



Letter to the Editor

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Response to “Complications during hysteroscopy for gynecological procedures: prevention is better than cure!”

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To the authors of ‘Complications during hysteroscopy for gynecological procedures: prevention is better than cure!’

Thank you for reading and responding to our article, ‘Complications of fluid overload during hysteroscopic surgery [1]’. We appreciate the interest in our work and invite questions and concerns relevant to this topic. To that effect, we would like to address points made in your response. We will address them in the order introduced.

We agree that ‘prevention is better than cure.’ We reported 1,300 ml of intravenous fluid administration. Hysteroscopic fluid medium of 2,010 ml was introduced, with 700 ml evacuated via Foley catheter. There may be unmeasured fluid lost via extravasation, which was not measured or documented. Nevertheless, we agree that this total fluid amount, though administered over two and a half hours, warrants concern. This concern was the focal point of our case report. We agree that communication of the volume administered in real-time is key to preventing subsequent complications. We express concern with the specifics discussed and citations referenced in your response. You cited primary source material in stating that pulmonary edema was reported with infusions of 800 ml of fluid under high pressure [2]. This article does not state this. The authors state that their results were either not analyzed statistically or that the average fluid deficits were clinically insignificant. No fluid recommendations were given. The background material cited does not address intravasation goals for isotonic fluids like the normal saline utilized in our case.

The authors of this letter state that it is recommended to establish endotracheal intubation and positive pressure ventilation during hysteroscopy, given the lithotomy and Trendelenburg positions.

The two articles cited for this proposed standard of care are low levels of evidence. The first is a summary of 13 cases with varying and/or absent documentation of surgical diagnosis, anesthetic modality, distension media, and patient positioning. We also note no formal recommendation of endotracheal intubation is given in this article [3]. The second article cited discloses three case reports describing venous air embolism (VAE) with subsequent recommendation to intubate all hysteroscopic cases [4]. Those authors disclose that all three cases occurred despite endotracheal intubation and that two of the three occurred after instituting intubation as a protocol for hysteroscopy. Endotracheal intubation institution in this article lacks statistical evidence of causality or correlation. A variety of recommendations have been made in prior publications. Local and/or neuraxial anesthesia to detect symptomatology in awake patients is a reported recommendation [5]. The aforementioned cited case summary includes patients receiving this modality. Those authors imply an escalation of airway intervention is necessary when acuity or co-

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morbidity rises [3]. We would therefore respond by stating that a risk stratification to consider endotracheal tube placement should be made on a case by case basis.

The authors note that the airway seal pressure at the time of laryngeal mask airway (LMA) insertion and at the time of the event are not mentioned and the possibility of LMA displacement or laryngeal edema leading to inadequate ventilation cannot be ruled out. We can report that LMA placement and seal appeared unremarkable during the entirety of this case. We would agree that undetected placement or sealing complications with any airway device, LMA or endotracheal tube, is a potential complication that could occur in this setting.

The authors comment that the Trendelenburg position and spontaneous ventilation increased the risk of VAE. Responding authors cited hysteroscopy-related VAE to occur as high as 10–50% of cases [3]. The cited case summary references seven articles, most of which are case reports referring to VAE occurring during CO₂ utilization for distension media. Background source material selection bias may be evident. For example, cursory background searching yields sources citing gas embolism occurring in 0.017% hysteroscopies with CO₂ as the distending medium specifically. They state CO₂ should be contraindicated during hysteroscopy for this purpose. They note that room air may be accidentally introduced in poorly controlled fluid intravasation systems, but they do not state that this could elevate the incidence of VAE from 0.017% to 10–50% [6]. Our posed respiratory complications secondary to fluid overload is a more common occurrence. The same paper that cited 0.017% gas embolism occurrence cites 0.14% fluid overload occurrence [6]. Even if gas distension media was utilized or accidentally introduced to our fluid intravasation equipment, we note that the source material cited reports that fluid overload is 8.2 times more likely to occur.

The authors present the symptoms associated with VAE. We would agree that hemodynamic changes, desaturation, and respiratory difficulty occurred in this case. The other clinical features included, namely ‘mill wheel’ murmur and electrocardiographic changes, did not. We did report hypercapnia and moderate hypoxemia (arterial blood gas yielded partial pressure of carbon dioxide 49.5 mmHg and partial pressure of oxygen 327 mmHg on 100% fraction of inspired oxygen). Crackles on chest auscultation and chest radiography exhibiting bilateral patchy opacification suggests pulmonary edema secondary to fluid overload. These findings are not uniformly evident with VAE. We also note the timeline of recovery. VAE significant enough to elicit hemodynamic compromise and ventilation/oxygenation limitation does

not recover quickly. Specific time to recovery is not widely documented, but recommendations of VAE treatment (e.g., hyperbaric oxygen therapy) is commonly reported in iterations of hours to days. The patient discussed returned to baseline and was extubated 5 hours post procedure. The apparent absence of entrained air in the intravasation system, constellation of clinical features, and timeline of recovery do not support a diagnosis of VAE.

We agree that precautions discussed in your letter to prevent VAE are mandatory. We agree that rapid identification and prevention of further gas embolus is key to limiting catastrophic outcomes. In this case, we highlight the importance of maintaining vigilance with reference to inadvertently escalated fluid administration. Communication with the surgical team regarding the possible concerns for fluid overload and a meticulous attention to patient hemodynamic patterns via noninvasive or invasive monitors is warranted.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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