

## **Early surgical intervention is indicated for recurrent spontaneous pneumothorax in children and adolescents**

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**Background:** Primary spontaneous pneumothorax (PSP) occurs most often in adolescent patients. There is consensus that surgical intervention plays an important role in preventing recurrence, however, the optimum timing of surgery is debated. We hypothesize that clinical and radiographic factors are associated with eventual need for surgery.

**Experimental Design:** We searched the medical record for PSP patients between ages 9 and 21 treated from 1/1/08 to 12/31/17 and collected data on chest tube management, radiographic measurements, operative management, and recurrence. We performed univariate analysis on relationships between admission events and eventual surgery or other management strategies.

**Results:** We identified 68 PSP admissions from 31 patients. Considering only first-time admissions, there was no association between eventual surgery and clinical factors and radiographic findings. The single factor associated with eventual surgery was history of pneumothorax in any lung ( $p=0.015$ ). For patients with prior pneumothorax who underwent surgery, operation the day after admission would have reduced hospital stay by an average of 1.5 days (min=0, max=9) and an average of 2.2 days (min=0, max=10) if performed on the day of admission, with a mean 1.85 fewer chest x-rays (min=0, max=7). Considering only first admissions, ipsilateral recurrence rate was 16.7% after surgery, 46.7% after chest tube alone, and 100% after observation alone.

**Conclusion:** This analysis suggests that though eventual surgery is difficult to predict, ipsilateral recurrence rate is reduced following surgery. Furthermore, earlier operation in recurrent patients could reduce resource utilization. Thus, expedited surgical treatment may merit consideration in patients with a history of pneumothorax.