

**Incidental Diagnosis of Post Traumatic Asymptomatic Adult Diaphragmatic Hernia**

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**Abstract**

Traumatic diaphragmatic hernia can go undiagnosed as patient can remain asymptomatic post trauma without cardiopulmonary compromise. There are incidents in literature that are detected by coincidence 20 years after the trauma although they are rare.

We present anaesthetic management of a patient with diaphragmatic hernia with history of previous trauma (15 years ago), who developed no symptoms over years and was diagnosed incidentally preoperatively when patient presented with fracture distal femur posted for open reduction and internal fixation.

**Keywords:** Incidental, Traumatic, Asymptomatic, Adult diaphragmatic hernia.

**Introduction**

Diaphragmatic hernias, which occur because of a defect on the diaphragm, may be congenital or acquired. Traumatic diaphragm hernias, which are in the acquired group, are detected in 0.8%-1.6% of obtuse trauma events.<sup>1</sup>

Right-sided diaphragmatic hernias in adults are usually caused by penetrating or blunt trauma<sup>2,3,4</sup> and only a few reported cases have not involved some type of obvious damage or injury.<sup>5,6</sup>

In this report, we aimed to present the anaesthetic management of a patient with diaphragmatic hernia with history of previous trauma (15 years ago), which was diagnosed incidentally preoperatively when patient presented with fracture distal femur posted for open reduction and internal fixation.

**Case Report**

A 30 year old male patient presented in the emergency department with a history of road traffic accident. The patient had c/o pain and swelling in left thigh. No h/o loss of consciousness, vomiting, seizure, chest pain, abdominal pain, ENT bleed.

On examination: GCS E<sub>4</sub>V<sub>5</sub>M<sub>6</sub>, Afebrile: Pulse- 100/min, B.P.- 130/88 mmHg, RR- 18/min, SpO<sub>2</sub>- 100% room air. Systemic Examination- CVS -S<sub>1</sub>S<sub>2</sub>, RS- Right sided air entry decreased, bedside

pulmonary function tests were normal, CNS :no neurological deficit, pupils B/L NSRL. P/A: soft , no organomegaly, Local examination: swelling +, tenderness +, crepitus +, bony deformity +, distal pulse + ,no other external injuries were noted.

Airway: patent, mouth finger >3f, no loose teeth , MMPG II.

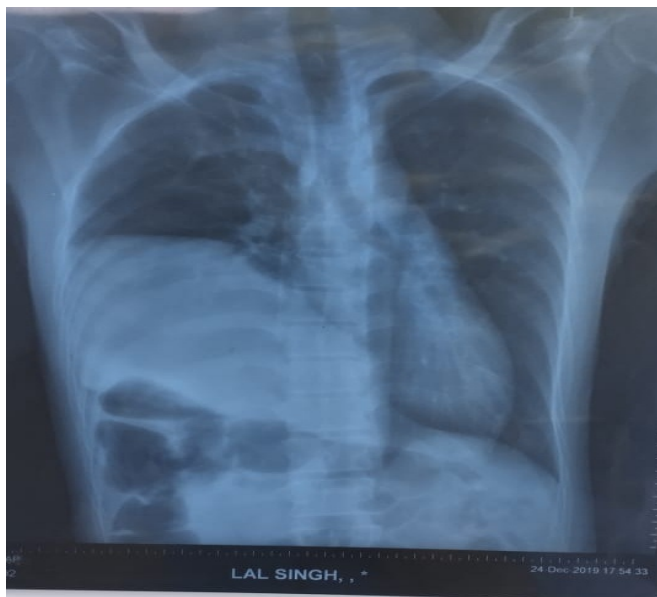
Patient lab data were as follows: hemoglobin (Hb)=12.0; hematocrit (Hct)=35.1.; platelet count:3,37000. prothrombin time (PT)=13.1; partial thromboplastin time (PTT)=24.1international normalized ratio (INR)1.2 ; blood urea=18; creatinine=0.8; Na=145, K=4.2; blood sugar (BS)=165mg/dl ; pH=7.42; PCO<sub>2</sub>=38.3; Po<sub>2</sub>=102.6,HCO<sub>3</sub> = 23.4 on R/A.

ECG : NSR, chest x ray : right hemidiaphragm elevated, no# rib/pneumothorax / hemothorax,

x-ray lower limb: # left distal femur . eFAST :negative.

CECT TORSO: old diaphragmatic hernia with herniation of liver, hepatic flexure, head of pancreas.

NCCT : normal,



C spine : normal. After General surgery and CTVS consultation taken for old diaphragmatic suggesting no active intervention because the patient did not have

any haemodynamic and respiratory disorders, patient was taken up open reduction and internal fixation for # distal femur.

**Plan of Anesthesia:** Combined spinal epidural technique (CSE).

Considering increased risk of complications in case of diaphragmatic hernia along with general anesthesia and need for post operative ventilatory support we decided to administer sequential combined spinal epidural anesthesia in this case.

After informed consent was obtained from the patient for the operative procedure & anesthesia and arrangement of adequate blood products , patient was shifted to OT and monitors attached (ECG, NIBP, SpO<sub>2</sub>, EtCO<sub>2</sub>, temperature), two 18G peripheral venous lines were secured and ringer lactate infusion was started.

Patient was made to sit with support.. Under all aseptic precautions epidural space was located with 18g tuohy's needle with LOR technique with air in L3 -L4 space with midline approach. subarachnoid space was located by spinal needle through epidural needle and after free and clear flow of csf was confirmed 2.8ml of 0.5% bupivacaine heavy + 30mcg clonidine was given. Epidural catheter was threaded and fixed at 10cm.

A sensory level of T10 was achieved on checking for pin prick sensation. Patient was administered O<sub>2</sub> @ 6l/min by face mask.

Intraoperative period was uneventful .Patient was given Inj. Midazolam 1 mg i.v. and

Inj paracetamol 1000mg i.v , Inj tranexamic acid 1 gm i.v. Patient maintained hemodynamic parameters and spO<sub>2</sub> of 99% throughout the procedure.

Fluid management done with crystalloid and Blood loss of 1200ml was replaced by transfusing one packed cell,

urine output was 1000ml. Epidural Test dose was given, inj morphine 3mg was given thereafter.

Surgery was completed without requiring any epidural local anesthetic supplementation and on shifting the patient's sensory level for pin prick sensation was L1. Patient was shifted to Intensive Care Unit and was given Inj. Bupivacaine 0.125% via epidural every 6 hours for 2 days for post-op analgesia.

The patient was discharged from hospital on postoperative day 5 without any problem. Patient is currently (1 month postoperatively) doing well and followed up in both surgical and orthopaedic OPD.

### **Discussion**

Diaphragmatic hernias are separated into two types: congenital and acquired.

Amongst acquired Traumatic diaphragmatic hernia occurs in around 5% of trauma patients.<sup>7</sup> There are incidents in literature that are detected by coincidence 20 years after the trauma, although they are rare.<sup>8</sup>

Diaphragmatic injuries are detected at a later stage for patients with a history of fall, and the diagnosis is made by coincidence at the rate of 41.3% during laparotomy, thoracotomy or autopsy.<sup>9</sup>

With the protection afforded to the right side of the diaphragm by liver, majority of the diaphragmatic injuries occur on the left side.<sup>10</sup> These patients may present with a spectrum of symptoms and signs, ranging from minor chest/epigastric discomfort, respiratory distress and intestinal obstruction from strangulation of the herniated contents. In our case, traumatic diaphragmatic hernia stayed asymptomatic for 15 years and it was detected by coincidence in preoperative investigation when patient presented with # distal femur. Various studies have noted left-sided diaphragmatic hernias containing colon, stomach, omentum, spleen, small bowel, pancreas and adrenal

gland, whereas the documented contents of right-sided hernias have been limited to liver, gallbladder, kidney and omentum,<sup>6</sup> In our case herniation of liver, hepatic flexure, head of pancreas was seen.

Regional anesthesia with combined spinal epidural was chosen in the above case as it was a lower limb surgery and to minimize the risk of requirement for post operative ventilatory support incase of diaphragmatic hernia if given general anesthesia. Avoidance of post operative ventilatory support helps in reducing chances of post operative infections for which these patients are highly prone, thus helping in early recovery and reducing hospital stay. Avoiding general anesthesia also helps in reducing the chances of patient getting dependent on ventilator thus helping in reducing the days of ICU stay. Regional anesthesia decreases the risk of aspiration, metabolic stress response to surgery, and blood loss. It helps in improving systemic blood flow, decreases platelet stickiness thus reducing the risk of pulmonary embolism. It also reduces duration of ileus reducing incidence of post operative nausea and vomiting and earlier return of bowel function.<sup>11</sup> Still, it is recognized that respiratory compromise can occur with regional anesthesia, especially with high sensory levels because of blockade of the muscles of respiration and reduction of the inspiratory capacity and expiratory reserve volume<sup>12</sup>, in our case to avoid such compromise level of block was vigilantly monitored during initial few minutes after subarachnoid block and once level of T10 was achieved slight head elevation was given to patient.

Use of post operative epidural analgesia helps in providing good pain relief, reducing pulmonary infection and atelectasis<sup>13</sup>. Use of general anesthesia and positive pressure ventilation may be advantageous in patients with Traumatic Diaphragmatic Hernia to

expand the atelectatic lung, increase functional residual capacity and to deliver high concentration of O<sub>2</sub>. However, large tidal volume and high peak airway pressure are not recommended because of risk of barotrauma to non affected lung.<sup>7</sup> Keeping in mind above mentioned pros and cons associated with each modality of anesthesia in our case we preferred regional anesthesia.

### Conclusion

We conclude that diaphragmatic hernias may observed as delayed phenomenon following trauma and detected by coincidence at the time anaesthesia for different surgical procedure making management more challenging . In hospitals where there is high patient load radiological investigations must be meticulously interpreted, correlated with history of presentation and clinical findings.

Use of regional anesthesia provides a viable option in management of cases with traumatic diaphragmatic hernia and prevents the unnecessary intraoperative and postoperative morbidity.

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After the consultation with the surgical team, it was decided that operation would be continued as a laparoscopic surgery with low pressure (12 mmHg) because the patient did not have any haemodynamic and respiratory disorders. Considering the long duration of the present operation and the general situation of the patient (malignancy), it was decided not to interfere in the diaphragmatic hernia.