CHAPTER 15

Trauma

The chest X-ray in cases of trauma may reveal numerous significant complications of trauma. The mechanism of injury should always be considered when reading a chest X-ray in the context of trauma. The following signs may be identified:

- Fractures, potential cause of penetrating injuries and in some sites easily overlooked (e.g. the spine)
- Consolidation indicating lung contusion
- Pneumothorax, pneumomediastinum, pneumopericardium and surgical emphysema-indicating penetrating injury or airway rupture introducing air to these spaces either from the lung or from outside the chest
- Haemothorax.

The following cases demonstrate the various results of trauma:

Lung contusion/laceration/fractures (Fig 15.1)

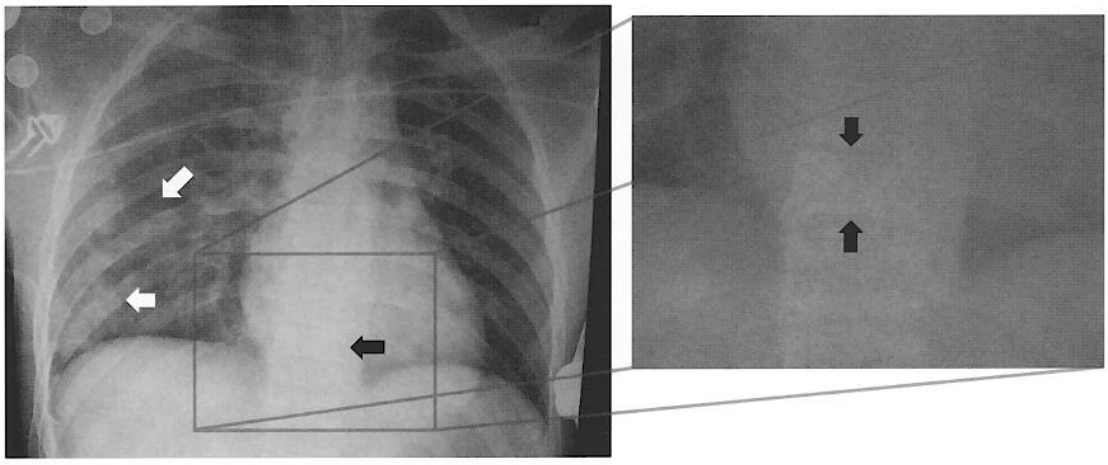

Figure 15.1
Frontal CXR of an adult male following a road traffic accident. Note the lung contusions (white arrows) but also the fracture of a lower thoracic vertebral body (black arrows).

Pneumothorax, surgical emphysema, pneumoperitoneum (Fig 15.2)

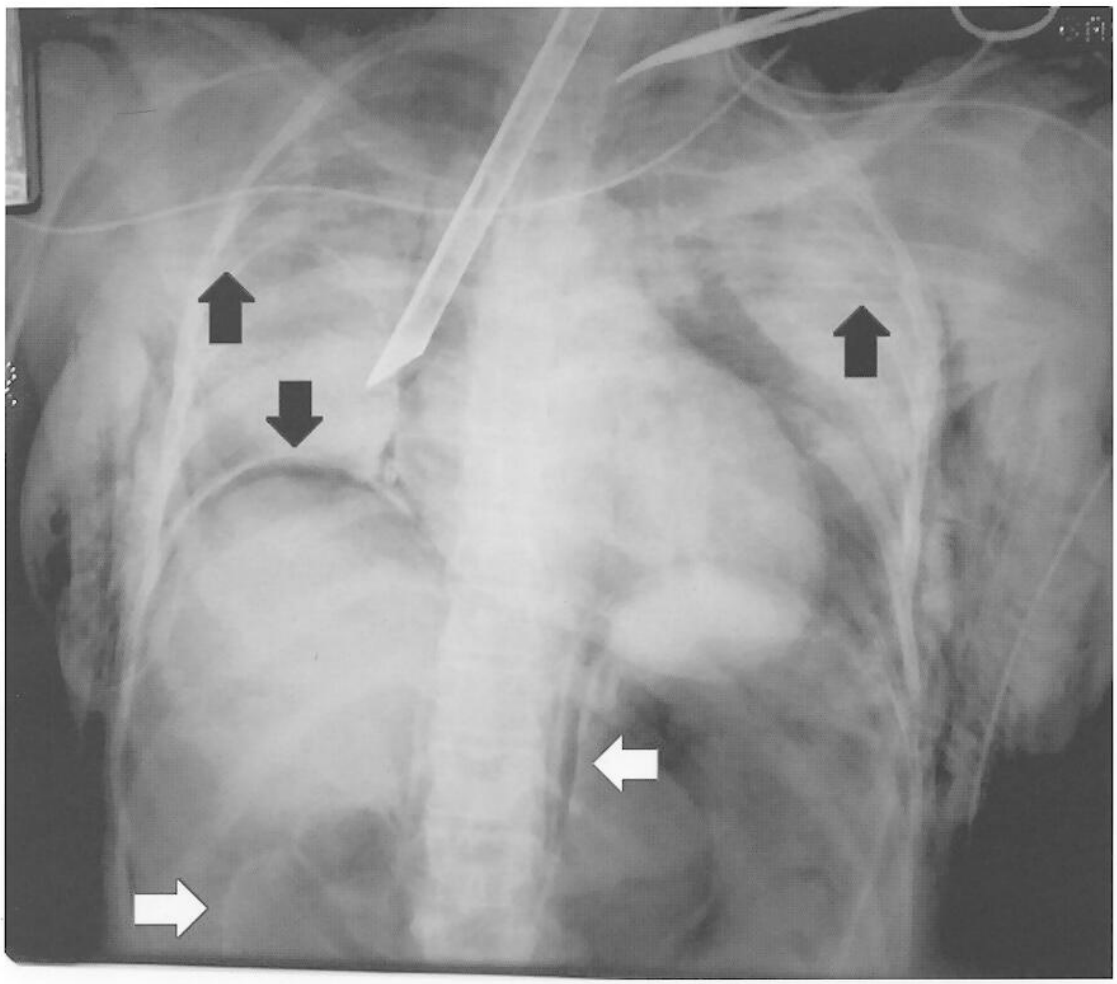

Figure 15.2
Supine CXR of an adult patient following a road traffic accident. Note the presence of air in the pectoral muscles (black arrows vertical up), pneumoperitoneum (horizontal white arrows), subdiaphragmatic air (black arrow vertical down). The left pneumothorax gives a sharp outline to the left heart border on this supine film.

Haemothorax (Fig 15.3, 15.4)

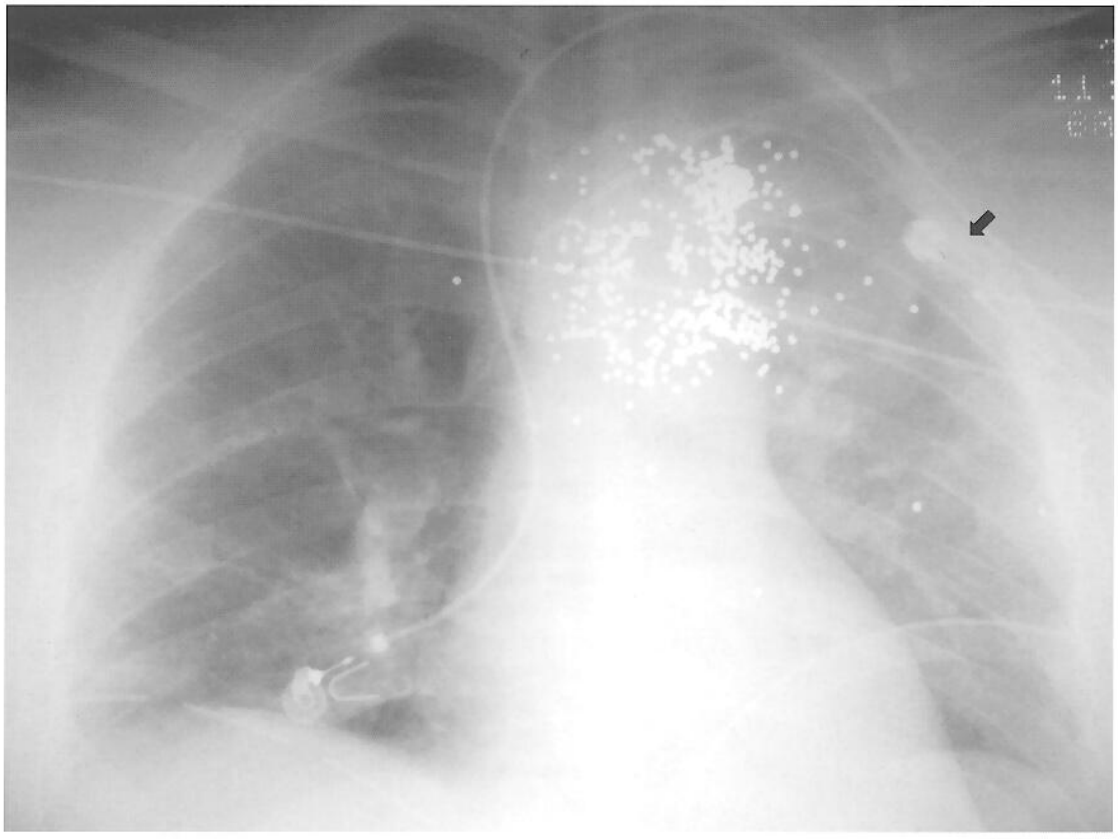

Figure 15.3
Supine CXR of an adult male who was shot in the chest with a shotgun. Note the radio-opaque shot. Of the three chest drains present, the marked drain (black arrow) was inserted to drain a haemothorax as a result of the trauma. Note the increased opacity in the left hemithorax due to haemorrhage into the upper and mid zone pleural space. The distribution indicates the non-simple nature of the fluid in this case blood.

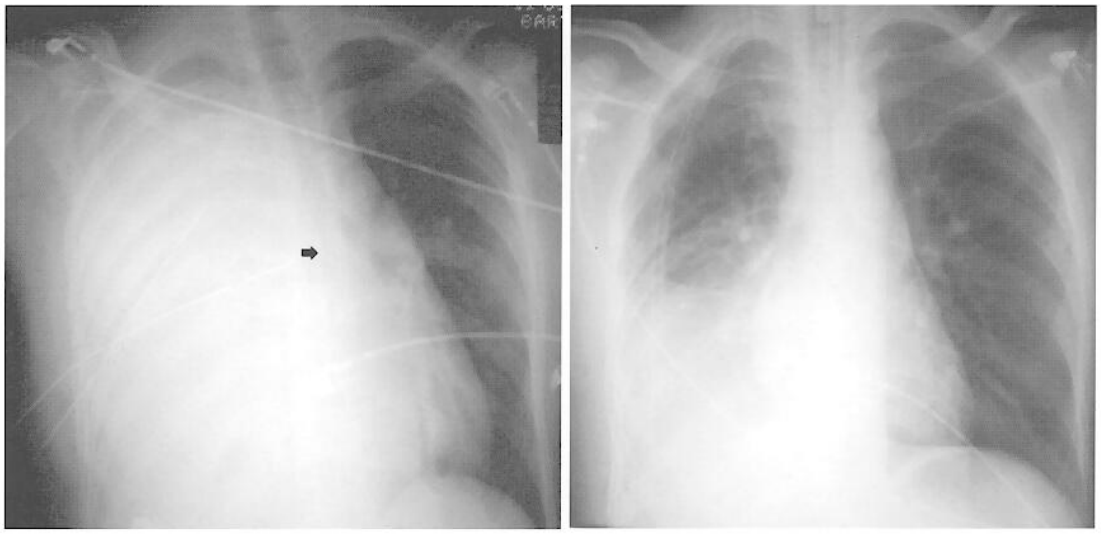

Figure 15.4
Frontal CXRs of an adult male victim of a stabbing. The complete opacification of the right hemithorax on the left CXR was due to a large haemothorax. Note the shift of the mediastinum to the left and deviation of the right main bronchus (black arrow). In the right hand image, the haemothorax has been partially drained and the mediastinal position has returned to normal.

Pneumopericardium and pneumomediastinum (Fig 15.5)

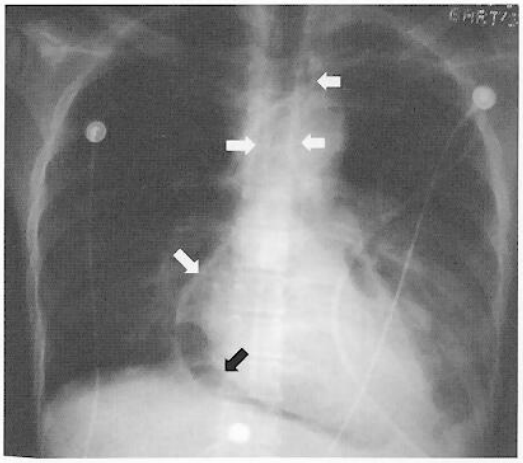

Figure 15.5
Frontal CXR of an adult male following a road traffic accident. Note the air tracking inferior to the heart (black arrow), the pericardium outlined by lung on one side and air on the other (white arrow diagonal down) and the mediastinal air (white arrows horizontal).

Bullet wounds (Fig 15.3, 15.6, 15.7)

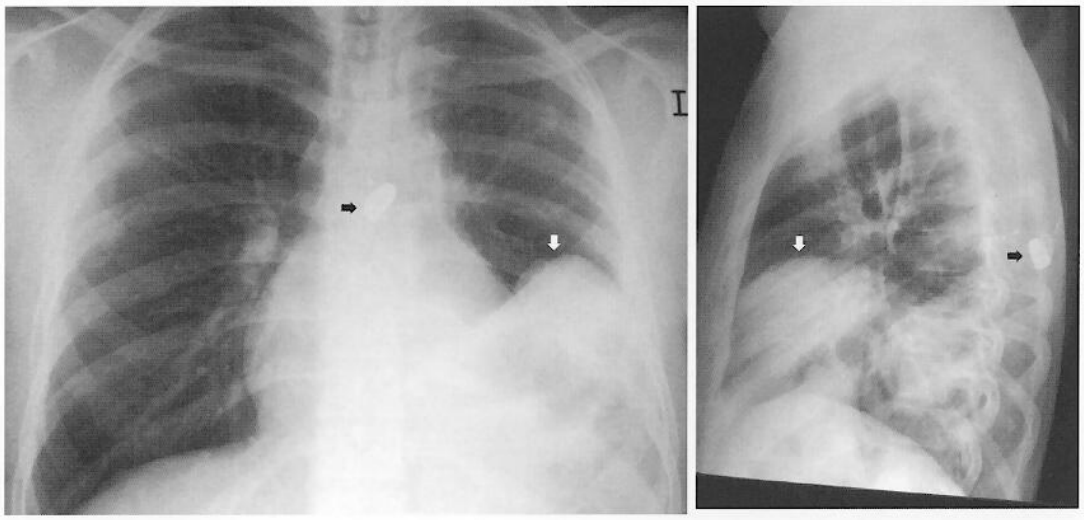

Figure 15.6
Frontal and lateral CXR of an adult male who was shot through the anterior left upper abdomen. The bullet traversed the diaphragm damaging the phrenic nerve causing diaphragmatic paralysis (white arrow), narrowly missed the heart and lodged in the posterior chest wall (black arrow).

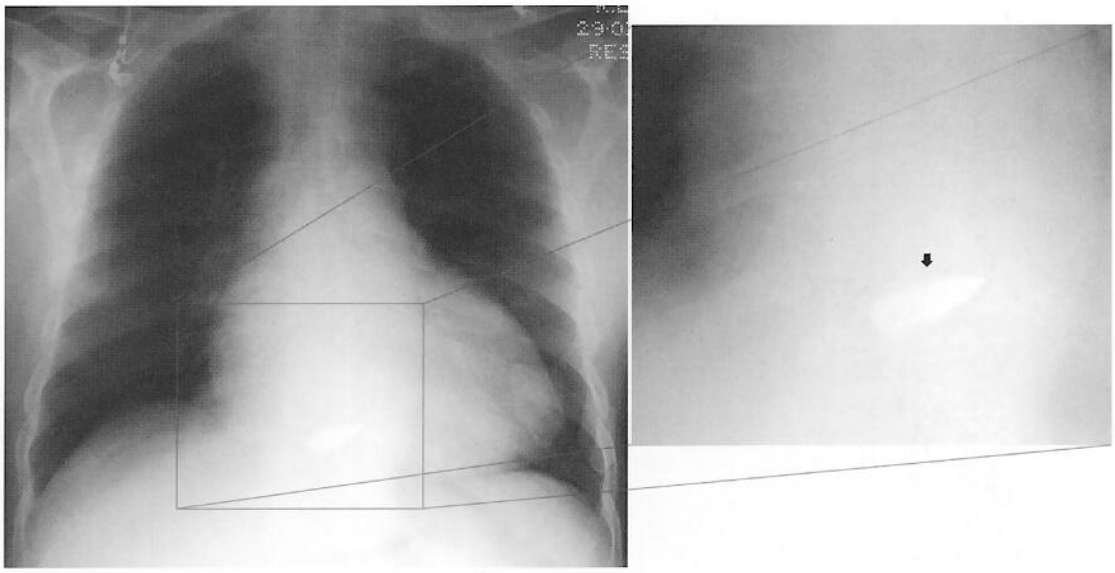

Figure 15.7
Frontal CXR of a patient shot in the abdomen 20 years earlier. The bullet has migrated via the IVC and right atrium to lodge in the right ventricle (black arrow).

The likelihood of any of these complications will depend upon the mechanism of injury, whether penetrating or blunt trauma, but all the possible complications should be considered in the context of a CXR for trauma.

Further reading

Hansell DM; Armstrong P; Lynch DA; McAdams HP, Imaging Diseases of the Chest 4th Edition (Mosby)

Wright FW, Radiology of the Chest and related conditions (Taylor and Francis)

Grainger RG; Allison DJ; Adam A; Dixon AK, Diagnostic Radiology, a textbook of medical imaging (Churchill Livingstone)