used is by no means innocuous. Bleeding complications have been seen in patients with dense adhesions in the pleural space and in the post-pneumonectomy state. In the latter situation pulmonary vascular injury has been suspected if the tip of the catheter lies beyond midline [3].

In our case the catheter had traversed the trapped and diseased lung probably at the site of pleural adhesion into the right pulmonary artery in spite of using blunt dissection to introduce the catheter. The patient was fortunate to have this complication recognised early and resuscitation was rapid as he was already in the ICU.

The non-operative approach to management of this situation was chosen owing to the trapped lung making a surgical approach quite hazardous and likely to result in further bleeding and lung injury. We anticipated that the dense pleural adhesions around the entire lung and positive pressure ventilation would assist in limiting the spread of any intra-pulmonary haematoma. We were pleased that gradual catheter removal over several days allowed progressive clot formation and sealing of the catheter tract.

Pulmonary artery injury is very rare but a serious complication of tube thoracostomy. The literature has reported few cases, but all have required surgical intervention. Because of our patient’s underlying lung disease he was managed by a trial of catheter removal with a backup plan for surgical intervention should that be required. He was fortunate not to require surgical intervention. This case once again emphasises the importance of determining the location of the pleural space and the lung edge prior to insertion of a thoracostomy tube.

References


eComment: Management options of tube thoracostomy-induced pulmonary artery injury

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Sundaramurthy et al. [1] describe an interesting mode of treatment of tube thoracostomy-induced pulmonary artery perforation. It is generally recognized that the blunt dissection method of chest tube insertion is safer but certainly not innocuous as their report shows. Pulmonary artery injury in such a setting is uncommon but appears to occur more frequently in the presence of pleural adhesions [2, 3]; the tube penetrates the lung parenchyma and perforates a branch pulmonary artery as it is advanced medially.

Immediate return of frank blood via the tube leads to a suspicion of major vessel injury. Hemostasis is controlled by clamping the tube and leaving it in situ as a temporizing measure. Definitive management from the available case reports has essentially been surgical. The report of Sundaramurthy et al. [1] is unique in this respect. Interestingly, theirs is not the first report of such an injury in an ill elderly patient with chronic obstructive pulmonary disease, pleural space adhesions and pleural infection; the report of Kao et al. [3] is somewhat similar but differs in the management approach.

Surgical management is technically demanding considering the pleural adhesions and the patient’s co-morbidities. The general aim of surgical treatment is to repair the pulmonary artery injury but when this is not feasible, a pneumonectomy may be performed [3, 4]. Delay in instituting surgical treatment risks pulmonary arterial thrombosis and clot propagation. Elevated right ventricular after load and pulmonary infarction become important concerns subsequently. Barring the technical difficulties, surgical treatment probably provides the most secure means of achieving hemostasis.

Non-operative management as described by Sundaramurthy et al. [1] is based on the occlusion of the pulmonary artery perforation by the clamped chest tube and the formation of a clot in the tract as the tube is gradually withdrawn. The concern with this approach is the unpredictability of hemostasis and the likelihood of thrombosis of the pulmonary artery with clot propagation. Leaving the tube in place for four days as the authors describe may well lead to significant vascular occlusion of the involved pulmonary vascular bed with its attendant complications. In the event that such an approach fails to secure hemostasis upon tube withdrawal, one is forced to undertake an emergency thoracotomy in a patient who has been...
rendered hemodynamically unstable. The wide applicability of this non-operative management option remains to be seen.

References


