

Title	Non-cardiogenic Pulmonary Edema and Venous Air embolus as complications of Operative Hysteroscopy
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Operative hysteroscopy has been utilized for several decades to both diagnose and treat a number of intrauterine pathologies. While typically perceived to be a very safe procedure, hysteroscopy entails specific risks of which anesthesiologists should be aware. Air embolism and severe fluid overload continue to be potentially devastating complications of hysteroscopy. Many of these complications have been reported in the gynecologic literature, but have not been published in the anesthesia journals. Only awareness of the potential for these complications and adequate intra-operative vigilance can prevent severe morbidity or death in the typically healthy patients receiving this intervention. In order to alert anesthesiologists to the potential for certain serious intra-operative complications, we describe the clinical manifestation and treatment of two patients seen in our ambulatory surgery center at Stanford University.

REPORT 1:

A 37-year old patient with a medical history of menorrhagia was scheduled for operative hysteroscopy. General anesthesia was induced with Propofol and a Laryngeal Mask Airway was inserted. Hysteroscopic resection of the fibroids was begun with Lactated Ringers solution. Approximately one half hour into the procedure, the patient began having decreased oxygen saturation to 85%. The patient then received succinylcholine, the trachea was intubated, and mechanical ventilation begun. Shortly thereafter, peak inspiratory pressures increased to 50 cm H₂O, tachycardia ensued and facial and upper body edema became apparent. Consequently, the procedure was discontinued after 6 liters of LR in addition to 1.1 liters of IV fluids had been absorbed. Furosemide 20 mg was administered and the patient was taken to the ICU. The patient experienced brisk diuresis in the ICU and was extubated 6 hr after the operation without complication.

REPORT 2:

The second patient is a 35 year old female scheduled for operative hysteroscopic myomectomy in order to evaluate for fibroids. Induction of general anesthesia was performed and maintained with a combination of propofol, alfentanil, and nitrous oxide. The gynecologists began the case with the infusion of lactated Ringer's solution into the uterus. After 45 minutes of hysteroscopy a sudden drop in the patient's etCO₂ from 34mmHg to 22mmHg occurred. The patient's mean arterial pressure dropped from 105mmHg to 60mmHg immediately afterwards. Upon auscultation of the chest the patient was found to have a new 3/6 churning, mill wheel type murmur. Treatment for a presumed venous air embolus was initiated following the precipitous drop in etCO₂. The surgeons immediately stopped hysteroscopy and evacuated the uterus of pressurized fluid and air. The remaining portions of the scheduled surgery were cancelled and the patient awakened without incident.

DISCUSSION:

Our literature search found a case report of LR intravasation during laparoscopy, but was unable to find a case of intravasation of entirely LR for hysteroscopy. Our case report suggests that isotonic distention medium such as LR still has the potential for rapid intravasation and resulting pulmonary edema, but it is apparently without the risk of electrolyte abnormalities seen with the non-ionic distention mediums. A device for maintaining intra-uterine pressures was used for the second case when venous embolus occurred. During hysteroscopy, fluid is instilled under pressure to improve surgical exposure. Venous air embolus is a potentially lethal complication of hysteroscopy that has seldom been reported in the literature. Controlled intra-uterine infusion devices that maintain a lower infusion pressure do not prevent venous air embolus.