



Endoscopic Closure of Large Iatrogenic Duodenal Perforation: Right Use of Endoscopic Accessories

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Abstract

Perforations during endoscopic retrograde cholangiopancreatography (ERCP) is a rare but dreadful complication. Type I Stapfer's perforations tend to be large and can get easily complicated by peritonitis and collections if not recognized and managed in a timely manner. With advancement in endoscopic accessories, endoscopic closure is usually attempted first, and surgical interventions are reserved only in patients with a failed endoscopic attempt. Though over the scope clips (OTSC) are used in patients with defect up to 20 to 25 mm in gastric or duodenal perforation and up to 30 mm in colonic perforations, larger defects can be also closed with the right use of adjuvant accessories. Here, we report our experience of successful closure of a large duodenal perforation during ERCP, using a single OTSC clip with help of accessories.

Keywords

- conservative
- endoscopy
- OVESCO

Case Discussion

An 80-year-old hypertensive woman, presented with biliary pain of 1-month duration. Patient had elevated alkaline phosphatase with normal bilirubin, and ultrasound abdomen showed cholelithiasis with dilated common bile duct and multiple stones with acoustic shadowing within the bile duct. The patient was planned for elective endoscopic retrograde cholangiopancreatography (ERCP); however, endoscopy perforation of the duodenum occurred at D1-D2 junction during the side viewing, which was immediately recognized and further procedure was stopped with plan for endoscopic closure of the defect.

Double-channel therapeutic scope (GIF-2TH 180, Olympus, Japan) with mounted OTSC clip (size 12/6t, OVESCO Endoscopy AG, Tuebingen, Germany) was inserted under CO₂ insufflation. The perforation site was identified at D1-D2 junction, which was approximately 2.5 cm to 2.8 cm in size

(as scope with the mounted OVESCO clip could be easily negotiated across the perforation site). Initially, an attempt was made to close the defect using suction; however, due to the large size of the perforation, lateral margins were not coming within the OVESCO cap. During the procedure, we used different accessories to approximate the edges of the defect. Initially, the edges were tried to approximate with OTSC twin grasper (OVESCO Endoscopy AG, Tuebingen, Germany) but due to friable margins, multiple attempts to approximate the lateral edges was failed. After that, we used the FTRD grasper (OVESCO Endoscopy AG) from one channel along with twin grasper from another channel. However, due to wide and friable margins, we could not approximate both the edges. Finally, we used two OTSC Anchor (OVESCO Endoscopy AG) and applied over the healthy mucosa of two opposite ends of the defect and pulled back both the anchors, which brought both margins of the defect within the

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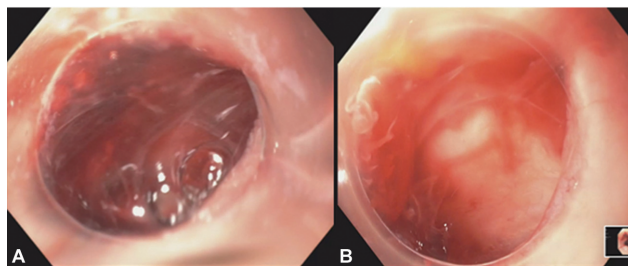


Fig. 1 (A) Large duodenal perforation at THE D1-D2 junction (approximately size: 2.5–2.8 cm). (B) Double-channel therapeutic scope (GIF-2TH 180, Olympus, Japan) with a mounted OVESCO cap could be easily negotiated across the perforation site.

cap. Once we had secured final position, we applied the OVESCO clip. Immediately, post-procedure, the entire defect was completely closed. The patient was kept on nil per oral and started on intravenous antibiotics along with other supportive treatment. She underwent CT abdomen with oral contrast, which was suggestive of no contrast leak with clip in situ. The patient was started on an oral diet after 24 hours and discharged after 72 hours of hospitalization. The patient underwent ERCP after 2 weeks of the perforation, and complete biliary clearance was achieved (►Video 1).

Video 1

Online content including video sequences viewable at: <https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0042-1746424>.

Discussion

With advancement of OTSC clips, the majority of iatrogenic perforations can be managed endoscopically with high

technical and clinical success rates. The efficacy of OTSC is attributable to the ability of the clip to provide full-thickness closure of the perforation. Moreover, it has higher compression force and captures a larger tissue volume. Surgery is usually being preserved for cases with frank peritonitis, hemodynamic instability, patients in whom an initial diagnosis of perforation was missed. Though OTSC clips are associated with high technical and clinical success rates, the presence of large perforation (>20–25 mm) poses a unique clinical challenge.¹ In such scenario, endoscopist can use various techniques for endoscopic closure of such defects. Large (14/6) OVESCO clips mounted on colonoscope can be used for such large defects; however, negotiating it across the upper esophageal sphincter or duodenal sweep could be difficult.² Loop and clip method have also been attempted, but difficult position in the D1-D2 junction and not been able to provide full-thickness closure poses a major limitation.³ In such a scenario, adjuvant accessories such as twin grasper or tissue anchor are of great help as these accessories can grasp both the edges of the defect. Availability and right knowledge of its use are very necessary for better outcomes. To conclude, endoscopic closure of a large duodenal defect is feasible with the right use of accessories.

Authors' contributions

NK: video editing, data acquisition, and final approval of the manuscript.

DS: drafting the manuscript and final approval of the manuscript.

RK, KCK, VJ, RK: critical revision of the manuscript, video editing, and final approval of the manuscript.

JS: conceptualization of the study, critical revision of the manuscript, video editing, and final approval of the manuscript.

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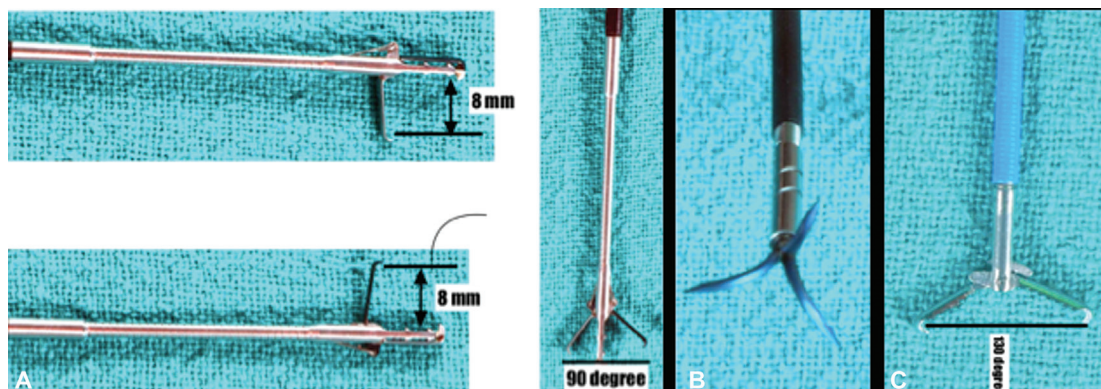


Fig. 2 (A) OTSC twin grasper has two jaws that can be opened separately at 90 degrees separately. It helps in grasping both the edges of the lesion and bringing them in the OVESCO cap. (B) The OTSC anchor allows precise alignment between the target tissue and the applicator cap. It allows better approximation of the tissue, especially when indurated. It has a diameter of 12 mm and the needle penetrate up to 4 mm. (C) The FTRD grasper is specifically design for grasping the submucosal lesion for full-thickness resection.

Conflict of Interest

None declared.

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