Case Report

Post-traumatic Synchronous Twin Inter-muscular Abdominal and Diaphragmatic Hernias: A Rare Presentation

Mohammad Sadik Akhtar, M.H. Beg, Syed Asmat Ali and Nadeem Mushtaque

Cardiothoracic Vascular Unit, Department of Surgery, J.N. Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

ABSTRACT

Simultaneous occurrence of traumatic abdominal wall hernia (TAWH) and traumatic diaphragmatic hernia (TDH) is uncommon. Our report documents the rare delayed presentation of simultaneous occurrence of TAWH and TDH in a patient who sustained a bicycle handlebar injury as a consequence of the bicycle he was riding colliding with a motorbike in a road-traffic accident. Excellent outcome could be achieved in this patient with surgical repair without requiring the use of a mesh. **[Indian J Chest Dis Allied Sci 2012;54:193-195]**

Key words: Traumatic abdominal wall hernia, Traumatic diaphragmatic hernia, Twin hernia, Handlebar.

INTRODUCTION

Traumatic diaphragmatic hernia (TDH) is an uncommon injury which is being more frequently encountered because of the increasing number of road-traffic accidents during the last few years.[1-3] Traumatic abdominal wall hernia (TAWH) is also a rare type of injury.[4] We present a rare simultaneous occurrence of both inter-muscular TAWH and TDH following handlebar injury in a patient who sustained a road-traffic accident. The hernia was successfully managed by layer-by-layer, tension-free repair without a mesh with excellent outcome.

CASE REPORT

A 45-year-old postman presented to us with complaints of breathlessness and swelling in the left hypochondrium and lumbar region. He gave a history of sustaining a road-traffic accident two weeks back. While riding on a bicycle he collided with a motorbike and sustained a blunt injury to left upper abdomen caused by the handlebar of his bicycle. Patient felt pain and had noticed a swelling with an expansile impulse on coughing or exertion in left upper abdomen immediately after trauma. He also complained of breathlessness that worsened on food intake. He consulted a private practitioner who prescribed analgesics and bronchodilators but these measures did not provide relief from his symptoms. When he presented to us, physical examination revealed a swelling in the left hypochondrium and lumbar region (Figure 1); an expansile cough impulse was evident. Respiratory system examination had revealed reduced air entry on the left side; bowel sound were audible in the left hemithorax. Chest radiograph revealed a left-sided basal homogeneous opacity with multiple air shadows. Contrast enhanced computed tomography (CECT) of the thorax and abdomen revelaed left-sided diaphragmatic hernia with left inter-muscular hernia (Figure 2). Disruption of internal oblique and transversus abdominis muscles with an intact external oblique muscle was evident. The patient underwent surgical repair using a left-sided

Figure 1. Pre-operative photograph showing a large hernia presenting as left flank bulge.

[Received: February 2, 2012; accepted: March 12, 2012]

Correspondence and reprint requests: Dr M.H. Beg, Professor, Cardiothoracic Vascular Unit, Department of Surgery, J.N. Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India; E-mail: mhbeg@rediffmail.com

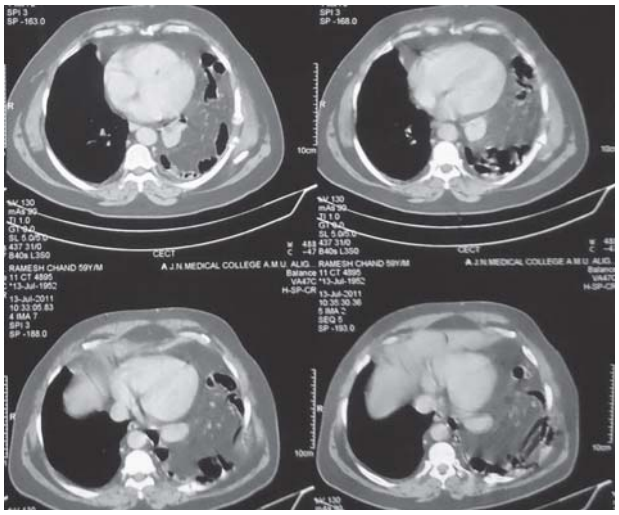

Figure 2. Contrast enhanced computed tomography of the thorax and abdomen showing a combined diaphragmatic and inter-muscular parietal thoracic and abdominal wall hernia.

thoracoabdominal incision. At operation, external oblique muscle was found to be intact and stretched over the abdominal viscera that had herniated through a 10cm x 9cm rent in the peritoneum, fascia transversalis, transversus abdominis, internal oblique muscles. Dehiscence of diaphragm and intercostal muscles between left 8th and 9th costal cartilages, presence of a 10cm x 6cm tear resulting in viscerothorax (Figure 3) could be seen. The viscera were reposed in the abdominal cavity. The torn muscles were repaired with horizontal mattress interrupted 1-0 silk sutures. Intercostals muscles and dehisced costal margin and tear in the diaphragm were repaired with interrupted silk sutures placing

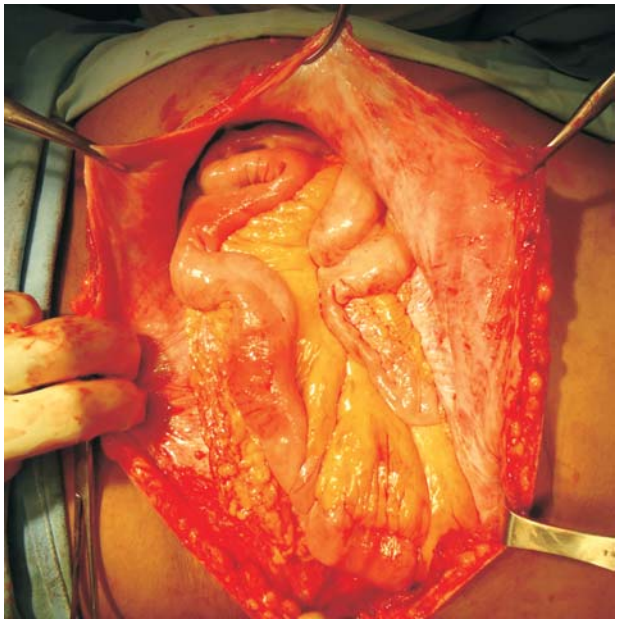

Figure 3. Operative photograph showing inter-muscular parietal wall hernia.

an intercostal tube connected to underwater seal (Figure 4). The patient was electively ventilated for 72 hours to avoid coughing and facilitate a smooth recovery. The post-operative period was uneventful. He recovered well and remained asymptomatic till the last follow-up visit.

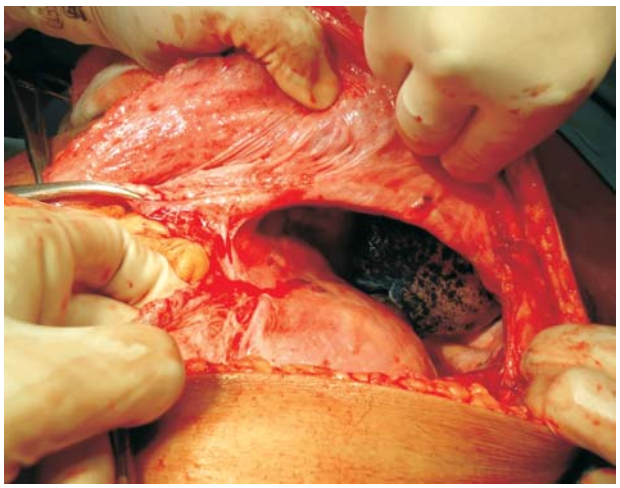

Figure 4. Operative photograph showing large diaphragmatic defect through which small intestines were herniating.

DISCUSSION

Diaphragmatic, lumbar and extra-thoracic hernias are well described complications of blunt trauma.[5] TAWH usually follows localised blunt trauma, from objects that are not small enough to penetrate the skin and are not large enough for the force involved to be dissipated widely. Occasionally, disruption of the abdominal wall may result from a severe compressive force. Raised intra-abdominal pressure is more likely to cause a TDH and this may co-exist with a TAWH.[6] This kind of injury may occur in a road-traffic accident when a person riding a bicycle collides with a fast moving vehicle (as in the case of our patient) and sustains a handlebar injury and develops a hernia.[7]

In this patient, the transversalis and internal oblique muscles had been avulsed from the costal margin. The external oblique muscle had withstood the trauma, probably because of its higher origin. Intercostal muscles between left 8th and 9th costal cartilages had also dehisced in the line of dehiscence of transversalis and internal oblique muscles along with tear in the left dome of diaphragm. In the absence of an immediate indication for surgery in the injured patient, early recognition of these hernias can be a diagnostic challenge and delayed presentation is common.[5]

This patient had noticed the presence of swelling immediately after the trauma but it was probably treated like a haematoma and ignored by both treating doctor and patient himself. When swelling became large and patient started having breathlessness, he was referred to our hospital. Upon diagnosis,

surgical repair is necessary secondary to the high morbidity and mortality associated with herniation and strangulation of abdominal organs. The operative approach of combined diaphragmatic and abdominal hernia depend upon several crucial factors, such as, the clinical and radiographic findings, the patient's condition, and the positioning of the hernia.[5] We used a thoraco-abdominal approach in our patient. Critical to repair is the reconstruction of the intercostal space by carefully suturing torn intercostal muscles and diaphragm and bringing back together adjoining ribs, and a tension-free and layer-by-layer approximation of margins of hernia.

Our report, the third of its kind in published literature[8] documents the rare delayed presentation of simultaneous occurrence of TAWH and TDH in a patient who sustained a bicycle handlebar injury as a consequence of the bicycle he was riding colliding with a motorbike in a road-traffic accident. Excellent outcome could be achieved in this patient with surgical repair without requiring the use of a mesh.

REFERENCES

1. Daoud IM, Calderelli RA, Knight HF, Mannix H Jr. Traumatic diaphragmatic herniation with abdominal wall rupture. *Conn Med* 1978;42:83-5.
2. Grover SB, Ratan SK. Simultaneous dual post traumatic and abdominal wall hernias. *J Trauma* 2001;51:583-6.
3. Welsford M. Diaphragmatic injuries. *Med J* 2001;2:72-6.
4. Netto FA, Hamilton P, Rizoli SB, Nascimento B Jr, Brenneman FD, Tien H, *et al*. Traumatic abdominal wall hernia: epidemiology and clinical implications. *J Trauma* 2006;61:1058-61.
5. Crandall M, Popowich D, Shapiro M, West M. Post-traumatic hernias: historical overview and review of literature. *Am Surg* 2007;73:845-50.
6. Rao PSV, Kapur BML. Traumatic intermuscular hernia in the anterior abdominal wall. *Arch Emerg Med* 1987;4: 237-9.
7. Dimyan W, Robb J, MacKay C. Handle-bar hernia. *J Trauma* 1980;20:812-3.
8. Choi HJ, Park KJ, Lee HY, Kim KH, Kim SH, Kim MC, *et al*. Traumatic abdominal wall hernia (TAWH): a case study highlighting surgical management. *Yonsei Med J* 2007;48:549-53.