



COVID-19 Town Hall



Prone positioning during pregnancy



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Prone positioning in the management of ARDS

Prone ventilation has been used in the treatment of acute respiratory distress syndrome (ARDS) as a strategy to improve oxygenation when ventilation (low tidal volume and optimal PEEP) fails

- The mechanism of action is:
 - Amelioration of the ventral-dorsal transpulmonary pressure difference
 - Prone positioning leads to a decrease in ventral alveolar over-inflation and dorsal alveolar collapse resulting in reduced over-inflation injury and atelectasis
 - Reduces lung compression by the heart and abdominal contents
 - Improved ventilatory perfusion mismatching and shunt
 - Improved secretion clearance

Prone positioning in the management of ARDS

- Prone ventilation may result in improved oxygenation and survival in select patients with ARDS
- Prone positioning in the conscious patient by improve oxygenation and reduce the need for mechanical ventilation
- Prone positioning has been used selectively to manage ARDS as the result of COVID infection

Prone positioning during pregnancy

- Advantages of prone positioning in pregnancy include:
 - The magnitude of diaphragmatic compression is increased due the gravid uterus which can be relieved in the prone position
 - Prone positioning relieves the compression of the major vessels by the gravid uterus and may improve uterine blood flow and fetal oxygenation
 - The other benefits of improved V-Q mismatch and shunt also occur in pregnancy
 - Has the potential to improve oxygenation without moving to ECMO

Prone Positioning during Pregnancy

- Prone positioning was used in pregnant women during the H1N1 influenza epidemic.
- Several case series demonstrated improved oxygenation in over 50% of women who were otherwise failing conventional ventilator treatment for ARDS due to H1N1 infection
- A single randomized controlled trial of prone positioning pregnancy from 2017 in normal healthy women demonstrated increased oxygen saturation and no adverse effect on HR, BP, and FHR.
- Prone positioning in the third trimester of pregnancy presents some difficulty but can be achieved with rollers and pillow to support the patient without compression of the gravid uterus.

Extracorporeal Membrane Oxygenation in Pregnancy

- ECMO has been successfully used in pregnant women with ARDS from various causes, H1N1 being the most reported.
- Results from the French national registry of H1N1 in 2009 reported:
 - 315 pregnant patients
 - 40 hospitalized in the ICU
 - 11 required ECMO (3.5% of total)
 - No serious bleeding events occurred
 - Fetal well-being as evidenced by FHR and ultrasound improved in all cases after ECMO