Ex Utero Intrapartum Intubation for Giant Fetal Neck Mass

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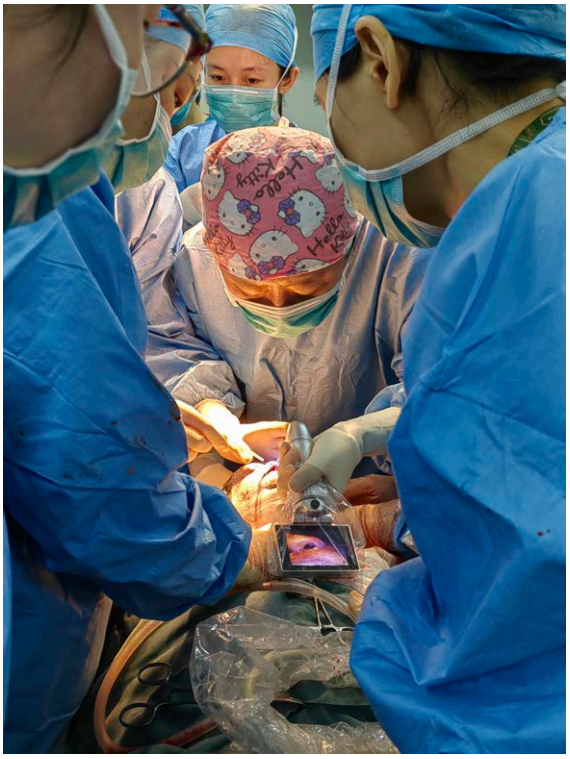

Fig. 1. Overall situation of the *ex utero* intrapartum intubation.

Fig. 2. A giant cervical mass encased the carotid vessels of the neonate. ETT, endotracheal tube.

Giant fetal neck masses are congenital anomalies that pose significant perinatal risks, including mortality, hypoxia, and anoxic brain damage due to difficulties in promptly establishing neonatal airway.[1] The *ex utero* intrapartum treatment (EXIT) procedure enables airway management while maintaining utero-placental circulation after partial delivery of the fetus *via* cesarean delivery.[1,2]

A 36-weeks-pregnant woman, with a fetus diagnosed with a giant neck mass, underwent *ex utero* intrapartum intubation to secure the fetal airway. Preoperative preparation included multidisciplinary consultations and rehearsals for the EXIT procedure. General anesthesia was administered using rapid sequence induction. Sevoflurane was subsequently maintained at 6% (2 to 3 minimum alveolar concentration [MAC]) to maximize uterine relaxation, facilitating partial delivery of the fetus.[3] Maternal hemodynamics were controlled using inotropics and vasopressors, monitored by a FloTrac (Edwards Lifesciences, USA) system, to optimize utero-placental perfusion. Mean arterial pressure was maintained within ± 20% of baseline, stroke volume above 80 ml, and cardiac output greater than 5 l/min.

During the EXIT procedure, the fetal head and neck were delivered while ensuring placental circulation. A videolaryngoscope (Vimed Medical, China) facilitated intubation with

Published online first on September 12, 2024.

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 ANESTHESIOLOGY 2024; 141:1139–40. DOI: 10.1097/ALN.0000000000005162

The article processing charge was funded by the Peking Union Medical Foundation (XHZJ2407).

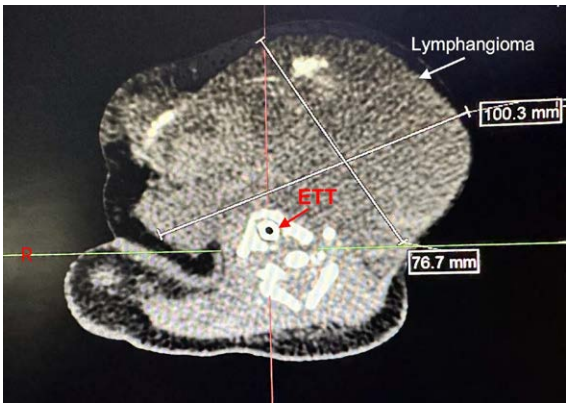

Fig. 3. Transverse computed tomography scan of the neonate for further surgical evaluation. ETT, endotracheal tube.

a reinforced endotracheal tube (ETT) (fig. 1). After successful intubation, the fetus was fully delivered (fig. 2). Umbilical cord arterial blood gas analysis showed a pH of 7.212, the baseexcess value of –3.8 mM, and the blood lactate of 2.4 mM. Postnatal pressure-controlled mechanical ventilation was initiated immediately, with inspired pressure 16 cm H_2O, positive end-expiratory pressure 5 cm H_2O, frequency 40, and fraction of inspired oxygen 30%. Arterial blood gas analysis 5 min later showed a pH of 7.36, BE of –4.7 mM, $Paco_2$ of 34.2 mmHg, and Pao_2 of 174.4 mmHg, indicating adequate oxygenation and effective carbon dioxide removal. ETT placement was confirmed *via* computed tomography scan and three-dimensional reconstruction (figs. 3 and 4).

Ex utero intrapartum tracheal intubation of a fetus with a potentially difficult intubation is feasible, allowing for the confirmation of correct endotracheal tube placement before cesarean delivery.

Competing Interests

The authors declare no competing interests.

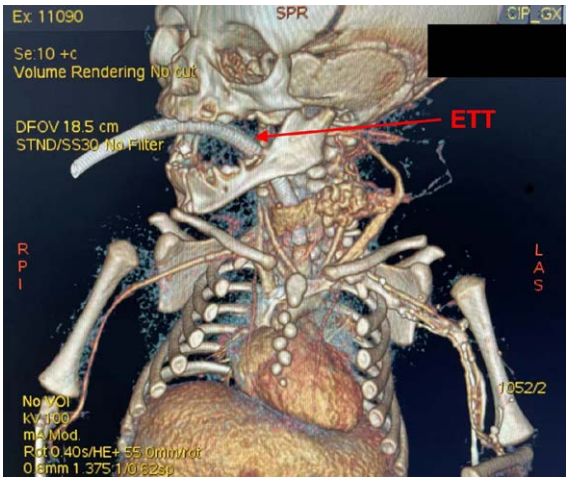

Fig. 4. Three-dimensional reconstruction of the neonatal airway. ETT, endotracheal tube.

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