Endoscopic fenestration with EUS guidance for esophageal duplication cyst

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A 74-year-old man with no significant medical history presented with nausea and intermittent vomiting. Physical examination and laboratory testing were unremarkable. Contrast CT revealed a cyst measuring 80 × 60 × 57 mm compressing the lower esophagus (Fig. 1 A and B). Magnetic resonance imaging confirmed a cyst originating from the esophageal wall containing fluid and debris but no masses (Fig. 1C).

An upper GI series revealed narrowing and delayed emptying of the esophagus (Fig. 1D). EGD revealed compression of the lower esophagus owing to a soft cyst (Fig. 2A). EUS confirmed a smooth cystic wall containing a fourth (muscle) layer, suggesting the diagnosis of esophageal duplication cyst (Fig. 2B and C). Because the patient refused surgery, our multidisciplinary GI board and ethics committee approved treatment by endoscopic fenestration (approval number 20-013). The patient gave informed consent after a thorough explanation of the risks involved and treatment options available.

Presence of the cyst was first confirmed with an endosonoscope (GF-UCT260, Olympus Medical Systems Corp, Tokyo, Japan). A 19-gauge needle (EZ Shot 3 Plus, Olympus) was used to introduce a 0.025-inch guidewire (Visiglide2 angled guidewire, Olympus) into the cyst.

Figure 1. A, A large cyst compressing the lower esophagus and left atrium was observed on contrast CT. B, Sagittal view shows severe compression of the esophagus. C, T2-weighted magnetic resonance imaging revealed no solid masses inside the cyst. D, Narrowing and delayed emptying of the lower esophagus was observed on upper GI series.
from the proximal side (Fig. 3A). After switching to a forward-viewing endoscope (GIF-H290T, Olympus) and confirming the entry point of the guidewire, the planned dissection line was marked using an electrocautery knife designed for endoscopic submucosal dissection (Dual-Knife J, Olympus). The same knife was used to make an incision from the anal side, exposing the circular muscle layer (Fig. 3B and C). The 19-gauge needle was used to puncture the cyst with a 19-gauge needle. Fluoroscopy showing a large cyst after a guidewire was introduced from the proximal side. Consistent with preprocedural endosonography, the incision with an electrocautery knife confirmed the circular muscle layer was confirmed after incision with an electrocautery knife. Incision of the muscle layer revealed a large cyst filled with brown fluid and debris. The head of the endoscope was inserted into the cyst. A clear air cystogram delineated the borders of the cyst. The guidewire’s placement within the cyst was confirmed after suction of its contents.
again to confirm that the incision was placed directly above the cyst.

Brown fluid was aspirated. The incision line was repeatedly traced for a progressively deeper cut. When the muscle layer was cut, reddish brown fluid was drained from the cyst. The end of the incision line was confirmed by fluoroscopy. When the incision was large enough, the endoscope was inserted into the cyst (Fig. 4A and B). The contents of the cyst were suctioned completely, and the guidewire was visualized inside the cyst (Fig. 4C). Endoclips were applied to prevent spontaneous closure of the cyst and perforation (Fig. 5A).

After the guidewire was removed, the cyst and incision site were examined to confirm hemostasis. Fluoroscopy confirmed resolution of both the stricture and delayed emptying of the esophagus, as well as the absence of leakage to the mediastinum (Fig. 5B) (Video 1, available online at www.VideoGI.org).

Biopsy specimens of the cystic wall revealed stratified squamous epithelium, providing pathologic support for the diagnosis of esophageal duplication cyst (Fig. 6). Symptoms resolved immediately after the procedure, and the postprocedural course was uneventful except for a mild, transient fever. Second-look EGD confirmed the absence of bleeding and perforation (Fig. 7A and B). Prophylactic antibiotics and proton pump inhibitors were continued until the patient was discharged 6 days after the procedure. One month later, a small, 4-mm window to an empty cyst was confirmed on follow-up EGD. The patient has remained asymptomatic during 3 months of follow-up.

Figure 5. A, Endoclips were applied to prevent spontaneous closure of the cyst and perforation. B, Fluoroscopy confirmed resolution of both the stricture and delayed emptying of the esophagus, as well as the absence of leakage to the mediastinum.

Figure 6. Biopsy samples of the cystic wall revealed stratified squamous epithelium.
the standard treatment, successful cases of endoscopic fenestration and resection have been reported. A long incision coupled with the use of endoclips is desirable to prevent spontaneous closure of the cystic wall because recurrence has been reported after puncture and partial fenestration.

DISCLOSURE

All authors disclosed no financial relationships.

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