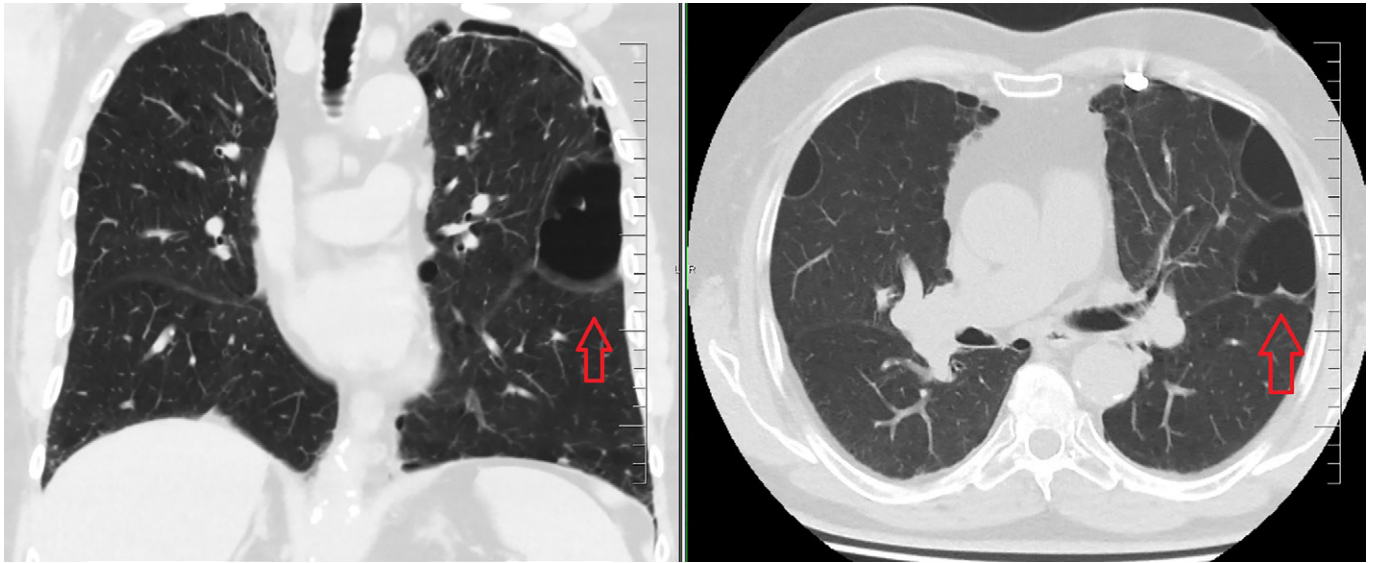
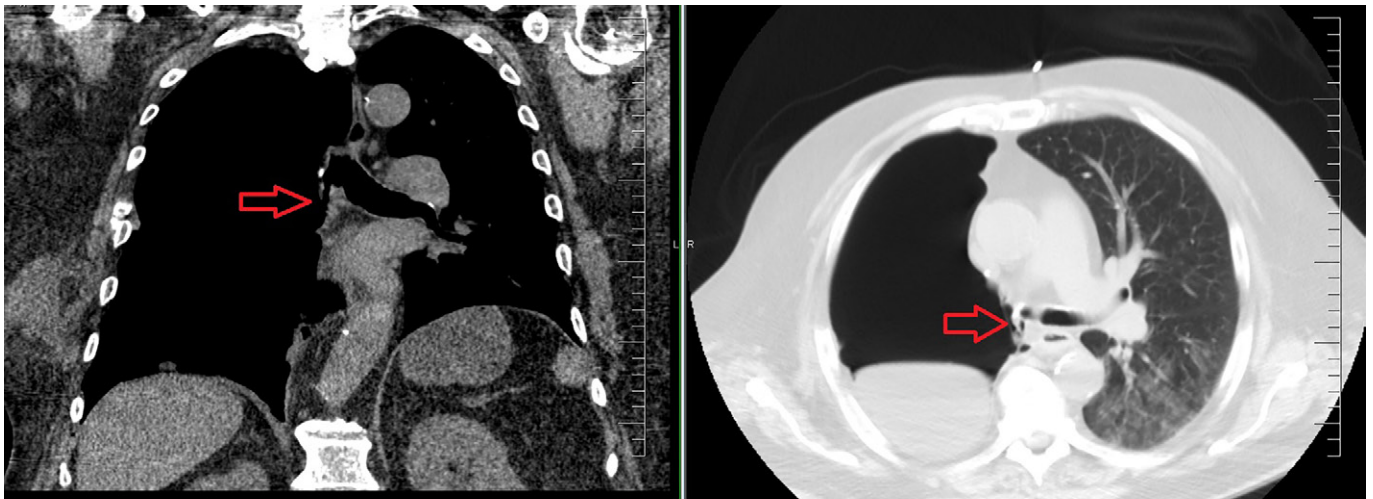


Fig. 2. Persistent pneumothorax in the field of panlobular emphysema**Fig. 3.** Bronchopleural fistulation after right-sided pneumonectomy

In elective VV ECMO-assisted surgeries, the duration of ECMO was one day, whereas in acute VV ECMO-assisted surgeries, the median duration of ECMO was 9 (2-15) days. None of the patients died during surgery. In elective cases, the 30-day mortality was 0%. In acute cases, the 30-day mortality was 37.5% (all patients died of complications related to ARDS). The median of hospital length of stay was 7 (5-10) days and 30 (19-77) days in elective and in acute cases, respectively.

Discussion

The primary indication for VV ECMO-assisted surgery in our 15 patients was the difficulty or impossibility of one-lung ventilation due to lung impairment or previous lung resections. Impossible selective intubation was the reason in two cases only (tracheomalacia, external tracheal compression). The risk of complications and mortality during elective VV ECMO-assisted surgery was very low. This implies that a small group of patients who would not normally be able to undergo surgery due to their inability to tolerate one-lung ventilation or selective intubation could safely undergo lung resections. A significant mortality rate occurred in acute cases, and bleeding frequently complicated the

postoperative course, partly due to the anticoagulation required for ECMO. However, the underlying disease caused the mortality, and all ECMO-associated complications resolved.

Jet ventilation, apneic ventilation with high-flow oxygen, or intubation through the surgical field into the distal trachea can provide oxygenation/ventilation in situations where selective intubation is impossible due to obstructions, tracheomalacia, or airway surgery [3]. Barotrauma can complicate jet ventilation, which limits its use in obese patients with COPD [3]. Endotracheal oxygenation, which involves high oxygen flow through a small probe, is an easy technique for oxygenation. However, without ventilation, it can cause hypercapnia, which can lead to hypercapnic acidosis. Furthermore, the duration of apnea, ideally limited to 30 minutes [4], frequently fails to provide adequate time for surgery. Periodical cross-field intubations may prolong surgery time and require frequent cooperation between the surgical and anesthesia teams.

Similar ventilation techniques, extended by intermittent conventional ventilation, can also be used for patients in whom airways could be secured, but one-lung ventilation is not possible or is associated with