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SURGICAL IMAGES

Esophageal obstruction due to a right-sided Zenker diverticulum



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Summary A Zenker's or pharyngoesophageal diverticulum may represent a rare cause of upper digestive obstruction, or more often, cervical dysphagia, regurgitations and cough. It develops most often on the posterior left side of cervical oesophagus in elderly patients, and depending on the severity of clinical symptoms may warrant surgical or endoscopic treatment. For large lesions with a difficult endoscopic access to the diverticular neck, surgery is recommended. In our case, we illustrate a giant right-sided Zenker's diverticulum responsible for complete aphagia in a 78-year-old male patient. Open surgery by right cervical approach, with diverticulopexy and cricopharyngeal myotomy was performed, with an uneventful recovery. This paper presents with preoperative and intraoperative illustrations of high educational value for this, often underdiagnosed, clinical entity.

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Clinical case

A 78-year-old man with a WHO performance status of 2 under chronic steroid therapy, presented with complete aphagia (Atkinson grade IV) [1] after several months of progressive dysphagia and ingested food regurgitations. A barium swallow (Fig. 1) and a thoraco-abdominal CT scan (Fig. 2) were performed, and showed proximal esophageal obstruction by

external compression due to a right-sided Zenker's diverticulum, with an estimated diameter of 8 cm.

Flexible endoscopy was first performed, in order to exclude an intra-luminal malignant lesion but also to assess the feasibility of an endoscopic treatment. This procedure was performed under light propofol sedation, after aspirating diverticular contents with an 18Fr nasogastric tube. However, the patient's stiff cervical column and limited mouth opening together with the small diverticular neck and the external compression by the diverticular pouch offered a very poor exposure for both a rigid and a flexible transoral approach. A feeding gastrostomy tube was also inserted to optimize the patient's nutritional status.

Open surgery was thus, decided, and diverticulopexy (suspension of the dissected diverticulum to the hypopharyngeal wall) together with a cricopharyngeal myotomy of

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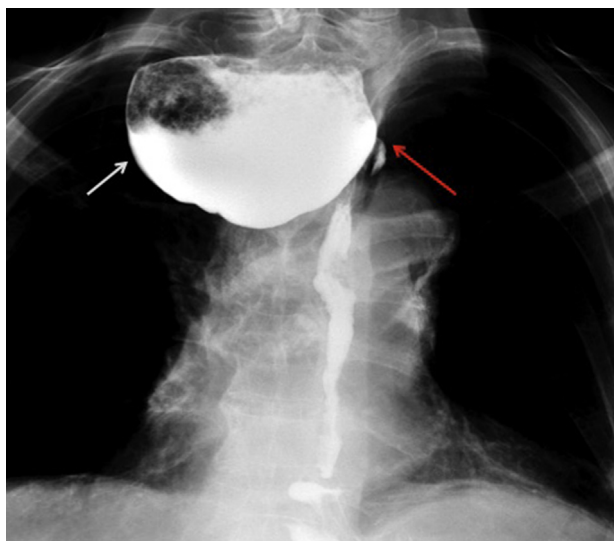


Figure 1. Barium swallow showing a giant right-sided Zenker's diverticulum (grey arrow) adjacent to the compressed esophagus (red arrow).

3 cm were performed through a right cervical approach (Fig. 3A, BA, B). Diverticulopexy was preferred to diverticulectomy to decrease the risk of mucosal breach and postoperative leakage, in the context of chronic corticosteroid therapy. Postoperative course was uneventful. The patient was seen at the outpatient clinic follow-up, 4 weeks later. He increased his performance status and had no residual dysphagia or regurgitation symptoms, allowing removal of the gastrostomy tube. Of note, no documented episodes of aspiration pneumonia were recorded in the preoperative or postoperative period.

Discussion

A pharyngoesophageal or Zenker's diverticulum (ZD) is a pulsion diverticulum that develops through the Killian's triangle, above the cricopharyngeal muscle. It is mostly seen in the left posterior wall of the esophagus; a correlation has been suggested between the position of ZD and the patients' handedness (right-handed patients would develop more left-sided lesions), however a clear pathophysiological explanation for left predominance is lacking [2]. It mostly affects patients over 70-years-old; clinical

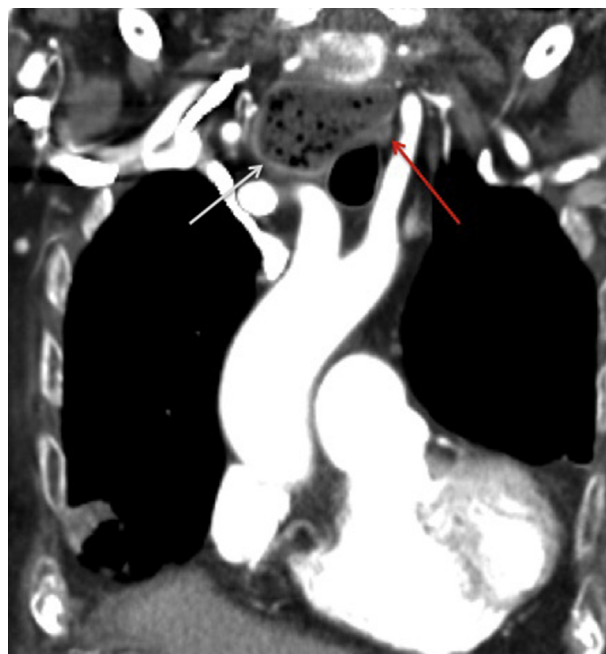


Figure 2. Coronal cervico-thoracic CT scan showing the Zenker's diverticulum (grey arrow) adjacent to the compressed esophagus (red arrow).

manifestations include dysphagia (80–90%), regurgitations, halitosis, chronic aspirations and cough. Initial workup should include barium swallow and an upper digestive endoscopy to exclude intra-diverticular malignancy, estimated in 0.4–1.5% of patients, and to search for other synchronous esophageal disorders (e.g. epiphrenic diverticula, hiatal hernia, achalasia) [3].

In case of a symptomatic ZD, treatment is indicated by either an open trans-cervical or endoscopic transoral approach. Currently, endoscopic approach by rigid endoscopy and stapled myotomy is often considered as the first-line treatment as long as adequate exposure of the diverticular septum is obtained [4]. Flexible endoscopy with cricopharyngeal myotomy by laser or electrocautery needle knife is another valid option with low morbidity and high success rates, especially useful in cyphotoc patients for whom rigid endoscopy cannot be performed [4,5]. Among the open approaches diverticulopexy consists of complete dissection of the ZD and suspension on the hypopharyngeal wall, whereas in diverticulectomy resection is performed on

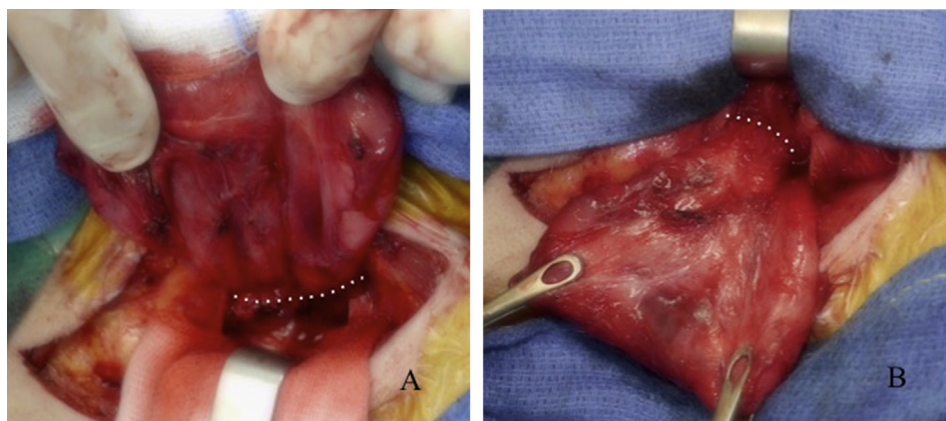


Figure 3. Through an open right cervical approach, complete dissection of the diverticulum, rear (A) and front (B) side. It will then be suspended on the hypopharyngeal wall. The diverticular neck is shown with the dotted line.

its origin usually by means of a stapler [4,6,7]. Inversion of the pouch into the esophageal lumen, although infrequently used, has also been described in the literature [4,7,8]. The open approach has reported better results and less failure rates for too large (>5 cm) [3,9], or too small (<3 cm) [5,10,11] diverticula, or whenever endoscopic exposure cannot be obtained due to the patient's rigid cervical column, limited mouth opening, retrognathia or other anatomical reasons. However to this day, no formal consensus exists on the indications of each approach, which remain subject to surgeon's preference and the experience of the center. In our experience, diverticulopexy yields satisfactory short- and long-term results and is particularly preferred for patients at high risk of postoperative leakage, as our current case.

Although current evidence on ZD care rests mostly upon small-scale retrospective studies, three recent systematic reviews compared the efficacy and outcomes of the different treatment options [4,7,8]. Overall, morbidity seems to be higher for the open approach, estimated to 10–15% versus 2.6–9.8% for endoscopy [4,7,8,10]. In terms of specific complications, open surgery compared to endoscopy is more often associated with postoperative fistulae (3–4% vs 1.2% for endoscopy), local hemorrhagic complications (1–2% vs 0.6%) and vocal cord paralysis (3.4% vs 0.3%) [4,8]. Endoscopic techniques have been associated with a shorter operative time and hospital stay, but also with a significantly higher risk of intraoperative failure and short-term recurrence (8–18% vs 4–6% with the open approach) [4,7,10]. Among the open transcervical approaches few robust data exist in favor of one technique over the other, however diverticulopexy might be associated with a lesser risk of postoperative leakage, a dreaded complication especially in elderly and frail patients [4,6,8,12]. Verdonck et al support diverticulopexy as the “best” open approach, for its lower fistula risk (1% vs 4% in diverticulectomy), lower hospital stay and better overall success rates compared to the other options [4]. In any case, complete myotomy of the cricopharyngeal muscle should be performed to release the pressure of upper esophageal sphincter [7,8,11].

In conclusion, a ZD should be systematically searched for in case of upper digestive compression, along with other pathologies such as thyroid cystic lesions, malignant tumors, tracheobronchial cysts etc. Management of ZD warrants a multidisciplinary approach for optimal individualized treatment and although minimally invasive transoral methods are increasingly considered as the first-line treatment choice, open surgery can be performed with acceptable morbidity and high success rates when endoscopic treatment is contraindicated or not feasible.

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Disclosure of interest

The authors declare that they have no competing interest.

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