Case Report

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Surgical Intervention for Laimer's Diverticulum, a Rare Type of Pharyngoesophageal Diverticulum: A Case Report

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Keywords

Laimer's diverticulum, cricopharyngeal myotomy, differential diagnosis of pharyngoesophageal diverticulum

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Pharyngoesophageal diverticula, classified as Zenker's, Killian-Jamieson's, or Laimer's diverticulum depending on the respective site of origin, are very rare. Zenker's diverticula are the most common type of pharyngoesophageal diverticulum, accounting for 0.01% to 0.11% of all gastrointestinal diverticula.[1] This diverticulum arises from Killian's triangle, the space between the thyropharyngeus and cricopharyngeal muscles. Laimer's diverticulum, arising from Laimer-Haeckerman's triangle to the dorsal side, located below the cricopharyngeal muscle, is even more rare, with only 3 cases reported in the English literature. Because surgeries for Laimer's and Zenker's diverticula are different, preoperative differential diagnosis is important. We experienced a very rare case of Laimer's diverticulum, diagnosed intraoperatively. In this case, diagnosis enabled effective treatment, so we present this case and discuss various considerations surrounding differential diagnosis. This case study was approved by the ethics committee of Tohoku University Hospital, Miyagi, Japan.

Case Presentation

A 55-year-old man presented with a 36-month history of progressive dysphagia. He also produced a frog-like sound while swallowing. Upper gastrointestinal endoscopy revealed a diverticulum within the posterior wall of the cervical esophagus, 2 cm from the esophageal orifice. Computed tomography revealed a 4-cm large, smooth, and round mass behind the cervical esophagus. The diverticulum started from the dorsal side of the cervical esophagus and extended toward the posterior mediastinum on esophagography (**Figure 1A, B**).

Preoperatively, we diagnosed the patient with Zenker's diverticulum because Zenker's diverticula are the most common pharyngoesophageal diverticula that arise from this site. We performed a transcervical diverticulectomy, approaching from the anterior border of the sternocleidomastoid muscle. The diverticulum was located at the dorsal side of the cervical esophagus, and the root of diverticulum was detected at the caudal side of the cricopharyngeal muscle (**Figure 2**). The diverticulum was not adhered to surrounding tissues, including the recurrent laryngeal nerve (RLN). We resected the diverticulum using an autosuture device. Cricopharyngeal myotomy, routinely used to treat Zenker's diverticulum, was not added.

The resected diverticulum was 40 × 35 × 20 mm. Postoperative esophagography revealed no leakage, stenosis, or other complications such as RLN paralysis. Food intake commenced on postoperative day 2, and the patient was discharged on postoperative day 6. One month postsurgery, he showed symptom improvement without diverticula recurrence, as determined by upper gastrointestinal endoscopy and esophagography.

Discussion

Laimer's diverticulum is a very rare type of pharyngoesophageal diverticula. In our case, the diverticulum was detected on the dorsal side of the cervical esophagus. We initially diagnosed the patient with Zenker's diverticulum, considering the examination results and prevalence of the supposed diagnosis. Intraoperatively, we noted the diverticulum occurred below the cricopharyngeal muscle; consequently, we diagnosed the present case with Laimer's diverticulum.

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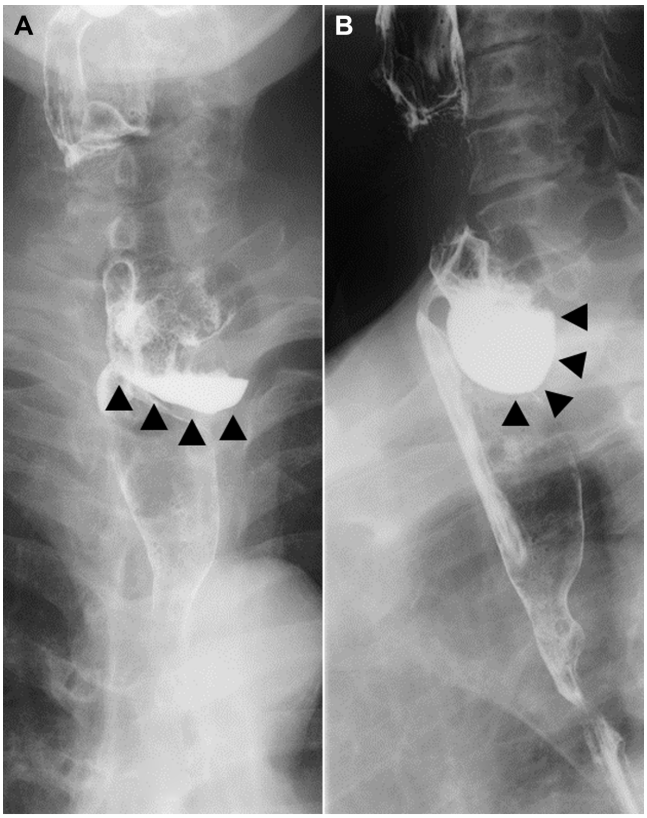

Figure 1. Esophagography. The diverticulum located on the dorsal side of the cervical esophagus: (**A**) frontal view and (**B**) left lateral view. Arrowheads show the diverticulum.

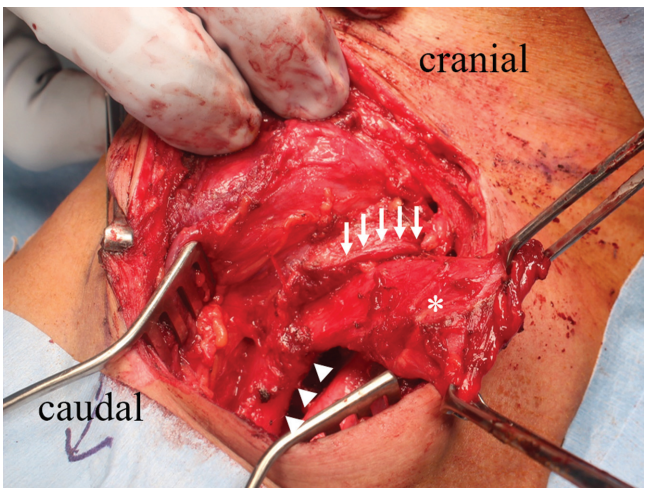

Figure 2. Intraoperative findings. The diverticulum occurred below the cricopharyngeal muscle. Arrows show the cricopharyngeal muscle and arrowheads show the esophagus. The asterisk denotes the diverticulum.

In Zenker's diverticulum, the RLN typically appears outside of its normal course because the diverticulum arises beside the RLN and pushes it toward the lateral side.[2] RLN paralysis has been noted in 12.9% of cases, which makes sense given the nature of Zenker's diverticulum.[3] In contrast, Laimer's diverticulum arises from the dorsal side of the cervical esophagus, away from the RLN. Given these observations, Laimer's diverticulum is less frequently associated with RLN paralysis, compared to Zenker's diverticulum. In our case, the RLN was completely intact and RLN paralysis was not observed.

Cricopharyngeal myotomy, in addition to diverticulectomy, is recommended in cases of Zenker's diverticulum. Zenker's diverticulum occurs due to increased intraluminal pressure in the oropharynx during swallowing, against inadequate relaxation of the cricopharyngeal muscle.[4] Only diverticulectomy can improve symptoms; thus, cricopharyngeal myotomy typically improves dysphagia symptoms. In patients with Laimer's diverticulum, the diverticulum occurs below the cricopharyngeal muscle; therefore, cricopharyngeal myotomy is not necessary.[5] In our case, cricopharyngeal myotomy was not performed, and dysphagia symptoms did not return. Therefore, differential diagnosis is important to avoid extra and unnecessary surgical interventions.

We experienced a rare type of pharyngoesophageal diverticula: Laimer's diverticulum. When treating pharyngoesophageal diverticula, surgeons should be aware of this rare type of diverticulum because the course of the RLN and the necessity of cricopharyngeal myotomy differ from Zenker's diverticulum. To make an accurate diagnosis, clinical and surgical findings are important, such as location of diverticulum or the relationship between the diverticula and nearby pharyngeal muscles.

Author Contributions

Naoto Ujiie, collected data, wrote article, treatment of the patient; **Yusuke Taniyama**, treatment of the patient, revised article; **Chiaki Sato**, treatment of the patient, revised article; **Takashi Kamei**, treatment of the patient, revised article.

Disclosures

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