Case 19 A patient with a chest drain

Figure 19.1

This patient underwent a left thoracotomy the day before through the seventh intercostal space. He is now back on the ward breathing spontaneously and is receiving oxygen by means of a face mask. He has a drip of lactated Ringer's (Hartmann's) solution via the cephalic vein at his left wrist and is also on oral fluids.

What type of drainage system is shown in Fig. 19.1?

An underwater chest drain (details of this are shown in Fig. 19.2). Air escapes from the pleural cavity on expiration but cannot be sucked back when the intrapleural pressure falls in inspiration, as shown here. The water bottle is placed well below the level of the chest to ensure that fluid does not reflux into the chest.

Note the two large drain clamps placed alongside the drainage bottle; if the bottle has to be lifted for any reason – for example, if the bed has to be shifted – the tubing is double clamped to prevent the risk of this reflux from occurring.

What is a pneumothorax?

A pneumothorax means a collection of air in the pleural cavity. It can occur on one or occasionally both sides.

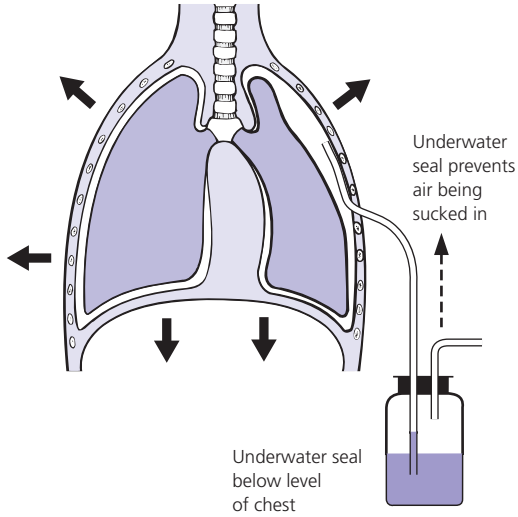

Figure 19.2 Underwater seal chest drain in the treatment of a pneumothroax. Air escapes from the pleural cavity on expiration but cannot be sucked back through the water seal on inspiration (as shown here). The water bottle is placed below level of chest to ensure fluid does not reflux into the thoracic cavity.

A tension pneumothorax results if the pleural tear is valvular, either after trauma, where a bony spicule has lacerated the lung, as shown in Fig. 19.3, or spontaneously, as a result of rupture of an emphysematous bulla of the lung. A tension pneumothorax is an urgent indication for the insertion of a chest drain.

What other pleural injury commonly accompanies chest trauma?

A haemothorax. This may also have an associated pneumothorax; the two together constitute a pneumohaemothorax. This may complicate a closed injury, where the fractured rib may have lacerated an intercostal artery or vein, or arise as a consequence of an underlying contused

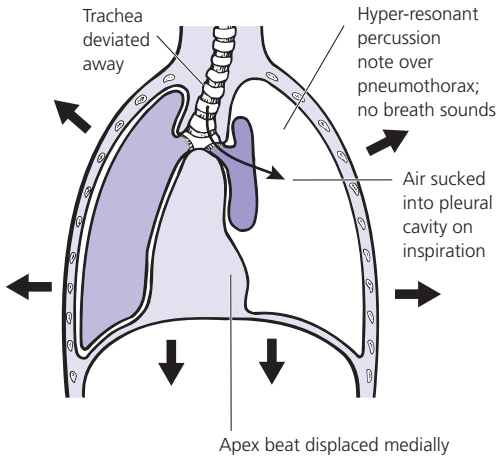

Figure 19.3 Tension pneumothorax produced by a valvular tear in the lung. Air is sucked into the pleural cavity on inspiration and cannot escape on expiration.

lung. It may also result from a penetrating wound of the chest from a stab wound or gun shot injury. On occasions, it may complicate trauma to the heart or great vessels.

How is a traumatic haemothorax treated?

An under water pleural drain is inserted. The fifth intercostal space in the mid-axillary line is recommended as the site for this. The bleeding usually ceases, but continued haemorrhage is an indication for urgent thoracotomy.