ZENKER’S DIVERTICULUM, A RARE CAUSE OF UPPER GASTROINTESTINAL BLEEDING

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ZENKER’S DIVERTICULUM, A RARE CAUSE OF UPPER GASTROINTESTINAL BLEEDING (Abstract): The most common complication of Zenker’s diverticulum is aspiration pneumonia, compression of the trachea and esophageal obstruction with large diverticulum, and increased risk of development of carcinoma. Thus bleeding occurs rarely, can be massive and life threatening, with ulceration being the most common cause.

Material and methods: We describe a patient with sever upper gastrointestinal bleeding as a result of a Zenker’s diverticulum. A 75 year-old woman was referred to the emergency room and hospitalized for hematemesis, melena, asthenia and total dysphagia. In this particular case we preferred open technique because of the diverticulum dimensions and bleeding episode. Left cervicotomy was practiced on the anterior edge of the sternocleidomastoid muscle, being known that Zenker diverticulum extend into the left neck 90% of the time, fact also confirmed by radiology in this case. Results: Postoperatively, the patient showed a complication free recovery. Five days after treatment the patient resumed nourishment. Several days later our patient was able to return home. Follow-up at 12 months after the operation showed complete recovery. Ulcer of the basis of Zenker’s diverticulum is a rare entity and, only a few cases were reported in the literature to date. Omitting thecricomyotomy predisposes to fistula or diverticulum recurrence due to the persistence of a high pharyngeal intraluminal pressure that acts on the posterior wall just proximal to the upper esophageal sphincter. Conclusions: Zenker’s diverticulum is an unusual site of origin for clinically significant upper gastrointestinal hemorrhage and differential diagnosis must include other more frequent causes of upper gastrointestinal bleeding. In our opinion, classical surgical therapy is indicated when distal esophageal imaging cannot be obtained during endoscopic examination, there is a large diverticulum or in an emergency setting when fast control over the bleeding source is required. Keywords: ZENKER’S DIVERTICULUM, GASTROINTESTINAL BLEEDING, CERVICOTOMY

Zenker’s diverticulum is a pulsion-type diverticulum of the hypo pharynx, the result of herniation of the esophageal mucosa and submucosa through the area of natural weakness known as Killian’s triangle.

It is hypothesized that abnormal activity in the cricopharyngeus muscle results in an uncoordinated swallowing mechanism, which, coupled with increased intraluminal pressure, results in the slow, progressive distention and herniation of the pharynx mucosa (1). The incidence of Zenker’s Diverticulum is estimated at 2 per 100,000, with highest prevalence rates in the 7th and
8th decades of life. Risk factors for development of Zenker’s diverticulum include presence of hiatal hernia and/or gastroesophageal reflux disorder (GERD), male gender and age (1, 2).

The most common complication of Zenker’s diverticulum is aspiration pneumonia, compression of the trachea and esophageal obstruction with large diverticulum, and increased risk of development of carcinoma (3). Thus bleeding occurs rarely, can be massive and life threatening, with ulceration being the most common cause.

Since its description by Zenker and von Ziemssen in 1877, numerous surgical techniques have been developed to treat the diverticulum. Initially, transcervical resection of the diverticular pouch has been the procedure of choice (4). However, the diverticular sac is in fact a consequence of the high pharyngeal pressure secondary to a lack of compliance of the cricopharyngeus muscle in relation to local fibrosis. Consequently, due to unacceptably high rate of recurrence, cricopharyngeal myotomy (CPM) was recommended for the management of the physiologic abnormality (5, 6).

Endoscopic therapy can be applied in two forms, either by the application of diathermic or laser coagulation, or stapling technique, which allowed an endoscopic suture of the cut margins (7, 8, 9, 10) (tab. I).

Size of the diverticulum determines which procedure to carry out (11, 12) (tab. II).

**TABLE I**

<table>
<thead>
<tr>
<th>Endoscopic techniques</th>
<th>Open techniques</th>
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<tbody>
<tr>
<td>Endoscopic stapled diverticulostomy</td>
<td>CPM</td>
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<tr>
<td>CO₂ laser / Electrocautery</td>
<td>CPM with diverticulectomy</td>
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<td>CPM with diverticulopexy</td>
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**TABLE II**

<table>
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<tr>
<th>Criteria</th>
<th>Surgical technique</th>
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<tr>
<td>I. Small sacs are less than 2 cm in length</td>
<td>CP myotomy alone is sufficient</td>
</tr>
<tr>
<td>II. Intermediate sacs are 2-4 cm in length</td>
<td>Endoscopic or open procedure can be used</td>
</tr>
<tr>
<td>III. Large sacs are greater than 4 cm in length</td>
<td>Open surgery</td>
</tr>
</tbody>
</table>

We describe a patient with severe gastrointestinal bleeding as a result of a Zenker’s diverticulum. A 75 year-old woman was referred to the emergency room and hospitalized for hematemesis, melena, asthenia and total dysphagia. She was known to have endured various respiratory tract infections in the previous several months and had difficulty to swallow solid foods for a few months. During the previous few days the ingestion of fluids had become impossible.

The clinical exam reveals pallor, evidence of dehydration and a 5 by 3 cm palpable tumor on the left side of the neck. Patient was tachycardic but with normal blood pressure. Blood exams shows moderate anemia. Esophagography with barium revealed a medium to voluminous pharyngo-esophageal diverticulum.
Zenker’s diverticulum, a rare cause of upper gastrointestinal bleeding

Surgical treatment was decided. In this particular case we preferred open technique because of the diverticulum dimensions and bleeding episode. Left cervicotomy was practiced on the anterior edge of the sternocleidomastoid muscle, being known that Zenker diverticulum extend into the left neck 90% of the time, fact also confirmed by radiology in this case.

The omohyoid muscle was cleaved and the superior thyroidian artery and vein were ligated and cleaved, in order to obtain suitable diverticulum exposure. The recurrent laryngeal nerve was identified and protected.

The diverticulum, with a diameter of approximately 3-4 cm, is identified and dissected (fig. 1). A Faucher probe was passed with some difficulty into the distal esophagus. Esophageal and crico-pharyngeus muscles are longitudinally divided for 3-4 cm. Mechanical suture at the base of the diverticulum is practices with aid of a TA 30/3.5 stapler (fig. 2). The diverticulum is sectioned close to the stapler (fig. 3).

Fig. 1. The diverticulum, identified and dissected

Fig. 2. Mechanical suture at the base of the diverticulum

Fig. 3 The diverticulum is sectioned close to the stapler

Final aspect after removing stapler and control of suture sealing and hemostasis (fig. 4). The excised diverticulum containing traces of barium from previous examination (fig. 5). Paraesophageal drainage through counter incision was preferred ostoperatively, the patient showed a complication free recovery. Five days after
treatment the patient resumed nourishment. Several days later our patient was able to return home. Follow-up at 12 months after the operation showed complete recovery.

**DISCUSSION AND CONCLUSIONS**

As a summary, the case is rare complication of Zenker's diverticulum that was initially misdiagnosed as having esophageal varices. Ulcer of the basis of Zenker's diverticulum is a rare entity and, only a few cases were reported in the literature to date (1, 5, 6). The diverticulum had a deep ulceration that was the source of the bleeding. The cause of the ulceration is unknown but it is possible that the ulcer has been caused by chronic NSAID or other ulcerogenic drugs prescribed for prior respiratory infections. Chronic alcohol abuse was the other contributing factor, known to predispose ulcer formation by facilitating the development of gastroesophageal reflux and stimulation of acid secretion (7, 8, 9).

Zenker's diverticulum is an unusual site of origin for clinically significant upper gastrointestinal hemorrhage and differential diagnosis must include other more frequent causes of upper gastrointestinal bleeding (10, 11).

In our opinion, classical surgical therapy is indicated when distal esophageal imaging cannot be obtained during endoscopic examination, there is a large diverticulum or in an emergency setting when fast control over the bleeding source is required.

Omitting the cricomyotomy predisposes to fistula or diverticulum recurrence due to the persistence of a high pharyngeal intraluminal pressure that acts on the posterior wall just proximal to the upper esophageal sphincter (12, 13).

**REFERENCES**

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MALIGNANT MESOTHELIOMA: NONASBESTOS-RELATED ASSOCIATIONS

It should be realized that although there is a strong link between the development of malignant mesothelioma (MM) and asbestos exposure, not all cases are etiologically related to asbestos exposure. The proportion of cases attributable to asbestos exposure varies between the sexes and country, according to occupation and use of amphibole asbestos. A number of other agents have been implicated in the causation of MM but the best evidence appears to relate to another mineral fiber (erionite) and to irradiation. However, there is strong experimental, epidemiologic and molecular evidence to suggest a possible carcinogenic or cocarcinogenic role of viruses such as simian virus 40 (SV40), a monkey polyoma virus, in the induction of MM. Malignant mesothelioma has followed 20 years after plombage therapy with lucite spheres for tuberculosis. Additional cases have been associated with chronic empyema, chronic peritonitis, induced pneumothorax for tuberculosis, and familial Mediterranean fever. (Jasani B, Gibbs A. Mesothelioma not associated with asbestos exposure. Arch Pathol Lab Med. 2012;136:262–267).

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