Images in Anesthesia

Ex utero intrapartum treatment (exit procedure): fetal airway management

FIGURE Management of the potentially difficult fetal airway on placental support during the EXIT procedure; Panel A (laryngoscopy), and Panel B (endotracheal intubation). Consent for publication of these photographs was obtained in accordance with institutional guidelines at the University of California, San Diego.

Recent advances in prenatal diagnosis of fetal congenital malformations (including the airway) have led to the development of *ex utero* intrapartum treatment (EXIT) procedures on the fetus (including management of the potentially difficult fetal airway) before severing the umbilical cord.¹ These very rare procedures are also known as fetal intrapartum operations on placental support (OOPS).² The EXIT procedures are performed in conjunction with elective Cesarean delivery.

The anesthetic management (general anesthesia) of parturients undergoing EXIT procedures is very different from standard Cesarean deliveries. First, unlike a standard Cesarean delivery, there is no need to limit induction of anesthesia to delivery time. Second, deep inhalational anesthesia (exceeding 2 MAC end-tidal concentration) with sevoflurane or isoflurane (often in combination with continuous *iv* infusion of nitroglycerine) is required to maintain full uterine relaxation. Third, maintenance of maternal intraoperative blood pressure and cardiac output might at times necessitate continuous *iv* infusions of dopamine. The fetus is only partially delivered from the uterus with maintenance

of placental support for the duration of time needed to establish the fetal airway.

At the University of California, San Diego we recently performed an EXIT procedure on a healthy parturient carrying a fetus with Treacher Collins syndrome. The fetal airway was established with orotracheal intubation while on placental support (Figure, Panels A and B).

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