Clinical Update - JCAHO Alert/Patient Safety/Improving Outcomes

Declining Use of GA in Obstetrics: Maintaining Advanced Airway Skills

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Objective
1. Discuss the general anesthesia-related maternal mortality in USA and UK and its impact on the changing obstetrical anesthesia practice.
2. Discuss the impact on the anesthesia trainees' experience in general anesthesia.
3. Recognize the importance of training and acquiring advanced airway management skills so as to avoid airway catastrophes in obstetrical patients.

Background: In Western countries the recognition of adverse maternal and neonatal outcomes associated with difficult airway management has led to a dramatic decline in the use of general anesthesia (GA) for both elective and emergency cesarean delivery (CD).1, 2

Anesthesia-Related Maternal Mortality and Trends in Obstetrical Anesthesia: Although the total number of maternal deaths had been decreasing steadily in the last few decades, anesthesia-related complications are the seventh leading cause of maternal death both in the United States and United Kingdom.3, 4, 5, 6 The majority of the anesthesia-related deaths took place during CD.3, 7 Majority of the maternal deaths were related to difficult or failed intubation, aspiration and respiratory related complications. Although case fatality rates for GA are falling, rates for regional anesthesia are rising.7

Closed Claims Studies: The recent Closed Claims Study, published in the USA, revealed that obstetric anesthesia claims for injuries from 1990 to 2003 had declined compared with obstetric claims for injuries before 1990. The improvements in the statistics and decline in anesthesia-related maternal mortality in the past few years are probably associated with the use of respiratory system monitors in modern practice, the decrease in the use of GA in obstetric practice, and enhanced awareness of the risk of aspiration of gastric contents in the obstetric patient.1 However, the incidence of claims from difficult intubation has not changed significantly.1

Why is Advanced Airway Management important? There have been tremendous advances in airway management in recent years. Improvements in advanced airway management led to a documented decline in the incidence of airway-related perioperative morbidity in the surgical population.8 Similarly, application of advanced airway management can decrease or eliminate the case fatalities in obstetrical cases especially when the anesthesia practitioner is confronted with an airway crisis situation.

Because GA for CD is frequently reserved for true emergencies, these high level stress situations can lead to an inadequate airway assessment or preparation which can contribute to the risk of failed intubation. Since the medical-legal liability associated with airway-related adverse outcomes is high,1 it is essential that all anesthesia practitioners practicing obstetric anesthesia should acquire and maintain advanced airway management skills.

Training in Advanced Airway Management: General anesthesia in obstetric anesthesia has largely been replaced by the use of neuraxial techniques. The widespread adoption of the neuraxial techniques for labor analgesia and cesarean delivery has been prompted by a number of benefits but more importantly because of the concern to avoid the potentially difficult airway and the risk of aspiration in the obstetric patients. The phenomenon of the widespread utilization of neuraxial techniques in the western countries has had a significant impact on the anesthesia trainees' experience in GA in the obstetrical patients.9, 10, 11 Because of the significant decline in the use of GA for CD the anesthesia trainees in USA and UK are getting minimal or no exposure to this important but necessary procedure during their anesthesia training.9, 10, 2

The importance of GA expertise in obstetrics is without question a necessity; because it remains a necessary choice in certain situations, such as, cord prolapsed; maternal hemorrhage; contraindications to neuraxial techniques e.g., coagulopathy; a perceived lack of time; and patient refusal. Because fewer CD are being performed under GA, there is a growing concern that current and future anesthesia practitioners, particularly the anesthesia trainees, will have minimum or no opportunities to learn and maintain critical skills for managing the airway.12, 10, 9 The difficult intubation rate in obstetrics can vary from 1:1,500, 13 1:300 to 1:250.14, 15, 16, 2 In addition to the basic airway skills, advanced airway management skills are also necessary.

Approaches to advanced airway management training: Advanced airway management with emphasis on difficult airway management must be a mandatory and critical aspect of anesthesiology. The US residency programs surveyed with a response rate of 79% showed that two-thirds of the responding programs acknowledged their lack of a difficult airway teaching rotation. Further, less than 20% of residency programs that have a formal airway teaching rotation, do not have a requirement that a resident be evaluated to have successfully performed a "required number" of procedures to demonstrate competence.17

Training for difficult airway management in an obstetrical situation: Ideally residents should train with obstetrical clinical scenarios and be able to apply their knowledge, judgement, technical and non-technical skills, in real-time simulation of those clinical situations. The training course should start with 1) A dedicated structured airway rotation in the general operating room (a prerequisite that they have successfully performed a "required number" of procedures); 2) Systematic practice and repetition with various individual airway devices and tools to facilitate intubation; 3) High-fidelity simulation-based practice of a clinical obstetrical difficult airway situation in which the individual resident must attempt to manage in "real time" the various limbs of the ASA algorithm including cricothyroidotomy in a "Cannot Intubate – Cannot Ventilate" situation; 4) An assessment of technical and nontechnical skills in a high-fidelity simulated obstetrical difficult airway situation; 5) Reassessment in six months to one year, to gauge the retention of cognitive, psychomotor and nontechnical affective skills by the anesthesia trainee with high fidelity simulation of the same obstetrical difficult airway situation.

In conclusion, there should be strong emphasis in addressing overall education, advanced airway management skills acquisition, and management of the difficult airway in obstetrical patients, similar to the aviation industry, with standardized simulation and crew resource management, and crisis resource management methods incorporated into the obstetrical anesthesia curriculum of all anesthesiology residents.
**Key Points:**

1. Anesthesia-related maternal mortality has decreased significantly; it ranks seventh among the leading causes of maternal mortality.

2. There has been a significant decline in the use of general anesthesia for cesarean delivery such that anesthesia trainees in USA and UK are getting minimal or no experience in this important but yet necessary procedure during anesthesia training.

3. Ideally residents should acquire advanced airway management skills and should train with obstetrical clinical scenarios and apply their knowledge, technical, nontechnical and judgement to obstetrical airway crisis situation.

**Key References:**


8. Cheney FW. The american society of anesthesiologists closed claims project: What have we learned, how has it affected practice, and how will it affect practice in the future? Anesthesiology. 1999 Aug;91(2):552-6.


