



Vascular Diseases, Motility Disorders, and Mechanical Laceration in the Esophagus

7

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7.1 Esophageal Varices

7.1.1 Definition

Esophageal varices are distended submucosal veins that protrude into the esophageal lumen. They are most frequently the consequence of portal hypertension as a part of the collateral circulation between the portal vein and vena cava.

7.1.2 Clinical Aspects

Esophageal varices can be found incidentally during endoscopy. Mostly they are found during the evaluation process of liver diseases or acute upper gastrointestinal bleeding. The most serious complication of esophageal varices is acute bleeding. Approximately 30% of all patients with varices experience at least one episode of variceal bleeding.

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7.1.3 Diagnosis

The endoscopic appearance of esophageal varices differs according to their grade. Esophageal varices are usually initially formed at the distal esophagus and may spread to the proximal esophagus with disease progression.

In the early stage, distended veins are located at the level of mucosa or rise slightly above it (Fig. 7.1a). The affected

vein may be bluish, grayish, occasionally whitish, or of a normal color. With progression, varices protrude markedly into the lumen and become tortuous, looking like “string of beads” with irregular calibers (Fig. 7.1b). With further progression, esophageal varices become convoluted with nodular thickening (Fig. 7.1c). “Red signs” indicate a high bleeding risk (Fig. 7.1d).

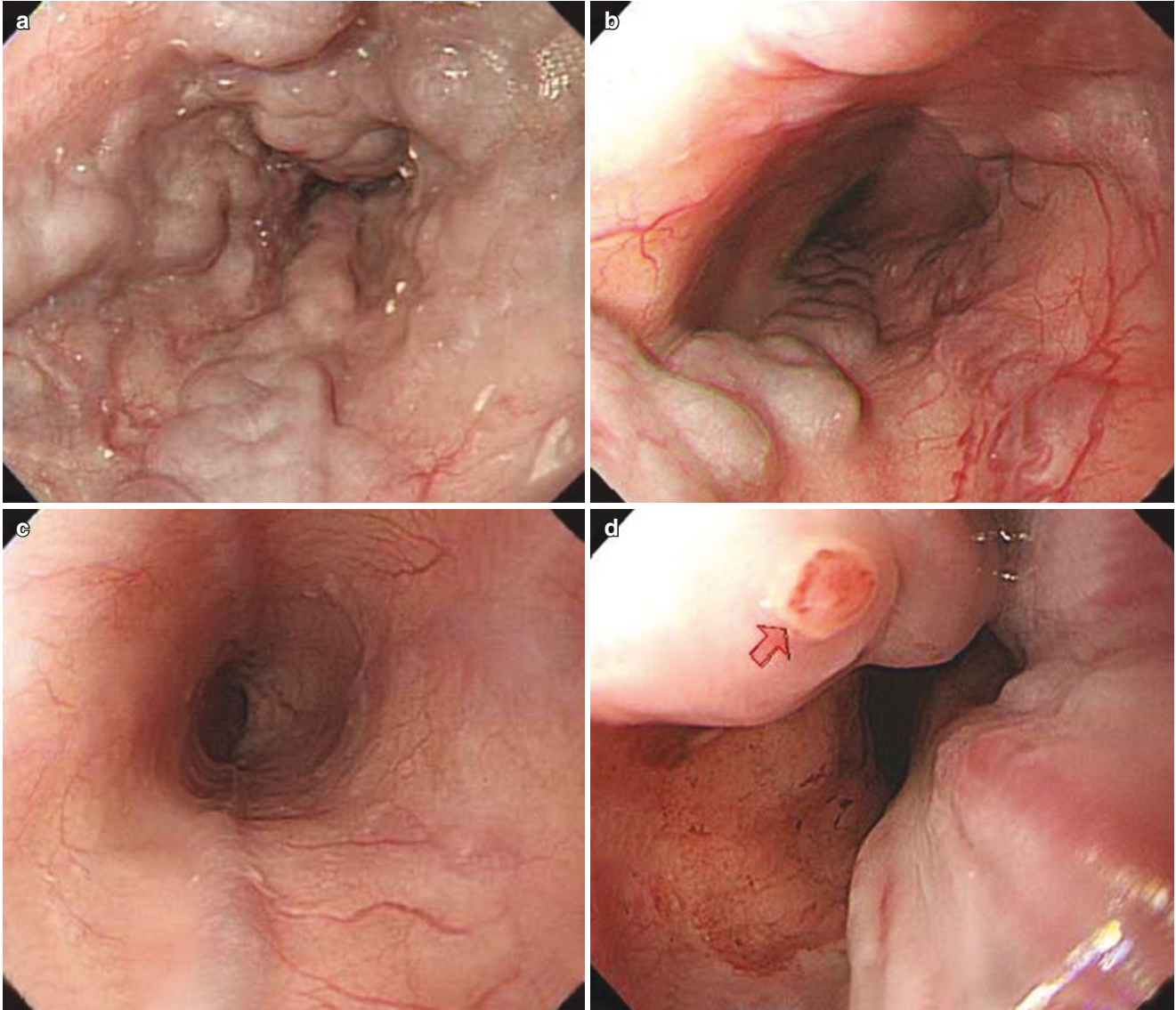


Fig. 7.1 Esophageal varices. (a) Distended veins at the level of mucosa. (b) Large, tortuous varices. (c) Nodular thickening. (d) Red sign on the varix

7.1.4 Endoscopic Grade and Classification

There are various endoscopic grading classifications for esophageal varices (Table 7.1). Dagradi classification assessed esophageal varices based on morphology with the measurement of the largest transverse diameter of the presenting varices. However, this classification was unable to differentiate among the different red signs, simply considering their presence or absence.

More detailed classification on esophageal varices is that of the Japanese Research Society for Portal Hypertension. The Japanese classification system is based on variceal color, size, extension from the gastroesophageal junction, and the presence or absence of the red sign. First, the color of the varix is to be noted either white or blue. Next, the Japanese system expands on the notion of “varix on varix” with the

term “red color sign.” Red wale marks are the longitudinal dilated venules that run along the variceal surface. “Cherry-red spot” refers to small red dilated venules approximately 2 mm in size. A hematocystic spot is a larger, red protrusion on a varix, typically larger than 4 mm in diameter. Diffuse redness is likely to be due to the dense network of dilated small venules on the surface of the varix. Then, the basic form of the varix is to be noted. Varices are divided into small and straight, enlarged and tortuous, and large and tortuous forms. The last aspect to be noted is the most proximal location of the varix as being in the distal, mid, or the proximal one-third of the esophagus.

Endoscopic criteria are not the sole determinant of the risk of bleeding. Instead, the status of the liver disease, degree of portal hypertension, and continued exposure to alcohol must be considered.

Table 7.1 Classification of esophageal varices

Dagradi classification
Grade I: variceal diameter less than 2 mm, disappear with esophageal lumen insufflation
Grade II: varices of similar diameter, clearly visible in the esophageal lumen
Grade III: varices of 3–4 mm, prominent in the esophageal lumen
Grade IV: variceal diameter 5 mm or more, tortuous
Grade V: red color signs
Japanese Research Society for Portal Hypertension
General color
Blue
White
Form
F1 (small and straight varices)
F2 (enlarged tortuous varices, less than one-third of the lumen)
F3 (large and tortuous, more than one-third of the lumen)
Red color signs
Red color signs absent
Red wale markings
Cherry-red spots
Hematocystic spot
Diffuse redness
Proximal extension
Distal one-third
Extension to mid-esophagus
Extension to proximal one-third

7.2 Motility Disorders

7.2.1 Achalasia

Achalasia is a neuromuscular disorder that causes a dysfunction predominantly affecting the mid and the lower esophagus. The essential features are the absence of propulsive peristalsis in the affected esophagus and failure of the LES to relax with swallowing. Typical complications are dysphasia, chest pain, regurgitation, aspiration, and weight loss. Esophageal manometry is the main diagnostic tool. Endoscopy may not show any abnormalities in the early stage of achalasia. Achalasia can be suspected with increased resistance to the endoscopic passage and failure of the cardia

to open during prolonged observation (Fig. 7.2). With retroflexed view, cardia may tightly close surrounding the endoscope as shown in Fig. 7.2.

Although pseudoachalasia is very rare, the primary reason for performing endoscopy in the achalasia patient is to exclude pseudoachalasia secondary to a malignancy. The most common cancer mimicking achalasia is gastric carcinoma of the cardia. Other common malignancies include squamous cell carcinoma of the esophagus, adenocarcinoma of the lung, Hodgkin's disease, hepatocellular carcinoma, and mesothelioma. Patients with pseudoachalasia tend to be over 50 years of age, with recent dysphagia and weight loss of less than 1 year duration. However, the predictive value of these clinical findings is low.

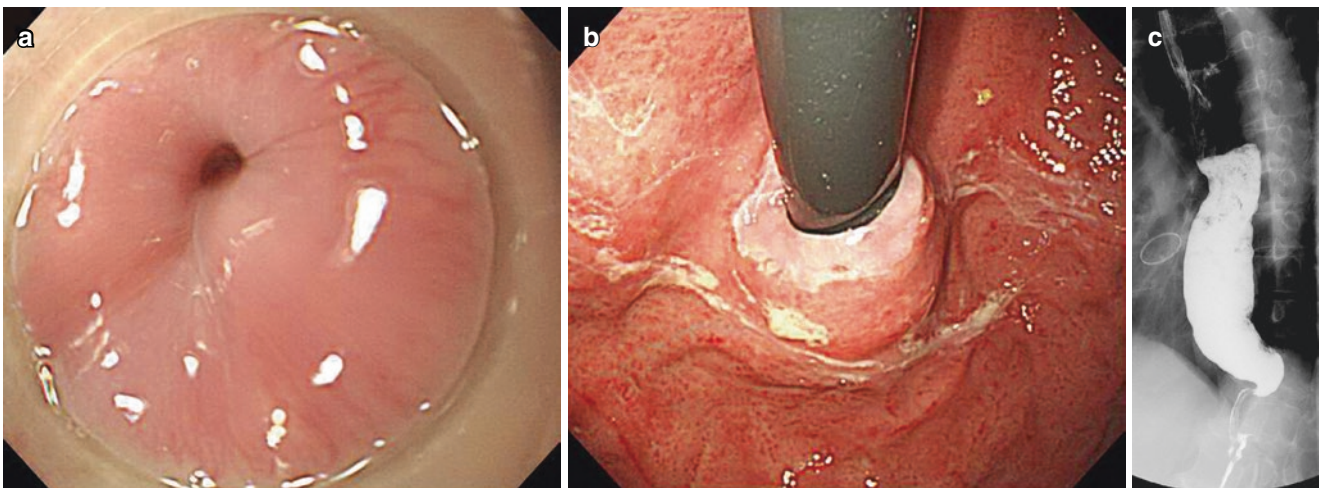


Fig. 7.2 Achalasia. (a) Sustained contraction of the lower esophageal sphincter. (b) Retroflexed view. (c) Esophagogram of achalasia shows bird-beak appearance in the distal esophagus

7.2.2 Diffuse Esophageal Spasm

Diffuse esophageal spasm is a condition in which irregular, synchronous, ineffectual contractions of the circular muscles occur during peristaltic contractions, which can lead to regurgitation and retrosternal pain. Relaxation of the LES is not impaired. Patients with this disease complain of severe

retrosternal pain occurring in brief episodes lasting only seconds. The pain is often triggered by drinking a hot or cold liquid but may also occur independent of meals, even during the night. There are no typical endoscopic findings. Some cases show segmental, irregular, nonpropulsive contractions (Fig. 7.3).

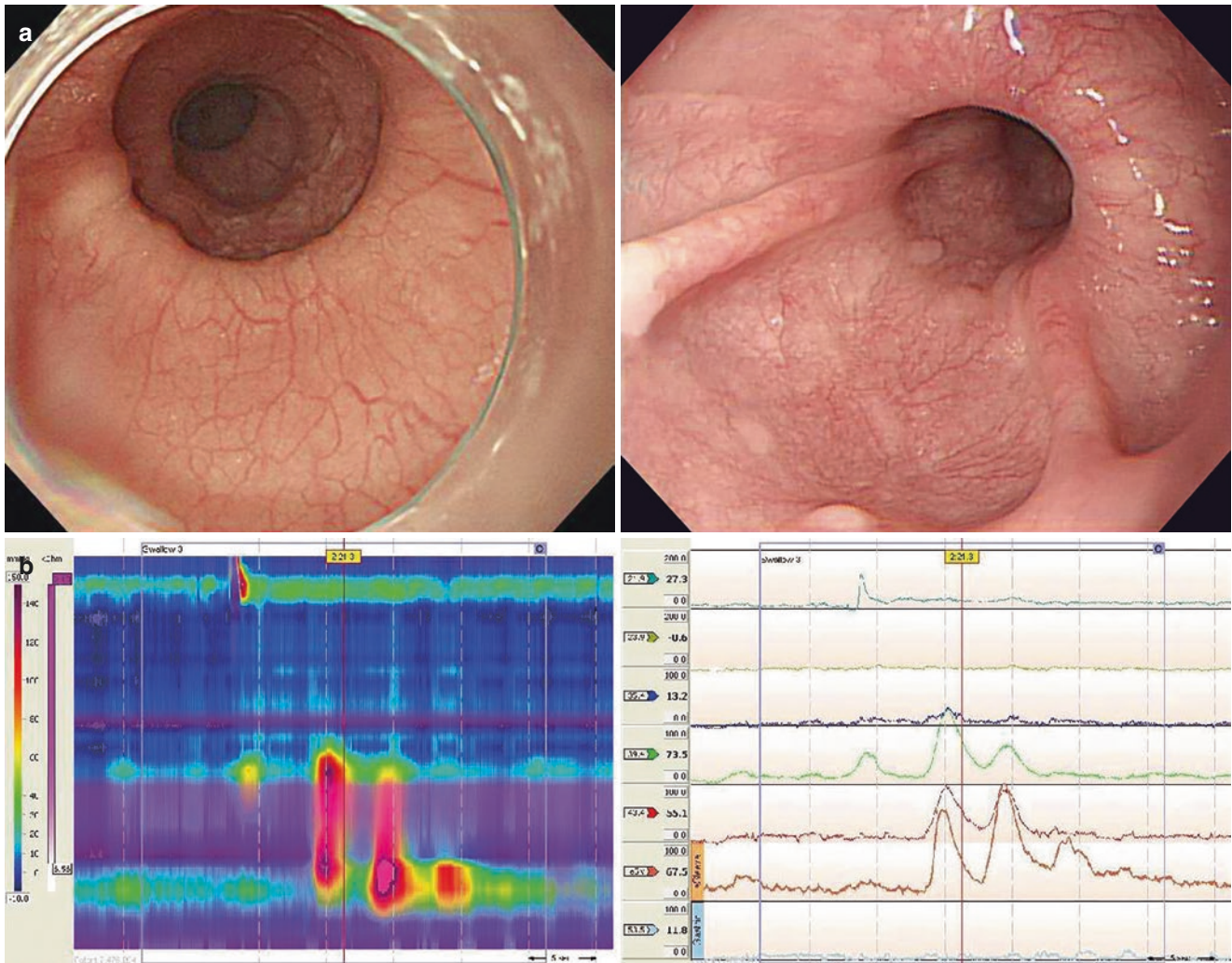


Fig. 7.3 Diffuse esophageal spasm. (a) Simultaneous contractions are observed. (b) Manometric findings of this patient

7.3 Mallory–Weiss and Boerhaave Syndrome

7.3.1 Definitions

The Mallory–Weiss syndrome is a condition in which the mucosal tear in the distal esophagus leads to bleeding. The cause is a sudden rise in the intra-abdominal pressure, which may occur with forceful vomiting (especially in alcoholics), vigorous coughing, asthma attacks, or during pregnancy.

A complete rupture of the esophagus is known as the Boerhaave syndrome. This complication leads to mediastinitis and has a high mortality rate (Fig. 7.4).

7.3.2 Endoscopic Findings

Endoscopy shows longitudinal blood-stained or bleeding tears at the gastroesophageal junction. Mucosal tear is frequently found at the posterior side (Fig. 7.5).

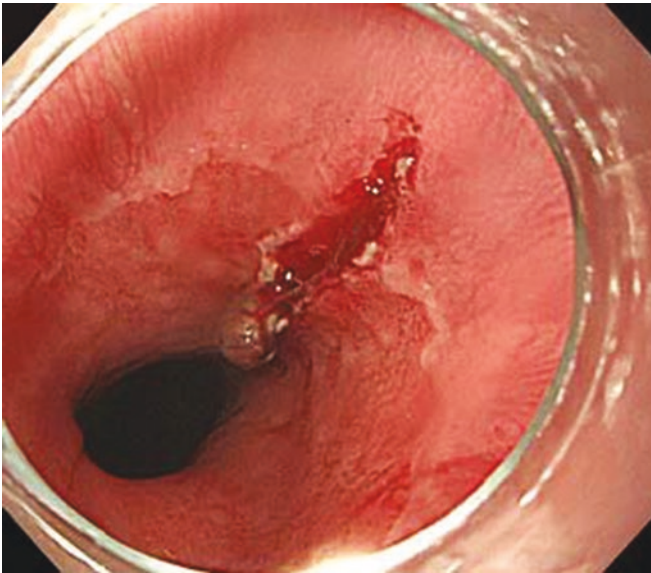


Fig. 7.4 Mallory–Weiss syndrome. Tear at the gastroesophageal junction extending proximally

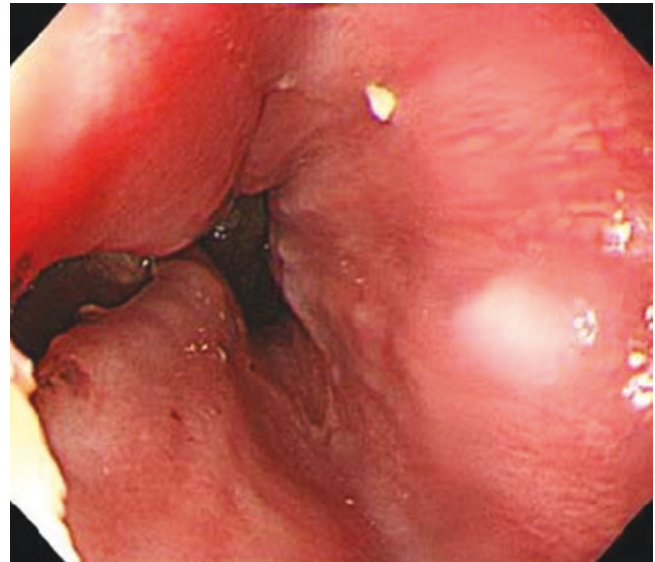


Fig. 7.5 Boerhaave syndrome. Perforation site was observed in the left side of esophagus

7.4 Others

See Figs. 7.6, 7.7, 7.8, 7.9, 7.10.

Interesting Case

A 39-year-old female was consulted from the Department of Gynecology due to heartburn and odynophagia which aggravated for 2 weeks. Four months previously, she had been diagnosed as stage IV cervical cancer with distant nodal metastasis involving paraesophageal and supraclavicular lymph nodes. After the second cycle of concurrent chemoradiation therapy including paclitaxel and carboplatin, she experienced severe heartburn and odynophagia. Her vital signs were stable, but she had pancytopenia with a white

blood count of $1870/\mu\text{L}$, hemoglobin level of 10.5 g/dL , and platelet count of $49,000/\mu\text{L}$. Upper GI endoscopy revealed diffuse desquamation of esophageal mucosa with easy contact bleeding and attached exudates showing characteristics of acute radiation esophagitis especially in mid- to lower esophagus. Multiple white mucosal plaque-like lesions representing candidal esophagitis were also noted in the upper esophagus and were confirmed by biopsy. In pathologic review of biopsy specimen taken from mid-esophagus, herpetic esophagitis was also diagnosed. This patient was diagnosed as combined esophagitis with multiple etiologic factors such as radiation, *Candida*, and herpesvirus. After medication with fluconazole 200 mg and acyclovir 1000 mg per day for 2 weeks, the symptoms were improved.

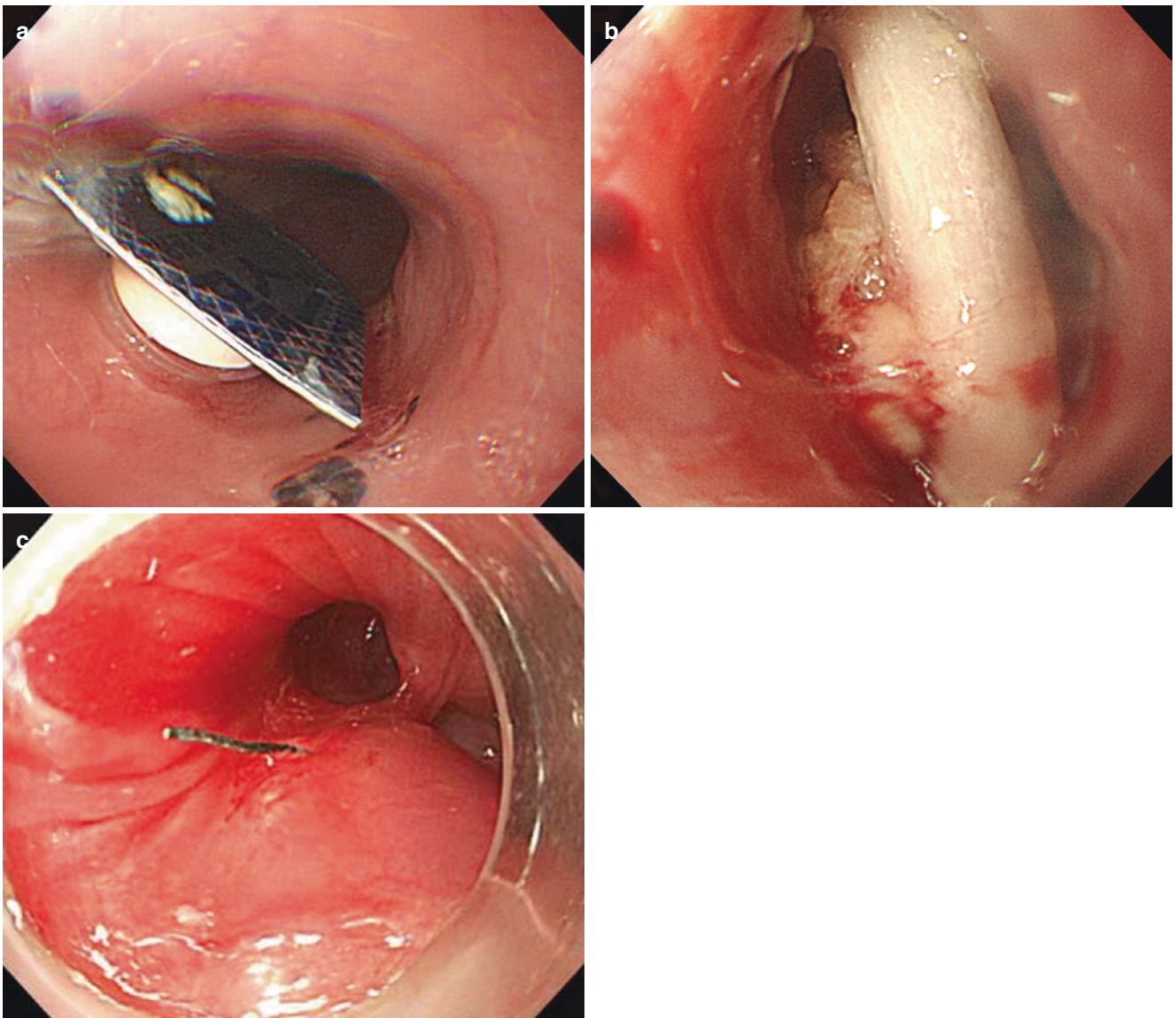


Fig. 7.6 A variety of foreign bodies are present in the esophagus, such as drug envelope (press through pack, **a**), fish bone (**b**), and metal wire (**c**)

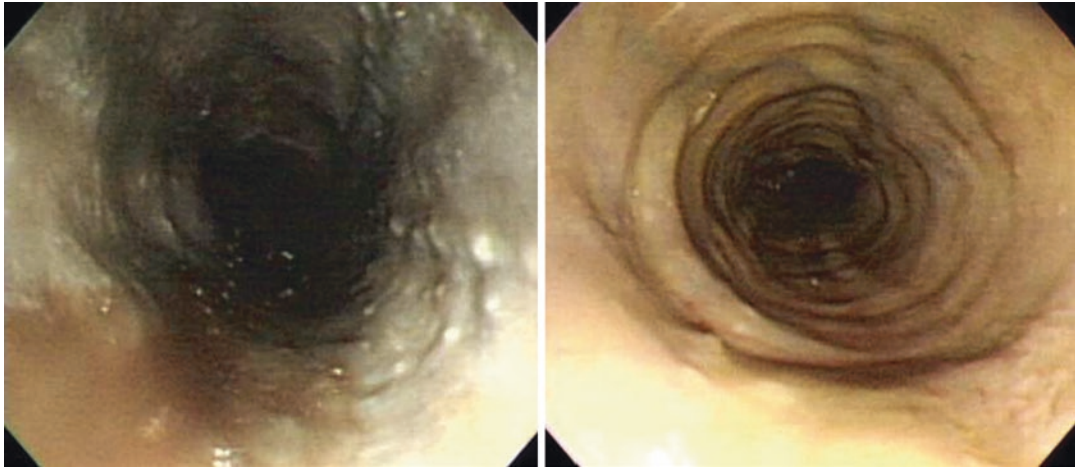


Fig. 7.7 Corrosive injury of esophagus

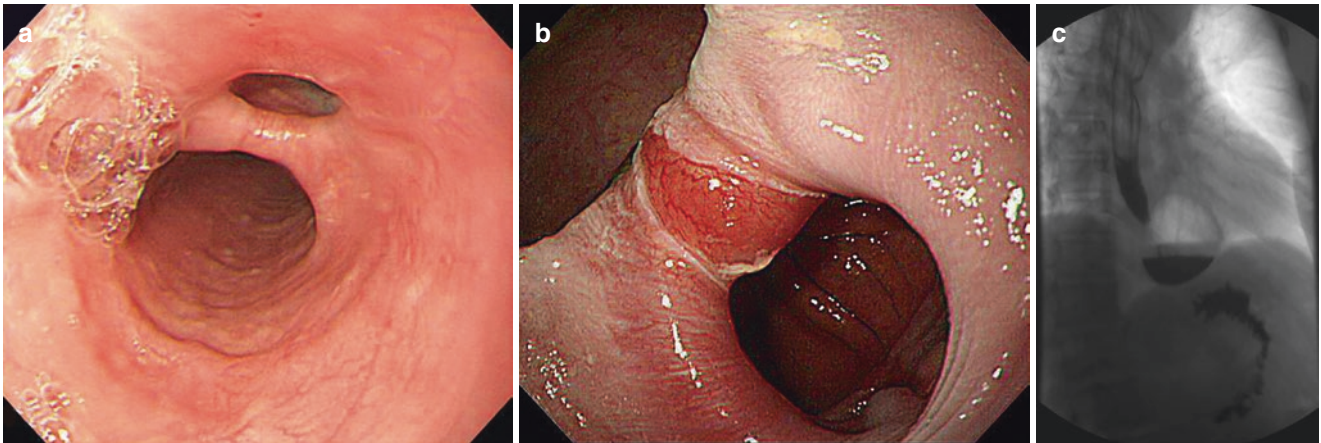


Fig. 7.8 Esophageal diverticulum. (a) Diverticulum is observed in mid-esophagus. (b) Epiphrenic esophageal diverticulum. This patient presented with dysphagia. (c) Esophagogram shows epiphrenic diverticulum in lower esophagus

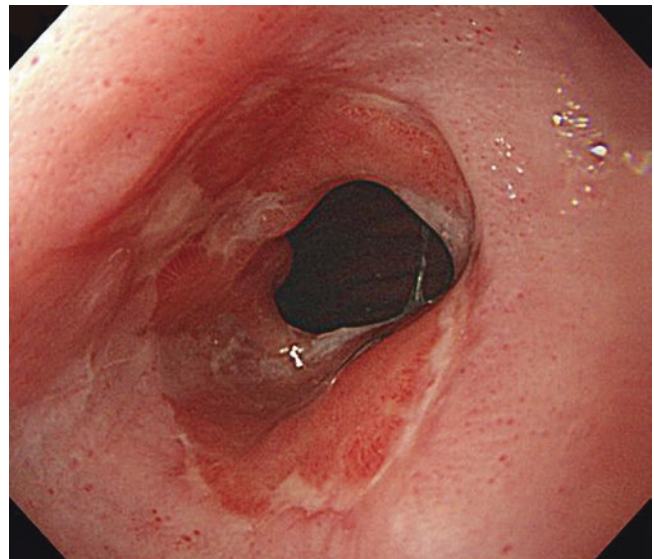


Fig. 7.9 Total gastrectomy state

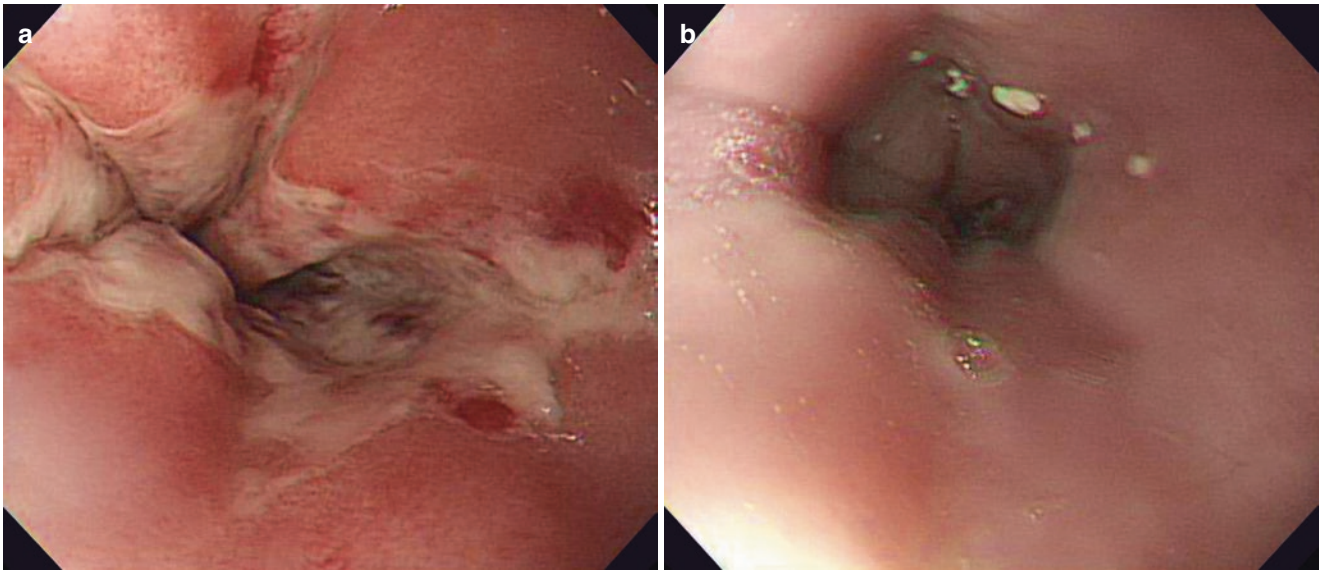


Fig. 7.10 Radiation esophagitis. Diffuse exudates with ulceration are presented in the radiation range (a). Out of this range, normal mucosa is shown (b)