



# A Balloon-Like Epigastric Hernia and Bilateral Shoulder Pain

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## Abstract

**Background:** Any abdominal pathology associated with diaphragmatic irritation may result in pain referred to the shoulders. Here we present an unusual case presenting with bilateral shoulder pain and an air-filled epigastric hernia as a result of a ruptured gastric ulcer.

**Case Report:** An 84-year-old male presented to the emergency department due to upper abdominal pain. He reported acute left shoulder pain starting the night before. Within several hours the pain had moved to the upper abdomen and then to the right shoulder. An air-filled epigastric hernia noted on physical examination raised the suspicion for pneumoperitoneum. This was confirmed by an erect chest x-ray (demonstrating sub diaphragmatic air) followed by an abdominal computed tomography. Emergency laparotomy revealed a perforated gastric ulcer.

**Discussion:** Gastric ulcer perforation should be considered in the differential diagnosis of shoulder pain, along with the many other causes of referred shoulder pain. Of note is that shoulder pain as a result of gastric perforation may precede the abdominal pain by many hours.

## Introduction

Referred shoulder pain may be caused by a variety of conditions [1]. The most common causes of referred shoulder pain as a result of visceral disease include myocardial ischemia and diaphragmatic irritation as a result of lung lesions (tumor, infarction, abscess) or sub diaphragmatic disease associated with the presence of blood or other irritants in the peritoneal cavity (e.g. pneumoperitoneum, sub diaphragmatic abscess or splenic rupture) [1,2].

Pneumoperitoneum is well-known cause of referred shoulder pain and may be the result of gastrointestinal perforation or may follow laparoscopic surgery [1,3,4]. Chemical irritation or stretching of the diaphragm resulting in irritation of the phrenic nerve may be responsible for the referred pain to the shoulder [1,3,4]. Here we present an unusual case presenting with bilateral shoulder pain and an air-filled epigastric hernia as a result of a ruptured gastric ulcer.

## Case Report

An 84-year-old male, presented to the emergency department due to upper abdominal pain. He reported severe acute left shoulder pain starting the night before. Within hours the pain had moved to the upper abdomen and then to the right shoulder. In supine physical examination, a midline epigastric balloon-like protrusion was evident, that gave the impression of presence of air within a hernia sac. The protrusion was easily reducible with light pressure, recurred immediately after removal of pressure while in supine position and disappeared in erect position. There was no evidence of myocardial ischemia from the ECG. An erect chest x-ray revealed bilateral sub-diaphragmatic free air (Figure 1) and an abdominal computed tomography confirmed the presence of an air-filled epigastric hernia sac (Figure 2). A laparotomy was performed revealing a perforated anterior gastric ulcer.

## Discussion

A variety of conditions can result in referred shoulder pain. This issue has been reviewed in more detail elsewhere [1]. Several reports have described shoulder pain as result of gastric perforation [4-6]. Of note is that similar to our case, shoulder pain may precede the abdominal pain by many hours [4]. Referred shoulder pain as a result of gastrointestinal perforation may be right-sided, left-sided or bilateral [4-6]. It has been hypothesized that bilateral shoulder pain may result from anterior gastric perforation [5]. However, posterior gastric perforation associated with significant bilateral pneumoperitoneum has also been associated with bilateral referred shoulder pain [6]. Of interest

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**Figure 1:** Erect chest x-ray demonstrating bilateral sub diaphragmatic air.

is that in our case, the presence of an epigastric hernial sac, filling with air in the supine position (upward movement of free peritoneal air) and disappearing in the erect position, allowed the early clinical identification of pneumoperitoneum. To our knowledge this finding has not been previously described.

## Conclusion

In patients resenting with acute shoulder pain, a variety of abdominal conditions, including gastric perforation, should also be considered in the differential diagnosis. Of note is that shoulder pain may precede the abdominal pain by many hours.

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**Figure 2:** A non-enhanced abdominal computed tomography demonstrating free peritoneal air extending within an epigastric hernial sac (arrow).

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