

Zenker's Diverticulum and Other Esophageal Diverticula — Definition and Symptoms

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Diverticula can be found in various organs, particularly the colon but also the duodenum, ileum, and esophagus. Every medical student should know the differences between true diverticula and false/pseudo-diverticula.



Definition and Pathogenesis of Diverticula

True and false diverticula

Diverticula are wall protrusions in hollow organs. A distinction must be made between 'true' and 'false' diverticula. Medical students should learn the definitions and differences, as they usually appear on medical student exams, particularly Zenker's diverticulum.

True diverticula

In the case of a true diverticulum, all wall layers are affected, even the muscularis. The **protrusion** often occurs due to tension from outside, such as scarring or inflammatory changes (with **tuberculosis** or **lymphadenitis**, for example).

False diverticula

In the case of a false diverticulum (or pseudo-diverticulum), only the **mucosa** and **submucosa** evert to the outside through a weak spot in the muscle layer. The reason for this is increased **intraluminal pressure**.

With respect to the esophagus, diverticula can be classified on the basis of location, as well as whether they are true or false.

Traction diverticula

Traction diverticula are true diverticula and are usually found on the level of the **tracheal bifurcation**. They also are referred to as **bifurcation diverticula** or **parabronchial diverticula**.

Pulsion diverticula

Pulsion diverticula are false diverticula. Predilection sites include the following points of the esophagus that have weak muscle:

- **Laimer triangle** (longitudinal muscle-free zone on the **upper esophagus**)
- **Killian triangle** (muscle-weak area between the **pars obliqua** and the **pars fundiformis** of the **cricopharyngeal muscle** of the **dorsal hypopharynx**).

This is really a diverticulum of the hypopharynx, although it is usually dealt within the context of the **esophagus**. Diverticula in the area of the **Killian triangle** are also known as **Zenker's diverticula**.

- **Above the diaphragm:** called an **epiphrenic diverticulum**

Epidemiology of Zenker's Diverticulum

Zenker's diverticulum is the most common type. It represents 70% of all cases of diverticula, followed by **traction diverticula** (20%) and **epiphrenic diverticula** (10%). Zenker's diverticulum affects mostly older men.

Symptoms of Esophageal Diverticula

Dysphagia and regurgitation

Large diverticula are accompanied by symptoms. Patients complain of dysphagia, retrosternal pain, feelings of pressure, and nightly regurgitation of undigested food residue. The latter is associated with risks of aspiration and pneumonia. The deposition of food residue in the bulges may lead to **halitosis**. Some patients describe a 'gurgling' sound when they drink.

Diverticula rarely become inflamed, bleed, perforate, or form **fistulas**.



Image: Barium esophagram revealing traction esophageal diverticulum with communication into the right upper lobe segmental bronchi. By Openi, License: [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/)

Note: Small diverticula, especially epiphrenic and parabronchial diverticula, often remain asymptomatic and are found incidentally (e.g., during X-rays).

Diagnosis of Esophageal Diverticula



[Image](#): Normal barium swallow fluoroscopic image, showing the ingested barium sulfate being induced down the oesophagus by peristalsis. By Bernd Brägelmann, License: [CC BY 3.0](#)

Esophageal bolus swallow test is the method of choice

The diagnostic method of choice is an **esophageal bolus swallow test**. X-ray images often clearly show the accumulation of contrast agents in protuberances, allowing precise differentiation of diverticula according to their location. **Traction diverticula** usually feature 'ear-like' outgrowths, whereas pulsion diverticula are mainly sack-shaped.

Due to the possible presence of a perforation, it is recommended that healthcare professionals use a water-soluble contrast medium, as barium poses the risk of **mediastinitis** or **peritonitis** upon exit from the esophagus.

Endoscopy

In order to exclude other possible causes of symptoms, endoscopy should be performed as well. However, care must be taken because the **mucous membranes** near diverticula are particularly prone to perforation.

Differential Diagnoses

In terms of differential diagnoses, healthcare practitioners should consider **esophageal carcinoma**.

Therapy of Zenker's Diverticulum

Surgical measures for Zenker's diverticula

Diverticula can be treated surgically. Surgery is usually indicated only for **Zenker's diverticula**—rarely for larger and symptomatic **epiphrenic diverticula**.

Note: Traction diverticula and epiphrenic diverticula usually require no treatment. With Zenker's diverticula, however, there is always a surgical indication. The operation can be performed endoscopically or openly. The diverticulum is resected, and **myotomy** of the **cricopharyngeal muscle** is performed to avoid recurrence. Mortality rates are very low, and the success rate is high (95%). Postoperative complications may include recurrent **paresis, mediastinitis, neck abscess, or salivary fistula**.

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