

# MISSED DIAGNOSIS OF A DELAYED DIAPHRAGMATIC HERNIA AS INTESTINAL OBSTRUCTION: A CASE REPORT

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## ABSTRACT

Penetrating diaphragmatic injury rarely occurs in isolation. Diagnosis of traumatic diaphragmatic hernia resulting from penetrating diaphragmatic injury may be delayed or missed with attendant high morbidity and mortality. We reported a 28-year-old man who presented with features of subacute intestinal obstruction which became severe over the last four days. He had a stab injury to his left lower chest wall that was sutured 31/2 years prior to the development of symptoms. Emergency laparotomy with incidental findings of missed diaphragmatic hernia with gangrenous jejunal segment was found. The hernia was reduced, gangrenous segment resected with end to end anastomosis, and repair of diaphragmatic rent done. He had an uneventful recovery and follow up. There is the need to maintain high index of suspicion of Traumatic Diaphragmatic Hernia (TDH) in a patient with recent or previous thoraco-abdominal injury that will reduce the rate of missed or delayed diagnosis.

Key words: penetrating chest injury, diaphragmatic hernia, delayed, missed diagnosis.



## INTRODUCTION

**T**raumatic Diaphragmatic Hernia (TDH) may result from either blunt or penetrating injuries, with reported incidence of 0.8 -1.6% and up to 70-90% respectively.<sup>1</sup> Most reports on the disease are case reports or case series; either missed or delayed, the manifestations are varied, non-specific, subtle in some cases and masked by other serious injuries in poly traumatised patients.<sup>2-8</sup> A high index of suspicion in a patient with recent or previous thoraco-abdominal injury coupled with some imaging

investigations will reduce the rate of missed or delayed diagnosis. When diagnosis is uncertain in a patient presenting with features of intestinal obstruction early surgical exploration should be considered if strangulation is to be avoided as evidenced by this case. Diaphragmatic injury from stab and gunshots are likely to increase from the rising arm conflicts and civil unrest due to insurgent's activities in our sub region thus the need to maintain high index of suspicion.

## CASE REPORT

A 28 year old man presented with a recurrent abdominal pain, got worse 4 days prior to presentation. There was associated progressive abdominal distension, vomiting and hiccup. He also

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had left chest discomfort and tightness worse on lying down. The Patient reported that he was stabbed to his left lower chest with a knife 3 years earlier where wound was only sutured.

Clinical examination on admission, revealed an acutely ill young man, afebrile, respiratory rate (RR) of 32cpm and pulse rate (PR) of 100bpm. Chest examination revealed a 4cm healed stab wound in the 10<sup>th</sup> Left Inter-costal space, ( fig 1.), dull percussion note and decreased air entry in the Left lower chest zone with transmitted sounds. The abdomen was grossly distended with visible peristalsis, and increased bowel sound. Diagnosis of acute intestinal obstruction was made. Plain chest x-ray showed an elevated left dome of diaphragm, irregular opacities at left lower chest zone (fig 2.) Abdominal X-ray showed dilated bowel loops, with multiple air fluid levels. Electrolytes, urea and creatinine are within normal limit. He was resuscitated with intravenous (IV) fluid, Nasogastric tube (NGT) intubation that drained 2 litres of bilous fluid, and Urethral catheter output was 50mls/hour. Patient abdominal distention and hiccup subsided, but on the second day of admission, patient developed a high graded fever (temp. 38.6°C), gross abdominal distention with tenderness and guarding, RR = 38cpm, PR = 134bpm with reduced Bowel sounds. A diagnosis of strangulated intestinal obstruction was made and emergency laparotomy was performed. Intra operative findings were: a grossly dilated Stomach with 18cm of the gangrenous segment of jejunum, 12cm from the ligament of treitz (fig 3.) the rest of the small bowel, part of the transverse colon and the greater omentum were herniated through the left dome of the diaphragm. (Fig.4).The gangrenous jejunal segment was resected and end - to - end jejun - jejunal anastomosis was done. The diaphragmatic rent; 9 x 8 cm in diameter (fig. 5) was repaired using prolene. Post-operative recovery and follow up at 6 months were uneventful.



Fig. 1 - Shows previously healed stab wound post-laparotomy



Fig. 2 - Chest x-ray showing elevated left hemidiaphragm with distortion of contour

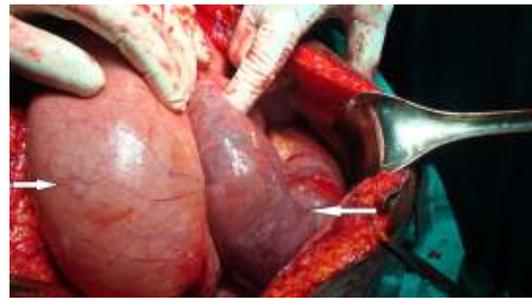


Fig. 3 - Dilated stomach with gangrenous jejunal segment



Fig. 4 - Diaphragmatic rent with herniated stoma being reduced



Fig. 5 - Diaphragmatic rent, 9 x 8 cm

## DISCUSSION

Mechanism of Diaphragmatic injury (DI) following blunt or penetrating thoraco-abdominal trauma varies. Blunt injuries cause rupture or tear from the shearing forces that spread in radial direction at the weakest point of the posterior lateral diaphragmatic wall. These, occurs more commonly on the left because of the presumed relative weakness of the left hemi diaphragm and protective effect of the liver on

the right side<sup>9</sup>. Similarly, stab injuries occur 3-5 times commoner on the left because the assailants are mostly right handed and injure their victims on the left as demonstrated in our patient<sup>10</sup>. Isolated diaphragmatic injury secondary to stab of the lower chest can remain asymptomatic and present later in life with intestinal obstruction because such injuries produces a small stabbing defect which is easily overlooked as seen in our patient. Delayed progressive visceral herniation through the diaphragmatic tear from constant negative intrapleural pressure pulling on mobile abdominal viscera occurs. When laceration occurs temporary “plugging” of the diaphragmatic defect by omentum may occur which may not prevent symptomatic visceral herniation from occurring some months or years later,<sup>2-5</sup> the longest delay of 50 years have been reported.<sup>11</sup> These delays often lead to various complications.<sup>2-6</sup> Thus, penetrating injuries with trajectories below the mammary line or above the costal margin should raise a high suspicion of a diaphragmatic injury. Delayed or missed diaphragmatic hernia should be considered in a patient with a prior history of penetrating trauma involving the lower chest or upper abdomen presenting with acute signs of intestinal obstruction. If such were entertained in our patients and early surgical exploration done the bowel may still have been viable. TDH may present with a new or vague abdominal pains, nausea, vomiting, dyspnoea, shoulder or chest pain and hiccup as in our patient. The sign of diaphragmatic irritation was thought to be due to splinting of the diaphragm from intestinal obstruction.

Initial chest x-ray may be normal or non-specific in 20-50% of patients, abnormalities that may suggest DI includes; “collar sign”, demonstration of NGT or abdominal viscus in thorax, other findings are obliteration of the diaphragm outline or distortion of its contour, elevation of the hemidiaphragm, pleural effusion or air-fluid level in the thorax. These signs are however nonspecific but when used in patients with prior history of trauma and serially in resource poor settings, a preoperative diagnosis up to 89% is achievable.<sup>7</sup> The chest x-ray of our patient (Fig.2.) demonstrated such retrospectively and if combined with the prior history of stab injury, missed diagnosis would have been avoided. Computerised Tomography (CT) scan is the mainstay of diagnosing TDH; it has a high sensitivity of 71% and specificity of 100% respectively as reported Killeen et al.<sup>12</sup> Diaphragmatic injuries should be surgically treated when recognized

early to reduce the attendant morbidity and mortality, since spontaneous healing is unlikely because of its constant state of motion. Options for repair include; the traditional open surgical repair by laparotomy, laparoscopic, thoracoscopic and video assisted thoracoscopic surgery. The choice is dependent on severity, complications of injury, the facilities and expertise available. Mortality increases from 3% if detected early to 25% in delayed or missed diagnosis.<sup>12</sup> TDH from stab injuries to the lower chest or upper abdomen are still being missed or diagnosis delayed. High index of suspicion should be considered in a patient with prior history of penetrating trauma to the thoraco-abdominal region presenting with features of intestinal obstruction and if in doubt early laparotomy should be considered in our setting.

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