

Efficacy and Safety of Lung Recruitment in Pediatric Patients with Acute Respiratory Distress Syndrome/Acute Lung Injury Using the Open Lung Tool

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Synopsis:

The purpose of this study is to establish the efficacy and safety of the Open Lung Tool recruitment maneuver in pediatric patients with acute respiratory distress syndrome/acute lung injury.

An open lung tool recruitment maneuver consists of applying high positive pressure to the lungs by adjusting ventilator settings. Lung recruitment maneuvers are widely used but not yet standard of care in pediatric ALI/ARDS. The lung recruitment maneuver takes only 30-45 min. The transport of the patient out of the ICU to radiology, doing the CT-scan and the maneuver, takes 1 1/2hrs. We will do one OLT recruitment maneuvers per patient in all the study subjects. A small subgroup of 8 patients will undergo 2 limited CT-scans.

Patients enrolled in the study will be ventilated using a lung protective ventilation strategy to limit plateau pressures to 35 cmH₂O and tidal volume to 6-8 cc/kg of ideal body weight for at least 1 hour prior to the OLT maneuver. PEEP will be adjusted to keep a O₂Sat > 90 %.

We will perform the LRM in a total of 50 patients to document improvements and/or complications associated with the maneuver. We will measure physiologic variables pre, immediately post maneuver and at 1hr, 4hrs, 8hrs, 12hrs, and 24hrs after the OLT maneuver. A subgroup of 8 patients – 2 infants, 2 toddlers, 2 school-aged children and 2 teenagers - will undergo limited CT scans before and immediately after the LRM.