures in distal esophagus to secure it in place.

- EVac cannot be left in place for a long duration, ideally should be changed every 3-5 days. This requires frequent endoscopies and hence anesthesia to the patient.
- Chronic discomfort and pain due to long term NG with EVac is a serious concern for most patients.
- No guidelines for exact duration of stent is available, however 6 weeks or less for smaller leaks is usually sufficient.

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