

## CASE REPORT

# A CASE REPORT OF CELL PHONE BLAST INJURY CAUSING GASTRIC PERFORATION

V Suryanarayana Reddy<sup>1</sup>, P Ramalingam<sup>2</sup>, C Ashrith Reddy<sup>3</sup>, Vimal Kumar K<sup>4</sup>

<sup>1</sup>Professor & Head; <sup>2</sup>Professor; <sup>3</sup>Assistant Professor; <sup>4</sup>Post Graduate student, Department Of General Surgery, Chalemeda Anand Rao Institute of Medical Sciences, Karimnagar

Correspondence: Dr. Vimal Kumar K., Email: drvimalk@gmail.com

## ABSTRACT

A 13 year old boy met with mobile phone blast injury presented with pain abdomen and multiple injuries over abdomen and chest with sutured laceration. On examination signs of peritonitis were present. Radiological investigations showed air under diaphragm. On Emergency exploratory laprotomy, perforation of around 1cm is found at the antrum of stomach on its greater curvature. Closure of the perforation was done. Patient recovered well.

**Keywords:** blast injury, cell phone, gastric perforation.

## INTRODUCTION

Blast injuries are common in war, terrorism, cooking gas etc., but cell phone blast injuries are of late increasingly common causing variety of injuries involving different parts, organs, systems of the person with short term and long term effects including “ripple effect” on that person, family and community. These injuries present unique triage, diagnostic and management challenges. We need study, training and preventive measures. Cell phone blast injuries are more common in Asia producing non-brand replacement batteries with attractive low price. People also need education regarding usage of cell phones.

## CASE

A 13 Year old boy resident of Ramagundam, alleged to have met with mobile phone blast injury while he was

holding a cell phone in his left hand close to the abdomen on 20.01.2013. He has come to triage with pain abdomen next day morning with multiple injuries over the abdomen and chest with a sutured laceration, Injury of left palm for which he was treated at the local hospital. He was hemodynamically stable at the time of presentation. Abdominal pain was sudden in onset which continuous and progressive, present all over the abdomen. There was history of blurring of vision and pain in the left eye. Past history, Family history, Personal history was not significant. General examination was normal. On Local examination many small abrasions and lacerations with specks of visible black foreign body are seen. He was complaining of abdominal pain which was increasing in severity. On physical examination guarding, rigidity and rebound tenderness was present with absent bowel sounds.

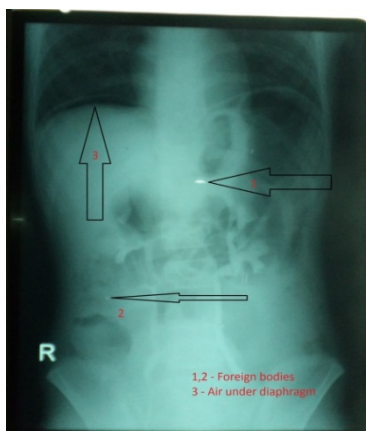


Fig.1

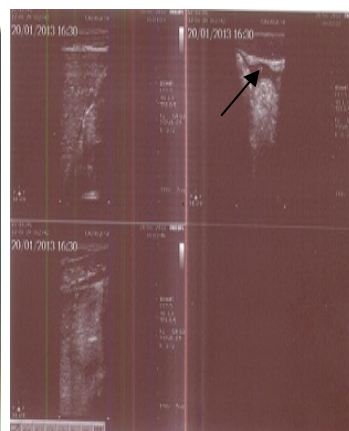


Fig.2



Fig.3

**Fig.1: X-ray Abdomen Erect showing foreign bodies and Pnemoperitoneum,**

**Fig.2: USG Abdomen showing mild free fluid in the peritoneal cavity indicated with an arrow.**

**Fig.3: X-ray Left hand showing fracture of the left 5<sup>th</sup> metacarpal indicated with an arrow.**



Fig. 4



Fig.5

Fig 4 and 5: CECT abdomen: Foreign bodies(white arrow in fig.4) in left lumbar and at the level of descending colon with pneumoperitoneum and hemoperitoneum(black arrow in fig.5)

## INVESTIGATIONS

**Routine Investigations:** normal, Specific Investigations Chest X-ray PA view- Normal.

**Diagnosis:** Hollow viscus perforation because of blast injury.

**Plan of care:** Emergency Exploratory Laprotomy.

**Intro-operative findings:** Perforation of around 1cm is

found at the Antral region of stomach on its greater curvature. Small specks of foreign bodies were present in the intestinal wall, no other foreign bodies in the peritoneal cavity, with seropurulent fluid of app 100ml was present.

**Procedure:** Perforation closure is done by graham's patch. Closure was done with 2.0 Vicryl. Post-operative management was uneventful and patient recovered well.

## PRE-OPERATIVE



Fig. 6

## INTRA-OPERATIVE



Fig.7

Fig.6: Pre-operative picture showing multiple injuries over the abdomen, chest.

Fig.7: Intraoperative picture showing perforation at the antrum of stomach on its greater curvature.

## DISCUSSION

Blast trauma is multidimensional injury; the type of the blast injury may lead to different systems involvement as it often combines blast, penetrating blunt, and burn mechanisms in the same casualty. <sup>1</sup>Blast injuries are classified into four types<sup>2</sup> Primary: is caused by the direct effect of blast overpressure on tissue, Secondary: caused by flying objects that strike people, Tertiary: caused by high-energy explosions; occurs when people fly through the air and strike other objects, Quaternary: encompass all other injuries caused by explosions. In primary blast injuries, ear drum perforation is the most common clinical finding. Pneumothorax should be actively ruled out and immediately decompressed in pa-

tients with blast lung injuries. Mortality is in excess of 60% in severe cases.<sup>3</sup>

### Gastrointestinal (GI) Injuries

Most common abdominal blast injuries include:<sup>4</sup>Primary: abdominal haemorrhage and perforation (colon most vulnerable to perforation)·Secondary: penetrating and blunt abdominal trauma·Tertiary: blunt and penetrating abdominal trauma·Quaternary: crush injury to abdomen and abdominal wall. In Primary blast injury to the gastrointestinal system involves the gas-containing organs far more than the solid organs; however, solid organs can be affected with high overpressures. In Injuries to liver, spleen, and kidney results in

lacerations, hemorrhage, and contusions. Hollow viscous injuries include hemorrhage, petechiae, and circumferential rings of hemorrhage. Transmural lesions can lead to full thickness bowel perforation, hemoperitoneum, peritonitis, and sepsis.<sup>3</sup>The clinical pitfall with these injuries is a delayed presentation, with some casualties developing peritoneal signs 48 hours or more after the explosion. The injury may affect any portion of the bowel but a propensity for the terminal ileum has been described.<sup>6</sup>Perforations are not common (0.1% to 1.2%) but may develop up to 24-48 hours later; however, delays of up to 14 days have been reported. Paran and colleagues reported on 3 patients who developed terminal ileum perforations requiring surgical resection. One patient was operated on immediately for signs of peritonitis on admission while the other 2 developed symptoms 24 hours later. Whether the perforations were due to an evolving injury or missed initially is unclear, but patients with blast injury should have serial abdominal examinations.<sup>4</sup> Symptoms of GI involvement include abdominal pain, nausea, vomiting, diarrhoea, and tenesmus, rectal, or testicular pain. Physical findings may be absent or diminished bowel sounds, bright red blood per rectum, guarding, rebound tenderness, and unexplained hypovolemia. Any patient with abdominal findings should have surgical intervention.

Diagnostic peritoneal lavage (DPL) is useful for patients with abdominal wall perforations by projectiles or in the unconscious or intubated patient. Otherwise, ultrasound and abdominal CT scans may be used. CT may reveal

extraluminal gas, hemoperitoneum, solid organ injury or disruption, or bowel wall hematomas with large fluid collections. However, CT has poor sensitivity in identifying hollow viscous injury; if symptoms persist, a DPL should be performed. For victims who are hemodynamically unstable despite a negative DPL, surgical intervention may be required as DPL can miss retroperitoneal injury, mesenteric hematomas, and subcapsular solid organ injuries.<sup>2</sup>

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