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Gunshot Injury to the Chest and Abdomen- A Case Report

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Abstract:
Gunshot wounds to the thoracoabdominal region are serious injuries that must be thoroughly investigated and treated aggressively. Because a penetrating projectile has no regard for fascial planes or distinctions between body cavities, all wounds in the lower thorax and upper abdomen must be viewed as a single lesion. Because of the physiologic differences between the abdominal and thoracic cavities, injury to both, such as that caused by a penetrating wound, adds more to the patient's shock than injury to either cavity alone. Herein we report a case of gunshot injury to chest and abdomen in a 29 year male who presented with breathlessness and left chest pain. Clinical findings, diagnostic work-up, and follow-up are provided along with a review of the literature on gunshot injury to chest and abdomen.

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I. Introduction :

Thoracoabdominal penetrating wounds are common lesions during warfare. The clinical manifestations of these wounds exhibit one of the following varieties: (1) Shock (hemorrhage) syndrome; (2) Thoracic (respiratory) syndrome; (3) Peritoneal syndrome; (4) Retroperitoneal syndrome. Shock (Hemorrhage) Syndrome:. Massive hemorrhage is the characteristic finding in the group of patients showing the shock (hemorrhage) syndrome. Thoracic (Respiratory) Syndrome .The majority of the wounds causing the thoracic (respiratory) syndrome penetrate the lower lobe* of the right lung or the right costophrenic sinus, pierce the diaphragm and cause a tunneling or grooving lesion of the dome of the liver. Peritoneal Syndrome The peritoneal syndrome is characterized by the penetration of hollow viscera. The lower lobe of a lung or the costophrenic sinus on either side of the thorax is penetrated, and the stomach or other portions of the intestinal tract are perforated. Retroperitoneal Syndrome. A small portion of abdominothoracic gunshot wounds present a clinical picture which has been called a retroperitoneal syndrome by Jolly. The principal wound is found in the mesentery and the retroperitoneal organs.

II. Case Report:

A 29 yr old male admitted with alleged history of gunshot injury over the chest. complaints of breathlessness, left sided chest pain and abdominal pain since trauma. On examination air entry decrease on the left side, diffuse tenderness in abdomen, guarding +, rigidity+, with absent bowel sound. Local examination Entry wound: Lacerated wound of size 3*2*1cm over Left side of chest .No exit wound .Abdomen no external injuries. Preoperative investigation was done chest x-ray and x-ray abdomen erect shows left lower lobe contusion. Free intra peritoneal air pockets in the Left upper quadrant seen outlying Left hemi diaphragm. Focal discontinuity in Left Hemi diaphragm .Rectangular radiopaque foreign body noted in Left lumbar region at level of left iliac crest P/O Bullet. Hence pt was proceeded with Laparotomy and thoracotomy .Under ET GA and epidural anesthesia. Left subclavian central venous access done. LAPA ROTOMY: Intra op Findings : about 1 litre of Hemoperitoneum .Splenic hilar injury with active pulsatile bleed.3*3 cm diaphragmatic rent in the muscular part.2*2 cm Contusion in greater curvature of stomach. Perforation of size 1*1 cm in transverse colon near the splenic flexure with 1 cm foreign body within it.3*2 cm foreign body cylindrical in shape retrieved from peritoneal cavity near L paraaortic region. Few omental tears present. Hence proceeded with splenectomy .Primary closure of transverse colon. Transverse loop colostomy. Wash given, haemostatic attained, drain tubes kept ,laparotomy wound closed in layers. Position: Right lateral decubitus .Incision: Left postero lateral thoracotomy. Under C-arm guidance foreign body identified in and around entry site and along the trajectory

pathway- retrived .Thoracotomy: Intra op findings: Left upper lobe through and through penetrating injury near the lingula .Foreign body over the lung parenchyma identified and retrieved Pericardium descending aorta found to be normal. Fracture of Left 7th rib in MAL with deep crushed bony fragments.3*3 diaphragmatic rent in Left hemi diaphragm muscular part. Lung injury sutured with 3-0 vicryl .Diaphragmatic rent closed with 1 proline interrupted sutures. Left 7th rib fragmented portions excised. Left ICD placed.Haemostasis attained .Thoracotomy wound closed in layers. Gun shot entry wound closed in layers.

Fig 1: Clinical pic of entry wound to left side chest

Fig 2: Radiographic image of x-ray abdomen erect

Fig 3: Post splenectomy specimen

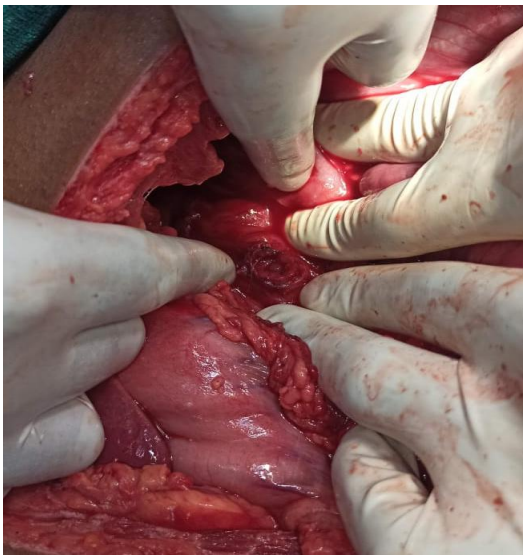

Fig 4: Intra op picture of transverse colon perforation

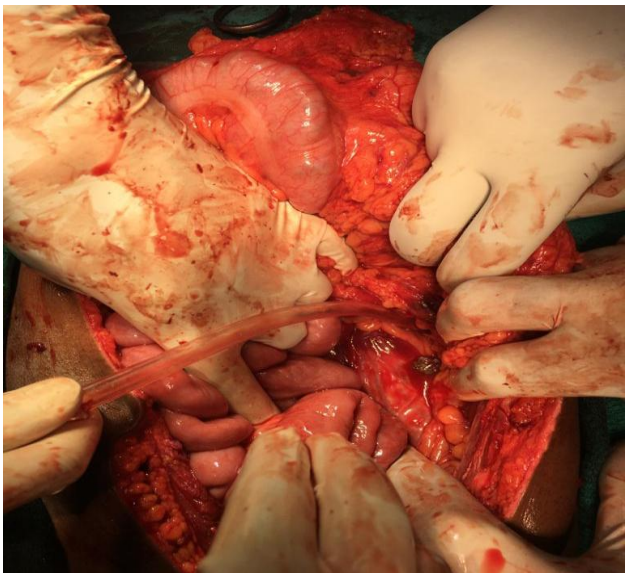

Fig 5: Intra op picture showing bullet in left illa fossa

Fig 6: Picture of retrieved bullet

Fig 7: Clinical picture of transverse loop colostomy

Fig 8: Intra op picture of lung laceration

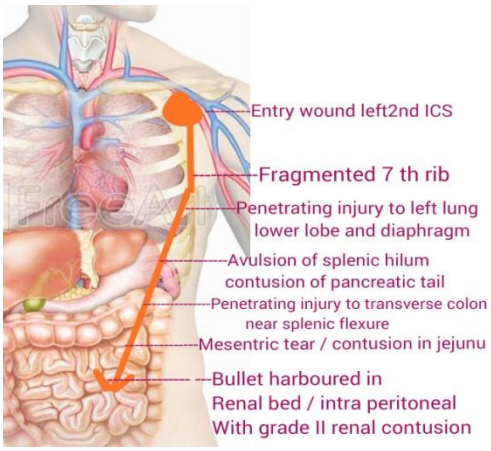

Fig 9:trajectory pathway

Fig 10: Post op clinical picture

III. Discussion

The physical trauma induced by a bullet from a firearm is known as a gunshot wound (GSW). Bleeding, shattered bones, organ damage, wound infection, loss of capacity to move a part of the body, and, in the worst-case scenario, death. Damage is determined by the bodily portion hit, the bullet's passage through the body, and the bullet's kind and speed[1]. Lead poisoning and post-traumatic stress disorder are two long-term consequences that can occur (PTSD). Before beginning management, make sure the area is safe. After that, severe bleeding is stopped, and the airway, breathing, and circulation are assessed and supported[2].

The chest wall, ribs, spine, spinal cord, intercostal neurovascular bundles, lungs, bronchi, heart, aorta, main vessels, esophagus, thoracic duct, and diaphragm are all important anatomy in the chest. Severe bleeding (hemothorax), respiratory compromise (pneumothorax, hemothorax, pulmonary contusion, tracheobronchial injury), heart injury (pericardial tamponade), esophageal injury, and nervous system injury can all result from gunshots to the chest[3]. Not every gunshot wound to the chest necessitates surgery. Asymptomatic people with normal chest X-rays can be observed with a repeat exam and imaging after 6 hours to ensure no delayed development of pneumothorax or hemothorax[4]. A chest tube is usually sufficient for management of a person who only has a pneumothorax or hemothorax, unless there is large volume bleeding or a persistent air leak[5].

Gunshot wounds to the abdomen can result in severe bleeding, bowel contents leakage, peritonitis, organ rupture, respiratory compromise, and neurological deficits.The most important initial assessment of a gunshot wound to the abdomen is whether there is uncontrolled bleeding, peritoneal inflammation, or bowel contents spillage[6]. If any of these are present, the patient should be rushed to the operating room for a laparotomy. Although previously, all people with abdominal gunshot wounds were taken to the operating room, with advances in imaging, practise has shifted in recent years to non-operative approaches in more stable people[7]. If the patient's vital signs are stable and there is no need for immediate surgery, imaging is performed to determine the extent of injury[8]. Ultrasound (FAST) can aid in the detection of intra-abdominal bleeding, and X-rays can aid in the determination of bullet trajectory and fragmentation[9].

IV. Conclusion

The presence of colonic injury and the number of organs injured (more than three) appear to be important predictors of morbidity in high-velocity missile-caused penetrating abdominal gunshot wounds.

A gunshot injury to the chest with a patient who is in shock and has intrathoracic haemorrhage should be evaluated for intra-abdominal and/or pelvic bleeding. Rapid evaluation of the abdominal cavity usually necessitates either a diagnostic lavage (DPL) or a trauma ultrasound (FAST), with the remark that neither of these techniques is effective for diagnosing pelvic bleeding.

CONSENT

The authors would like to thank the patient for providing informed consent for the publication of this case report.

CONFLICT OF INTEREST

Authors have no conflict of interest to declare.

AUTHOR CONTRIBUTION

1. Patient management and treatment decisions.
2. Patient management, surgical treatment and manuscript writing.
3. Patient management, manuscript writing.

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