

Workshop mechanic ventilation

General objectives

Positive-pressure mechanical ventilation through an endotracheal tube, as a treatment strategy for patients with respiratory failure, was introduced in the 1950s. Bjorn Ibsen, an anesthesiologist at Blegdams Hospital, breathed in air with positive manual pressure through a balloon tracheostomy cannula, to a 12-year-old girl, a victim of severe respiratory failure. The girl survived and from then until today hundreds of patients benefited from the innovative method.

Intraoperative mechanical ventilation (MV) strategies over the years have evolved parallel to the knowledge of respiratory pathophysiology. Since the induction of general anesthesia, residual functional capacity (CFR) is further reduced, resulting in areas of atelectasis, which leads to deterioration of gas exchange and respiratory mechanics. Pulmonary complications occur between 3 and 10% of Patients in whom elective abdominal surgery is performed, and even more in those requiring emergency surgery, these complications are also related to lung injury induced by mechanical ventilation. The high current volumes overlap the alveolar units, which favors the development of inflammation. Also the use of inadequate expiratory final positive pressure would damage the alveoli by a mechanism of opening and closing them. Stress and Strain are implicated in this pulmonary deterioration produced by inadequate mechanical ventilation. Numerous studies have shown that a protective intraoperative ventilatory strategy based on low current volumes, positive end-expiratory pressure, and sometimes alveolar recruitment maneuvers improves respiratory function and reduces post-operative complications.

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Particular objectives

Understand the mechanisms that trigger mechanical ventilation-induced lung injury (VILI) in both normal lungs and patients with acute respiratory distress syndrome.

Know the characteristics that must be met by a mechanical ventilation strategy to avoid it.

Monitoring of pulmonary mechanics during mechanical ventilation. Measurement of blood gases during mechanical ventilation and its interpretation.

Measurement of functional residual capacity during the intraoperative period. Advantage and limitation.

Describe an opening maneuver, its indications and contraindications, and their possible beneficial and adverse effects.

Pulmonary ultrasound during mechanical ventilation. Benefits and limitations.

Program

Respiratory physiology applied to mechanical ventilation.

Intraoperative protective ventilation in patients with normal lungs. Ventilatory modes.

Intraoperative protective ventilation in patients with Acute Respiratory Distress Syndrome. Ventilatory modes.

Monitoring of pulmonary mechanics during the intraoperative period.

Pulmonary ultrasound. Its benefits.

Equipment

Advance the Aysis CS and Carescope R860 Respirator

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