

Conservative management of gastric rupture following scuba diving

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Abstract

Gastric rupture is an uncommon surgical problem which normally presents with an acute abdomen and peritonism. An unusual case following underwater ascent and its conservative management is presented.

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Keywords: gastric rupture; scuba diving; barotrauma

Case report

A 35 year old diver was air swallowing underwater because of an upper respiratory tract infection. Following a fairly rapid ascent from a depth of 23 m he developed upper abdominal pain and distension. Gastric rupture was suspected, and both the chest x ray (fig 1) and the abdominal x rays revealed a large amount of free intraperitoneal gas. A water soluble contrast study of the upper gastrointestinal tract showed no evidence of

continuing leak (fig 2) Abdominal ultrasound showed a small amount of free intra-abdominal fluid. In the absence of peritonism the patient was managed conservatively, and recovery was uneventful.

Discussion

Gastric rupture is uncommon and normally follows blunt abdominal trauma while the stomach is distended.¹ Gastrointestinal barotrauma occurs because the volume of the intraluminal bowel gas doubles for each 10 metres of ascent (Boyle's law). Clinical signs and symptoms are normally limited to eructation, abdominal fullness, colicky pain, and flatus expulsion.² It is as a result of its potential to become a closed system with cardiospasm and pylorospasm that the stomach is the site of gastrointestinal rupture in the most severe cases.³ Gastric rupture secondary to barotrauma is very rare, with only 12 cases reported to date.⁴

Ten of the 12 cases described were treated surgically, although patients may show little evidence of peritoneal irritation.⁴ This approach has been taken as rupture following blunt abdominal trauma is associated with a high rate of infectious complications and a mortality of nearly 50%.⁵ In these cases, however, the stomach was usually distended with acid and food residue, rupture resulting in chemical and bacterial peritonitis. In contrast, gastric rupture in divers is secondary to gaseous distension, with the stomach frequently empty.

The diagnosis is dependent on the demonstration of free intraperitoneal gas, and a water soluble contrast meal will show whether the rupture has sealed spontaneously. Ultrasound gives an indication of the amount of free intraperitoneal fluid. In the absence of signs of peritonism, and with demonstrable spontaneous closure, we recommend conservative management.

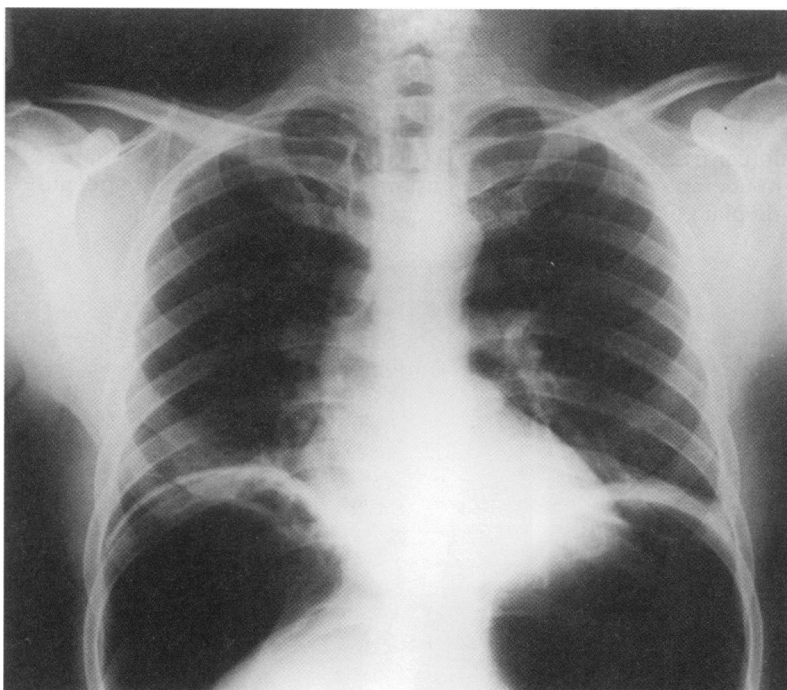


Figure 1 Chest radiograph showing a large volume of free intraperitoneal gas below both hemidiaphragms.



Figure 2 Water soluble contrast meal and follow through show no evidence of leakage of contrast from the stomach. Free intraperitoneal gas (long black arrows) and retroperitoneal gas (black arrowhead) are still present.

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