INTRODUCTION
Tension gastrothorax is an extremely rare condition, almost always reported as a delayed or late complication of acute traumatic diaphragmatic hernia. Due to the rare nature of the condition, it is difficult to predict the incidence/frequency.
Nasogastric tube insertion is recommended to relieve the tension. This case report describes the presentation and management of acute condition in a lady.

CASE REPORT
A 45-year-old non-smoker female presented at local hospital with a 10 days history of right shoulder pain and increasing shortness of breath for the last 4 days. She had a road traffic accident 11 years ago that resulted in traumatic rupture of the diaphragm, which had been surgically repaired.
On examination, she was in sinus rhythm with a rate of 100/min. The blood pressure was 110/70 mmHg and core temperature was 37.5°C. The arterial oxygen saturation was 95% while breathing room air. The left side of the chest was hyperresonant with decreased breath sounds. The chest radiograph was initially reported as left pneumothorax with mediastinal shift to the right (Figure 1).
Needle thoracostomy was performed, however, the procedure did not improve the clinical or radiological picture. A lateral chest X-ray showed a loop of bowel in the thoracic cavity that was later confirmed by CT scan as presence of stomach in the left hemithorax. Several attempts to pass a nasogastric tube failed.

The patient was transferred to the thoracic surgical unit. On arrival, the patient had developed extreme difficulty in breathing. She was in sinus tachycardia with a heart rate of 140/min, blood pressure of 80/60 mmHg, she was cold and clammy. Her condition deteriorated into a respiratory arrest. The trachea was rapidly intubated and lungs were ventilated. The stomach was decompressed by passing a 14G cannula through the left side of the chest wall. She was successfully resuscitated within a few minutes and an emergency thoracotomy was performed.
The stomach, omentum and spleen were found in the left side of the chest. The herniated abdominal contents were reduced and the defect in the diaphragm was repaired.

To facilitate the surgery, one-lung ventilation, using a left double lumen endobronchial tube, was performed. At the end of the procedure, on resuming two-lung ventilation, the patient became hypoxic, 88% on 70% inspired oxygen. The peak airway pressures were about 40 and pink froth started appearing in the endobronchial tube. The patient had developed re-expansion pulmonary edema. This was confirmed by a chest radiograph (Figure 2). Differential lung ventilation was commenced. The patient was then transferred to the intensive care unit.
Left lung required pressure control ventilation with peak ventilation pressure set at 30 cms of H20 delivering a tidal volume of approximately 300 mls with a positive end expiratory pressure of 7.5 cms of H20.

Right lung required pressure control ventilation with peak inflation pressure set at 20 cms of H20 delivering a tidal volume of 450 mls with a positive end expiratory pressure of 5 cms of H20.

There was marked improvement in the apparent dynamic compliance of the left lung and after 18 hours, conventional ventilation was commenced via normal endotracheal tube. Pressure controlled ventilation was continued for a further 5 days and then the respiratory support was weaned successfully.

**DISCUSSION**

Tension gastrothorax is a rare condition that simulates acute tension pneumothorax. It is almost always a delayed complication of traumatic diaphragmatic hernia.1

Insertion of a nasogastric tube with suction is a recommended primary emergency treatment.2,3 However, there have been cases reported where this treatment has failed.4,5 In such conditions, a rapid percutaneous needle decompression of the hollow viscus through the chest wall should be attempted. A chest tube may not control the situation unless and until the stomach is perforated.

In this patient, the viscus i.e. the stomach was decompressed by a 14 guage cannula. As we were aware of the diagnosis from the CT scan, done at the previous hospital, and there was a further distension of the stomach, we assumed that as a reason for our successful attempt.

Following emergency thoracotomy and corrective surgery, using one-lung ventilation, the patient developed unilateral re-expansion pulmonary edema.

Patients with such unilateral lung injury pose a significant challenge with ventilatory management. A unilateral lung injury creates a variable degree of asymmetrical lung mechanics resulting in decreased lung compliance, increased dead space, increased shunt fraction etc. Ventilation via a single lumen endotracheal tube exposes the uninjured lung to volutrauma.

Differential lung ventilation is one of the few treatment options in such conditions.6,8 Differential lung ventilation allows differential application of airway pressures and positive end expiratory pressures. This method prevents overinflation of normal lung and underinflation of damaged lung.9 By selectively managing each lung, barotraumas and volutrauma can be avoided. Recent studies in single lung transplantation have been suggested in patients with a difference in estimated dynamic compliance of 2.7 or greater may require differential lung ventilation. However, prospective and randomised studies are required to prove this.10

**REFERENCES**