

Cesarean Delivery for Refractory Status Asthmaticus



William W. Andrews, PhD, MD

In this issue of *Obstetrics & Gynecology*, Lo et al present the case of a 32-year-old woman, gravida 3 para 2, with a known history of severe asthma, noncompliance, and need for intubation before the current pregnancy (see p. 422).¹ Additionally, she had been admitted to the medical intensive care unit and required bilevel positive airway pressure five times prior during the current pregnancy. At 33 weeks of gestation, she presented with another severe asthma exacerbation that progressed to status asthmaticus requiring intubation and readmission to the medical intensive care unit. Despite aggressive mechanical ventilation and medical management, her condition worsened, and an arterial blood gas indicated a pH of 7.19, PaCO₂ 79 mm Hg, PaO₂ 36 mm Hg, and a tidal volume of 200 mL. Electronic fetal monitoring revealed a normal fetal heart rate, decreased variability, and no accelerations or decelerations. The patient was deemed to be critically unstable despite maximal therapy, and an emergent cesarean delivery was performed.

As expected, the 1,810-g neonate was acidemic (pH 7.19) at birth but eventually did well, with no neurologic compromise. The respiratory status of the mother improved remarkably immediately after delivery (within minutes). Tidal volume increased to 450–500 mL, peak inspiratory pressure decreased from 45 cm H₂O to 28 cm H₂O, and the FIO₂ requirement decreased from 80% to 40%. The patient continued to improve and was extubated on postpartum day 1 and discharged on day 10.

The authors briefly review management of status asthmaticus in pregnancy and recommend consideration of cesarean delivery as a life-saving intervention for both mother and fetus in the face of clinical deterioration despite maximal ventilatory and medical management. They speculate that, as observed in the current case, cesarean delivery may lead to improved respiratory status by increasing diaphragmatic excursion, thereby increasing tidal volume. They also highlight the fact that most cases of status asthmaticus respond to aggressive therapy and the need for cesarean delivery should be rare. Indeed, they cite only four other published similar cases.^{2–5}

As the authors indicate, normal physiologic respiratory changes in pregnancy include (by the third trimester) a decrease in residual volume and functional residual capacity along with a substantial increase in both resting minute ventilation and tidal volume (to as high as 600 mL or greater).⁶ Indisputably, the tidal volume of 200 mL before delivery in the case reported by Lo et al¹ was extremely low, and the rapid increase to 450–500 mL observed just after delivery may have been the key lifesaving factor for the mother.

Regardless of the etiology of respiratory compromise, many maternal-fetal medicine specialists have observed rapid improvement in maternal respiratory status just after delivery (personal observation and communication). The decision to deliver the pregnancy in the current case may have

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Dr. Andrews is from the Department of Obstetrics and Gynecology at the University of Alabama at Birmingham, Birmingham, Alabama; e-mail: wandrews@uab.edu.

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resulted in saving both the mother and the fetus, and failure to do so may have resulted in the death of both. However, extreme caution should be exercised in making this decision in the case of status asthmaticus (or other causes of severe maternal respiratory compromise). First, objective data are limited to a few case reports. Second, the cutpoint gestational age at which cesarean delivery should be considered is not clear. A marked improvement in tidal volume and subsequent maternal respiratory status is unlikely to occur when the uterus is comparatively small and does not substantially diminish diaphragmatic excursion. Although maternal size or stature may be a factor in certain cases (eg, dwarfism or severe scoliosis), perhaps consideration of cesarean delivery should be reserved for gestational ages at or above fetal viability. Third, obstetricians should be very careful not to equate the mere presence of status asthmaticus with a need to perform a cesarean delivery (because most cases respond to therapy as noted by Lo et al¹). Consideration of cesarean delivery should be reserved only for

unstable cases refractory to mechanical ventilation and medical management. An unnecessary major abdominal surgery in an unstable mother who is responding to therapy may have adverse consequences for both the mother and the newborn.

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