

CASE STUDY

Spontaneous haemopneumothorax: a surgical emergency

D.A.C. Sharpe, K. Dixon, K. Moghissi

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ABSTRACT: We describe two cases of spontaneous haemopneumothorax treated successfully at emergency thoracotomy. We emphasize the importance of torn apical vascular adhesions as a source of intrathoracic haemorrhage in these two cases.

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Thoracic Endoscopy and Laser Service, Goole and District General Hospital, Goole, Humberside, UK.

Correspondence: K. Moghissi, Thoracic Endoscopy & Laser Service, Goole & District General Hospital, Woodland Ave Goole, Humberside DN14 6RX, UK

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Spontaneous pneumothorax is complicated by intrathoracic haemorrhage causing haemopneumothorax in only 0.5% of cases [1]. Surgical intervention within the first 24 h of presentation is uncommon, with only 13 reports in the English world literature so far [2–14]. We report a further two cases, and review the sources of intrathoracic haemorrhage in both of these cases and in the others described in the world literature.

Case study 1

A 19 year old male presented with sudden onset chest pain of 3 h duration. The only additional history was that of asthma. Chest radiograph showed a 20% pneumothorax. A second episode of chest pain associated with increasing dyspnoea occurred 3 h later. Chest radiograph revealed that the pneumothorax had increased in size and a fluid level had become apparent (fig. 1). Tube thoracostomy was inserted and 1,200 mL of fresh blood released. Chest radiographs showed the lung to be expanded and the fluid to have drained. During the following 4 h a further 1,300 mL of blood was drained.

In view of the sustained haemorrhage, emergency posterolateral thoracotomy was performed to explore the source. This revealed 500 mL of clotted blood within the chest. The source of the bleeding was traced to a torn vascular adhesion at the apex of the chest which had passed to an apical bulla (fig. 2). The bleeding point was controlled with electrocautery and a single suture. The apical bulla was obliterated by stapling and the chest was closed in layers over a single drainage tube. Post-operative recovery was uneventful, with minimal further drainage.

Case study 2

A 30 year old female presented with a 4 day history of right-sided chest pain, dizziness, and generally feeling



Fig. 1. – Plain chest radiograph 6 h after admission demonstrating the haemopneumothorax prior to the insertion of the tube thoracostomy in Case 1.

unwell. On examination she was found to be shocked and pale. Her haemoglobin was 70 g·L⁻¹, and a chest radiograph revealed a right-sided hydropneumothorax. She was immediately transfused and a tube thoracostomy inserted releasing 2,000 mL of fresh blood. Chest radiograph showed the lung to have expanded but residual collection within the chest.



Fig. 2. — Resected specimen of the apical bulla showing the torn vascular adhesion from which the haemorrhage occurred in Case 2. (Internal scale bar=1 cm).

In view of this residual collection, limited posterolateral thoracotomy was performed (this case occurred before the widespread application of video-assisted thoracic surgery). The patient was found to have a further 1,250 mL clot within the chest. The bleeding point was a torn 3 mm vascular adhesion, which had passed to a bullous area in the apex of the lung. Adhesion and bullae were both ligated and the chest closed in layers over a single drainage tube. Postoperative recovery was uneventful, with minimal further drainage.

Discussion

The first description of spontaneous haemopneumothorax is credited to Laënnec, who described it following a postmortem in 1828. The first two comprehensive case reports of haemopneumothorax were published independently in 1900 by PITT [15] and ROLLESTON [16]. In 1950, MYERS *et al.* [2] performed an emergency thoracotomy to deal directly with the source of haemorrhage. Since that initial description, 17 further cases of emergency thoracotomy for spontaneous haemopneumothorax have been reported in the English world literature [1–14]. The source of bleeding is reported as a torn vascular adhesion in 14 of these 17 cases (82%), though in the remaining three cases no reference is made as to the source of haemorrhage. The most frequently reported type of adhesion is the apical vascular adhesion in association with apical bullous disease. It is suggested that as the pneumothorax occurs and the lung collapses the adhesion is torn. Since the lung has collapsed and there is no structure to provide local pressure to tamponade the haemorrhage, a small calibre vessel can bleed freely into the chest cavity causing substantial blood loss. It has been reported that vessels in such adhesions have defective muscular components to their walls, so that normal contraction and retraction to arrest haemorrhage is inhibited [4].

In both of the present cases, a single apical vascular adhesion was found to be the source of the haemorrhage. Although the vessel was of small diameter in both cases it was bleeding profusely. Such a small calibre vessel could easily be overlooked as the source of haemorrhage by an inexperienced thoracic surgeon. We therefore stress that in cases of emergency thoracotomy for haemopneumothorax a search should be made, particularly in the apex of the chest, for bleeding vascular adhesions. Such a vessel is likely to be the source of the haemorrhage in 80% of cases. In future, cases of haemopneumothorax may be dealt with by video-assisted thoracic surgery. In the present cases, because of the sustained bleeding in Case 1 and the residual clot within the chest in Case 2, it was probably safer to perform a limited thoracotomy to clear the chest and deal directly with the source of haemorrhage.

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