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Apical Bullae and Spontaneous Pneumothorax

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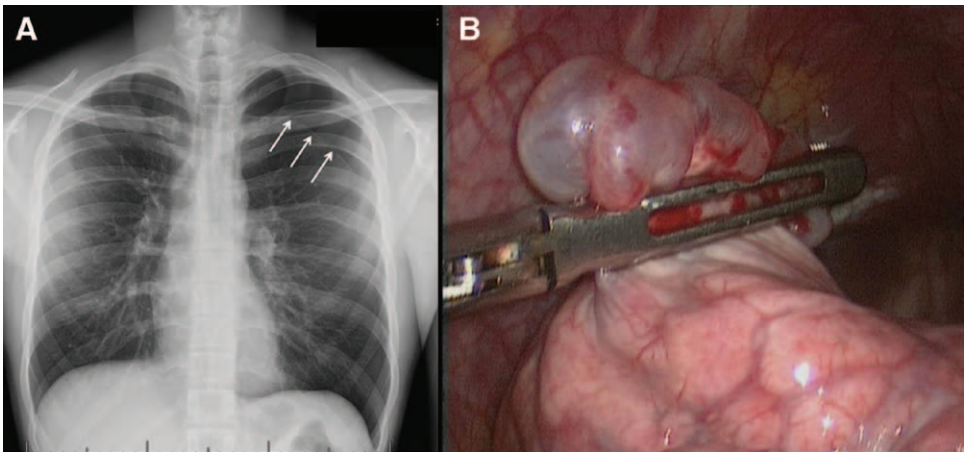

SPONTANEOUS primary pneumothorax is common in tall, asthenic males between ages 10 and 30 yr.[1,2] Initial mode of therapy is nonoperative with a recurrence rate of 50%. Hitherto, recurrent pneumothorax was treated with thoracotomy and wedge resection of pulmonary bullae using a double-lumen endotracheal tube and single lung ventilation. Bullectomy is now routinely performed *via* video-assisted thoracoscopy.[3]

A 19-yr-old man (64 kg, 188 cm) with a history of left spontaneous pneumothorax was admitted after complaints of sudden pleuritic chest pain and dyspnea. Chest radiograph revealed left-sided pneumothorax (fig. A). A pleural drain was inserted, and he was scheduled for video-assisted thoracic surgery and bullectomy.

After induction with propofol, fentanyl, and rocuronium, the trachea was intubated with a single lumen, cuffed endotracheal tube. Anesthesia was maintained with desflurane in 100% oxygen. He was placed in a right lateral decubitus position. To aid surgical visibility, carbon dioxide, 7–10 mmHg, was insufflated into the pleural cavity and the patient's tidal volumes reduced to 5 ml/kg. Mechanical breaths were set to a rate of 30–35 breaths/minute to compensate for hypercarbia caused by low tidal volumes. Apical bullae were identified *via* thoracoscopy, and bullectomy was performed (fig. B) followed by chest tube placement and uneventful trachea extubation. The patient recovered without incident in the postanesthesia care unit and was discharged home on postoperative day 3. Video-assisted thoracoscopic bullectomy is possible with two lung ventilation, minimal tidal volumes, and an increased respiratory rate to compensate for hypercarbia.

References

1. Poenaru D, Yazbeck S, Murphy S: Primary spontaneous pneumothorax in children. J Pediatr Surg 1994; 29:1183–5
2. Robinson PD, Cooper P, Ranganathan SC: Evidence-based management of paediatric primary spontaneous pneumothorax. Paediatr Respir Rev 2009; 10:110–7
3. Chen JS, Hsu HH, Huang PM, Kuo SW, Lin MW, Chang CC, Lee JM: Thoracoscopic pleurodesis for primary spontaneous pneumothorax with high recurrence risk: A prospective randomized trial. Ann Surg 2012; 255:440–5