

## Perforation of benign peptic ulcer in hiatal hernia into the pericardium, resulting in pneumopericardium



**Fig. 1** Chest radiograph showing pneumopericardium.

A 57-year-old woman with a medical history of hiatal hernia, peptic ulcer disease, alcoholism, and schizophrenia was admitted to the emergency department with epigastric pain and fever. The patient had not been taking her prescribed proton pump inhibitors.

A peptic ulcer perforation (1.5 cm) in the hiatal hernia sac was discovered during gastroscopy, and an attempt to close the perforation with metal clips was unsuccessful (▶ **Video 1**). The patient's general state became more severe following gastroscopy. Tachycardia with atrial fibrillation, dyspnea (saturation <80%), and hypotension (systolic blood pressure <60 mmHg) occurred. The patient was referred for surgery with suspicion of pneumopericardium (▶ **Fig. 1**).

A gastrotomy was made during laparotomy. A fistula to the pericardium was located and directly sutured. A tissue sample was taken from the ulceration. A cardiothoracic team performed pericardial drainage, which was complicated by the rupture of the fragile, inflamed wall of the right ventricle. Suturing of the right

ventricle through the sternotomy was performed. The patient died 36 hours later due to multiorgan failure.

Massive fibropurulent pericarditis was diagnosed in the autopsy. Specimens from the ulceration showed only fibrosis and inflammation with no trace of malignancy.

Peptic ulcer perforation located in the hiatal hernia sac with pneumopericardium is a very rare complication of benign stomach ulceration. Typically, this complication is related to malignant neoplasms of the stomach located in a hernia sac or in the fundus with invasion of the diaphragm and pericardium or as a complication after Nissen fundoplication [1]. Salling et al. described a case of pneumopericardium related to a gastric ulcer in a hiatal hernia, and cited seven similar cases from the literature [2]. The mortality rate is very high and it demands a multidisciplinary approach as well as a quick surgical response. Currently, there are no published guidelines or standards on how to manage such a complication [3,4]. We suggest that in the case of a gastropericardial fistula, a computed tomography scan of the chest and abdomen with administration of oral contrast should be performed instead of endoscopy, which could dramatically worsen circulatory insufficiency.

### Video 1

Gastroscopy with an unsuccessful attempt to close the perforation with metal clips.

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