

Gastric Perforation Due to Blunt Trauma Abdomen

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Abstract

Blunt trauma abdomen rarely leads to gastrointestinal injury in children and isolated gastric rupture is even rarer presentation. We are reporting a case of isolated gastric rupture after fall from height in a three year old male child.

Key words: Gastrointestinal, Abdomen, Stomach

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Introduction

Gastrointestinal injury in children after blunt trauma abdomen is rare accounting for nearly 3% of the abdominal injuries. Gastric rupture, if isolated, is even rarer which accounts for only 0.02% to 1.7% of the cases¹. The casualties after gastric trauma parallel the time taken for intervention, number of gastric injuries sustained and synchronous involvement of other organs. Early diagnosis and timely intervention are essential measures to curb the high morbidity and mortality associated with the disease². Herein, we present a case of a three year old male child who was diagnosed as a case of gastric rupture after fall from height. The case is reported owing to rare presentation of isolated gastric rupture in children.

The Case

A three year old male child presented to the emergency surgical department after a sustained trauma abdomen following fall from height. The child was conscious, however clammy and dehydrated. Physical examination revealed mild tachycardia. Blood pressure was 100/65 mmHg. Local examination showed tenderness and guarding of upper abdomen along with abdominal wall dimple. Immediate chest and abdominal X-rays were done which showed gas under diaphragm and multiple air- fluid levels. There was no evidence of other acute chest injuries. CECT abdomen showed massive pneumoperitoneum with haemo-peritoneum. The patient was resuscitated and was shifted for exploratory laparotomy in emergency OT. A 4 cm long full thickness gastric rupture was found along the greater curvature of stomach. There was no associated visceral tear or rupture (Figure 1). Primary two layer closure was performed. A thorough peritoneal lavage was done. Post-operative recovery was uneventful and patient was asymptomatic on two months follow-up.

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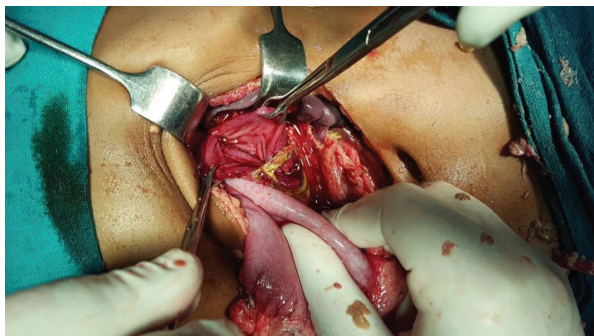


Fig 1: Intraoperative picture of the case.

Discussion

Idiopathic gastric rupture is rare in children beyond neonatal period; explained by the extensive mobility, distensibility and deeper location of the organ in the rib cage³. However, stomach is more vulnerable to rupture if distended by food, liquid or gas. Gastric rupture following trauma abdomen usually occurs along with other viscera rupture or tear. The organs frequently involved in simultaneous injury are liver, spleen, pancreas, lungs and injuries involving extremities⁴.

Gastrointestinal organ injuries can occur by three mechanisms: crush injury, burst injury and shear injury. In the former, the organ is compressed violently against the spine. Rapid compressive forces when applied to distended hollow viscous cause burst injury. Shear injury is caused by continuous acceleration and deceleration of the organ at point of fixation as can occur during Heimlich maneuver⁵. The most common cause of rupture is blunt trauma abdomen due to motor vehicle collision accounting for 75% of the cases. Others include can be assaults, falls, psychiatric disorders, like anorexia nervosa^{1,6}.

The rupture can be full thickness or partial thickness. Full thickness rupture first involves the seromuscular layer followed by submucosa and mucosa, respectively. The most common site of rupture is anterior gastric wall followed by greater curvature, lesser curvature and the posterior gastric wall⁴. In our case, the child was diagnosed as having rupture at greater curvature of stomach.

Owing to the rarity and even rarer isolated occurrence of rupture stomach, making its diagnosis is difficult and requires a high index of suspicion⁴. Delay in diagnosis is associated with higher morbidities and mortalities. Prompt abdominal and chest X-rays can be done but free intraperitoneal air is visible in only 16-66% of the cases. CT may be helpful in early diagnosis and thereby decrease the resultant mortality due to peritoneal contamination, sepsis and shock. Intraperitoneal air and associated solid organ injuries are better visualised on CT². In our patient, multiple air- fluid levels were visualised on X-ray and CT revealed gastric tear.

Closing the tear in two layers is the treatment of choice for gastric rupture. It should be followed by air test to assess the subtleness of repair and looking out for any other sustained gastric rupture². In our case also, the tear was sutured in two layers followed by air test. No other simultaneous gastric tear was found. Thorough peritoneal lavage and drainage was done before closing the abdomen.

Conclusion

Isolated gastric rupture is extremely rare in children. Keeping its possibility as a differential is essential on part of the clinician to aid the early diagnosis and treatment and minimise the associated complications and mortality.

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