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Uniportal video-assisted thoracoscopic pulmonary wedge resections in asymptomatic patient with large pneumothorax and epilepsy: Case report

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Purpose

Pneumothorax is marked by the presence of air within the pleural cavity. Spontaneous pneumothorax is classified into primary and secondary subtypes. Managing a spontaneous pneumothorax depends upon several factors, namely its extent and nature (initial vs recurrent), the subtypes, and patient stability. There is a spectrum of treatment strategies that includes conservative measures and therapeutic surgical options.

We describe a 22-year-old man with epilepsy and a sizeable, asymptomatic pneumothorax. This discovery was made entirely by chance during routine screening for tuberculosis. Uniportal video-assisted thoracoscopic surgery (VATS) was performed, enabling successful wedge resections of right upper lobe (RUL) and right lower lobe (RLL).

Methods

A 22-year-old male outpatient, diagnosed with epilepsy and confined to a wheelchair, presented to our Department of Thoracic and Cardiovascular Surgery with a right-sided pneumothorax. This was an incidental chest X-ray finding during tuberculosis screening at a developmental disability care facility. The patient had no major related symptoms. There was a medical history of small-for-gestational-age birth, with perinatal hypoxic-ischemic encephalopathy and neonatal seizures.

Upon arrival at the emergency department, we recorded an O_2 saturation of 95% on room air. The admitting chest X-ray revealed a sizeable right pneumothorax, with apical upper lobe adhesions. After chest tube insertion to evacuate accumulated air, computed tomography (CT) of the chest was done, documenting multiple apical bullae of RUL.

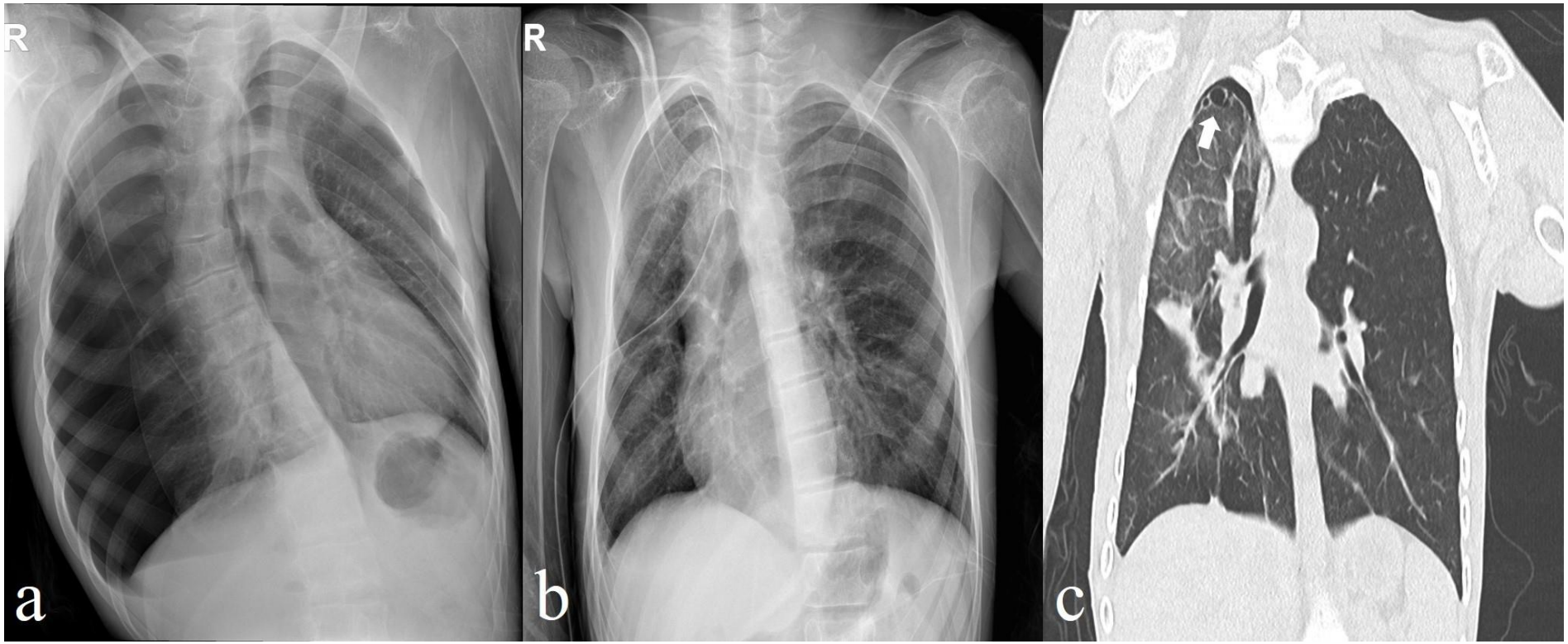

Figure 1. Preoperative imaging studies: (A) Sizeable right-sided pneumothorax seen on chest X-ray; (B) Successful re-expansion of right lung following closed thoracostomy; and (C) Multiple bullae at apex of right upper lobe (white arrow) on computed tomography of chest (coronal view).

Methods

The patient's overall size (height, ~146 cm; weight, ~22 kg) seemed adequate for thoracoscopic access, so we used uniportal VATS to resolve ongoing chest tube air leakage. His narrow airway called for a single- rather than double-lumen endotracheal tube. Once under general anesthesia and in left lateral decubitus position, we extended the existing chest tube opening (at third intercostal space, anterior axillary line) to 2.0 cm, fitting our working port with a small wound protector to ensure a clear operative field. The surgical assistant then positioned a 5-mm, 30° scope at the upper incisional rim. Various instruments, including curved suction tips, grasping tools, and articulating endostaplers, were subsequently introduced through the single incision. Although one-lung ventilation was not possible, low tidal volumes served to enhance operative field visibility.

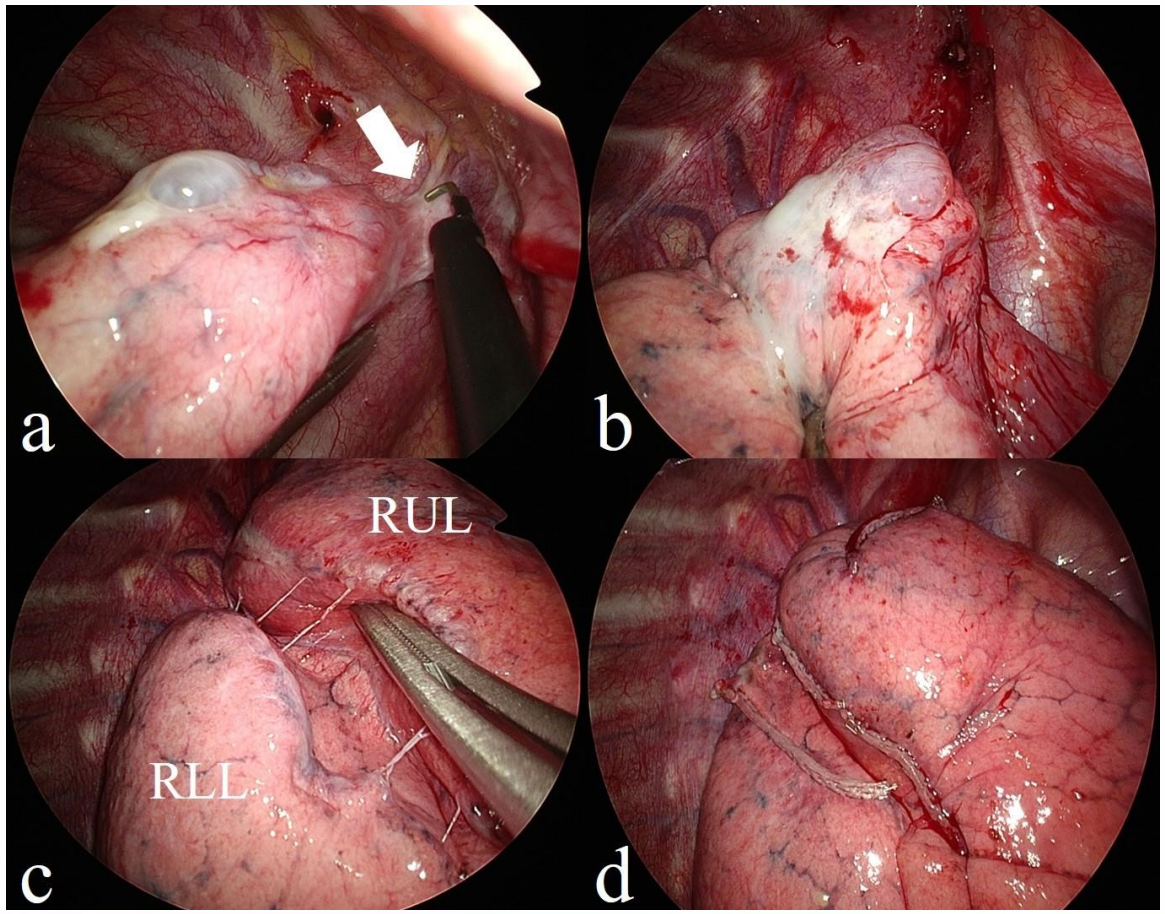

Figure 2. Operative views: (A & B) Multiple bullae at apex of right upper lobe, with focal adhesions (white arrow); (C) Multiple blebs of right upper and lower lobes along major fissure; and (D) Right upper and lower lobe wedge resection lines after uniportal video-assisted thoracoscopic surgery.

Results

Wedge resections were required at apex of RUL and along the major fissure, occupying portions of right upper and lower lobes. Small air leaks were detected along the stapler line of the RLL. To address this, we applied Neovil and glue on the stapler lines. For pain management, intercostal nerve blocks were delivered. Thereafter, a 20-Fr chest tube was inserted at the lower incisional edge, and the working incision was closed in layers. Operative time totaled 102 min, duration of anesthesia was 145 min, and estimated blood loss was 50 cc.

In the recovery room, an upright anteroposterior chest X-ray (taken 20 min after procedural completion) was clear. On postoperative Day 2, we switched from the digital Thopaz drainage system to an alternate device, Sinapi in preparation for patient discharge. The patient visited our outpatient clinic on postoperative Day 9, and we were able to remove the chest tube as there were no visible air leaks for 24 hours. A follow-up chest X-ray acquired 4 days after chest tube removal showed no abnormalities.

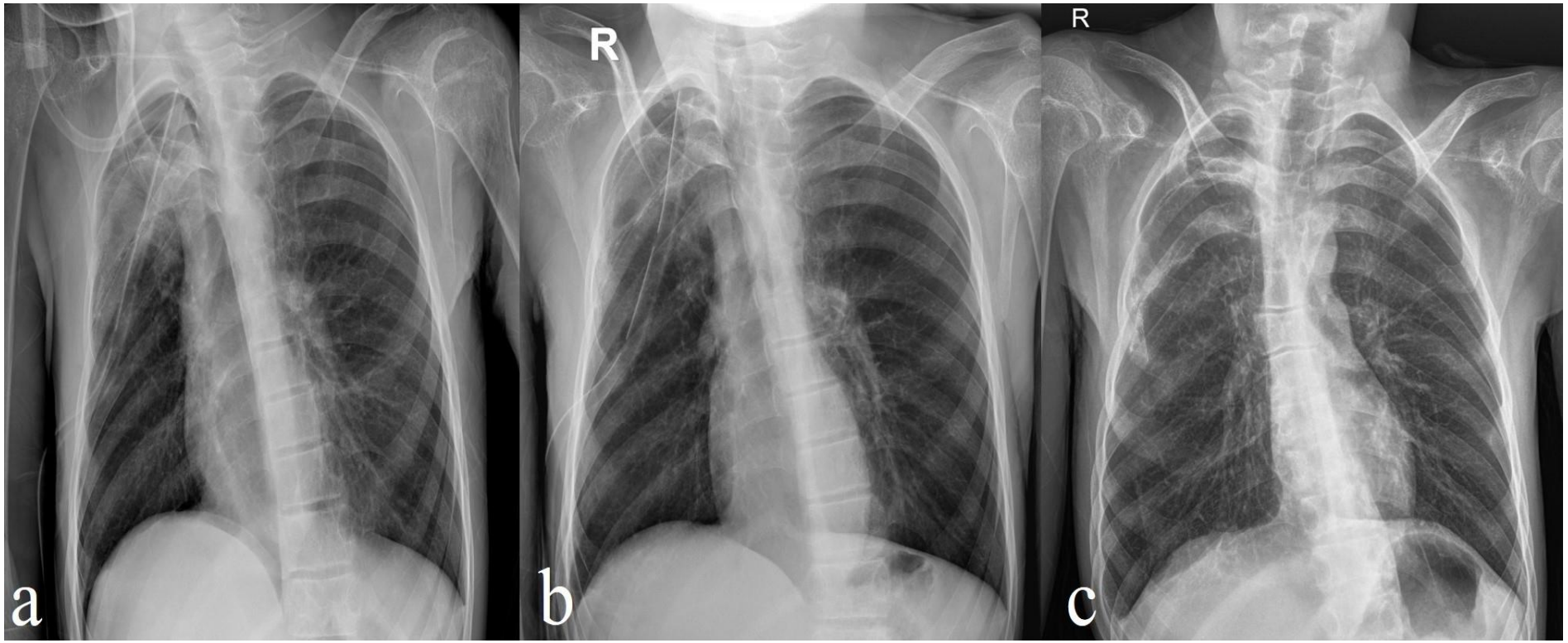

Figure 3. Postoperative chest X-rays:
(A) Upright anteroposterior radiograph obtained in recovery room; and
(B & C) Plain films from initial (Day 7) and subsequent (Day 11) outpatient visits.

Conclusion

We have described a 22-year-old man with epilepsy and a substantial but asymptomatic pneumothorax who underwent uniportal VATS wedge resections of the right lung. Although his clinical profile did not align with consensus indications for surgery, his singular circumstances required a surgical strategy aimed at minimizing recurrence risk. An operative solution was thus imperative, knowing the patient's inability to verbally convey distress, such shortness of breath or chest wall pain.