

## Should we wait for the bubble to explode?

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Bilateral spontaneous pneumothorax is a rare clinical event, comprising approximately 1% of all cases of spontaneous pneumothorax (1,2). Early diagnosis and immediate chest drainage are mandatory to avoid life-threatening respiratory failure (2). The multidisciplinary team (MDT) approach for bilateral tension pneumothorax may be helpful to provide more reasonable approaches, which from experts will improve patient prognosis (3).

The most challenging aspect in such patients is the decision about whether to undergo surgery or conservative management. If surgery is chosen, what is the optimal timing? The optimal timing of surgery is not controversial in young patients with primary spontaneous pneumothorax (PSP) if air leakage persists (4,5). However, the optimal timing of surgery is difficult to determine in cases of secondary spontaneous pneumothorax (SSP) with persistent air leakage (6).

Patients with SSP have a poor condition, and they have several associated co-morbidities. The expectation of high postoperative morbidity and mortality rates may preclude early surgical intervention.

Although the incidence of PSP and SSP is similar (7), the incidence of surgical treatment for SSP is lower than that for PSP (8), because SSP is associated with underlying lung disease and elderly patients combined with poor cardiopulmonary reserve (9). Compared with PSP, patients with SSP are less tolerant and symptoms are more severe (10). Furthermore, the spontaneous healing rate of air leakage is lower and the recurrence rate is significantly higher in patients

with SSP than in those with PSP (11,12). Postoperative morbidity has been reported to be 20.6–25.2% (6,13-15), and the postoperative mortality rate was found to be approximately 5% in patients with SSP (13,14).

The postponement of surgery is like a double-edged sword. It may provide an opportunity for the air leakage to cease. In contrast, if the patient's condition deteriorates while awaiting surgery, the postoperative risk may increase or the opportunity for surgical treatment may be missed.

The American College of Chest Physicians and the British Thoracic Society recommend surgical treatment if air leakage persists for more than 4 or 5 days (4,5). However, evidence for this recommendation is not strong in patients with SSP. Chee *et al.* (11) reported that 79% of air leakages in the SSP group had resolved spontaneously in 14 days with no mortality and that after 15 days, air leakage closure proceeded at a much slower and more unpredictable rate. Thus, they recommend surgery for patients with air leakage persisting beyond 14 days (11). However, several investigators have recommended surgery as early as 3 days for persistent air leakage because delayed surgery is associated with a higher rate of pleural infection, and the healing rate is lower in patients with SSP than in those with PSP (6,16,17). The mortality rate of pleural infection is up to 20% (16). In such patients, operative intervention should be considered much earlier. There is a lack of evidence for deciding cutoff value of 3 or 14 days. However, it is clear that a decision should be made within 15 days. If the patient does not have corrective risk factors such as pneumonia or

re-expansion pulmonary edema, early surgical intervention should be considered carefully.

Sometimes, subcutaneous emphysema can progress rapidly to life-threatening status, with upper airway compromise, tension pneumomediastinum, and pneumopericardium.

In this patient, blow holes were used to drain subcutaneous emphysema, and negative-pressure wound therapy can be a useful tool for rapid decompression of emphysema (18).

Postoperative pain is another important factor that can cause or aggravate atelectasis and pulmonary infections. Thus, aggressive pain control using a thoracic epidural catheter, paravertebral block, or a single injection of liposomal bupivacaine should be considered (19).

In conclusion, decision-making for this critically ill patient is challenging, but sharing of the burden by MDT consultation can improve patient outcome.

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### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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