**K ** Spontaneous pneumothorax; Diagnosis; Management; Imaging; Surgical intervention; Recurrence

I

Spontaneous pneumothorax (SP) refers to the presence of air in the pleural cavity without a history of trauma. It typically occurs in individuals aged 18-30 years, with a higher prevalence in males. SP can be classi ed into primary and secondary types. Primary spontaneous pneumothorax (PSP) occurs without underlying lung disease and is o en observed in tall, thin, young adults, while secondary spontaneous pneumothorax (SSP) occurs in patients with preexisting lung conditions, such as chronic obstructive pulmonary disease (COPD), cystic brosis, or tuberculosis [1,2]. e pathophysiology of SP involves the rupture of small subpleural blebs or bullae, which results in air leakage into the pleural space. Symptoms commonly include sudden chest pain and shortness of breath, and the condition can range from mild to life-threatening [3]. Timely diagnosis is crucial to guide appropriate management and prevent complications such as tension pneumothorax, respiratory failure, or recurrent episodes. e diagnosis of SP is primarily clinical, supported by imaging studies. Chest X-ray (CXR) remains the rst-line imaging modality for initial is prl 2.9(a3(a)5(i078 Tw T (p)-9(o)12(rn Tw T (p)ie(es)5(fe5R (Tw Tds)-9(o)d078 Tw

spontaneous pneumothorax (PSP), where observation coupled with oxygen therapy results in favorable outcomes [7]. ese approaches are particularly bene cial in avoiding unnecessary invasive interventions, reducing healthcare costs, and minimizing patient discomfort. However, for larger or more symptomatic pneumothoraxes, invasive interventions such as needle aspiration and chest tube insertion are required. e choice between these interventions depends on factors such as pneumothorax size, patient symptoms, and the urgency of the situation. In cases of recurrent SP or those complicated by persistent air leaks, video-assisted thoracoscopic surgery (VATS) remains the gold standard for de nitive management [8]. VATS not only provides excellent outcomes but also facilitates simultaneous pleural ablation, thereby reducing recurrence rates. Pleurodesis, although e ective, is typically reserved for patients with recurrent pneumothorax who are not surgical candidates. While the management of SP is largely guided by the size and recurrence of pneumothorax, advancements in imaging and surgical techniques have signi cantly improved patient outcomes.

C

Spontaneous pneumothorax (SP) remains a clinical challenge, but advances in diagnostic imaging and management strategies have greatly improved outcomes. e use of high-resolution CT scans enhances diagnostic accuracy and helps identify potential underlying lung pathology. Conservative management with oxygen therapy has proven e ective for small, uncomplicated cases, while larger pneumothoraxes and recurrent episodes require more invasive interventions such as chest tube drainage or video-assisted thoracoscopic surgery (VATS). e individualized approach to treatment is essential, particularly in the presence of underlying lung disease or recurrent episodes. As research continues, the integration of new technologies and techniques promises further improvements in the diagnosis and management of SP. Early intervention and appropriate management strategies can signi cantly reduce the morbidity and recurrence associated with spontaneous pneumothorax, improving the overall quality of life for patients.

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