Positioning as a Venous air embolism risk factor

- Anesthesiology Considerations and Management of Venous Air Embolism in Patients in the Semisitting Position: A Single-Center Review
- Comparison of integrated versus parallel continuous renal replacement therapy combined with veno-venous extracorporeal membrane oxygenation in patients with COVID-19 ARDS
- Knowledge and Practices Regarding Prevention of Central Venous Catheter Removal-Associated Air Embolism: A Survey of Nonintensive Care Unit Medical and Nursing Staff
- The risk of intraoperative venous air embolism from neurosurgical procedures performed in the lounging position: an in-depth analysis of detection, management, and outcomes of 1000 consecutive cases
- Patient height and American Society of Anesthesiologists class as significant risk factors for posterior fossa surgery in the semisitting position
- Analysis of Tomographic Images of a Catastrophic Gas Embolism during Endoscopic Retrograde Cholangiopancreatography
- Pulmonary abscess combined with pulmonary vein thrombosis and stroke: A case report
- Analysis of risk factors for venous air embolism in the semisitting position and its impact on outcome in a consecutive series of 740 patients

Venous air embolism risk factors are the major deterrent for surgeons and anesthesiologists, despite the fact that sitting and semisitting positions are commonly used in these operations.

Certain positions can increase the likelihood of air entering the venous system, leading to VAE. Here are some examples:

Trendelenburg Position: The Trendelenburg position, where the patient's head is lower than their feet, is commonly used in various surgical procedures. However, this position can increase the risk of VAE because air can migrate into the central veins when the pressure in the thoracic cavity decreases. The upward movement of the diaphragm in this position can draw air into the venous system.

Reverse Trendelenburg Position: In contrast to the Trendelenburg position, the reverse Trendelenburg position involves elevating the patient's head higher than their feet. Although less common, this position can also predispose patients to VAE by promoting the entry of air into the venous circulation.

Sitting Position: Procedures performed in the sitting position, particularly neurosurgical procedures or shoulder surgeries, carry an inherent risk of VAE. In this position, the venous pressure at the surgical site can be lower than atmospheric pressure, allowing air to be drawn into the veins.

Beach Chair Position: The beach chair position is often used for shoulder arthroscopy or certain cardiac procedures. It involves semi-sitting with the patient's back at an angle of 45-60 degrees. This position can lead to a decrease in venous pressure in the brain, increasing the risk of VAE.

It is important to note that patient positioning alone may not cause VAE, but when combined with other factors such as the presence of open veins, pressure differentials, or air entry points, it can contribute to the development of VAE. Healthcare professionals should be aware of these risks and take appropriate precautions, such as carefully managing patient positioning, maintaining adequate hemodynamic monitoring, and promptly recognizing and addressing any signs of VAE during procedures.

Sitting Position

Sitting Position as a Venous air embolism risk factor.

Dynamic lateral semisitting position

Dynamic lateral semisitting position.