Insertion of a chest tube into the pleural space is a common procedure for haemopneumothorax. The most severe complications are related to the technique of insertion. Other complications are directly related to tube location after placement.

The following case report describes the development of a pulmonary lesion and an erosion of the internal mammary artery that occurred several days after the placement of the chest tube and when it had already been removed.

A 17-year-old boy sustained a motorcycle accident with thoracic trauma. He was found in severe respiratory distress on the scene and was intubated and ventilated.

Upon arrival at the emergency department a right flail chest and right pneumothorax was diagnosed. A 28-Fr chest tube without trocar was inserted in an anterior-superior direction in the right anterior axillary line, fifth intercostal space and the pneumothorax was evacuated. An anterior-posterior chest X-ray (Fig. 1) showed that the tube tip laid beyond the midclavicular line, with the proximal hole inside the pleural space. During the following days the patient remained dependent on the ventilator because of the severe pulmonary contusion. In the meanwhile a continuous air leak (50–100 ml per breath) persisted through the chest tube. On the 9th day the patient showed a respiratory deterioration. A chest X-ray and a subsequent chest CT scan showed the recurrence of an apical and basal pneumothorax that required the insertion of two new tubes. During the following days the patient remained stable but still in need of mechanical ventilation while the air leak from the chest tubes decreased. On the 14th day the first chest tube was not draining air and was removed. On day 23rd, a relevant haemorrhage in the bronchial tree started abruptly and the respiratory situation soon deteriorated. No blood was drained by the two

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**Figure 1** Chest radiograph the day of injury shows the position of the chest tube.
remaining chest tubes. Fiberoptic bronchoscopy showed blood coming out of the upper right lobar bronchus. A double lumen tracheal tube was inserted in order to prevent flooding of the left bronchial system. A chest angio-CT scan was then carried out and showed an intraparenchymal pulmonary blood collection in relation to the right internal mammary artery on the second intercostal space (Fig. 2), where the tip of the chest catheter laid. The subsequent thoracotomy showed the local intrapleural adhesion, the decubitus lesion of the vessel and a vast and destructive haemorrhagic infarction of the upper pulmonary right lobe. The artery was ligated, and a pulmonary lobectomy was carried out. After the surgery the clinical course was uneventful, the patient was discharged from the intensive care unit on the thirtieth hospital day.

This case shows that chest tube could result in the erosion of the internal thoracic artery with haemorrhage inside the pulmonary tissue and the bronchial tree.

The event was particularly dangerous in our experience, because of the bronchial tree flooding it caused. It happened 19 days after positioning of chest tube and 5 days after it was removed.

Moreover, the pleural tubes, though working, did not drain any blood because of the inflammatory adhesion between visceral and parietal pleura. This fact made it difficult to find the origin of the haemorrhage. The chest angio-CT scan revealed both the vascular and the pulmonary lesion.

We underline the opportunity not to cross internal mammary vessel with a ventrally positioned chest tube and the utility of angio-CT scan in diagnosis of internal vascular haemorrhage.

References