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DESCRIPTION

We describe the evolution of our airway management technique used in a series of four EXIT (Ex-Utero Intrapartum Treatment) procedures¹.

Our department, in conjunction with our Otolaryngology colleagues, devised a protocol for the management of EXIT procedures. This outlines the required personnel, equipment, and plan of action for the procedure. The importance of communication is highlighted.

In broad terms, this involves antenatal MRI and careful MDT planning. Following maternal general anaesthesia, a hysterotomy is performed, the head and upper torso are delivered. Uteroplacental gas exchange is maintained until airway secured. Direct laryngoscopy by an experienced paediatric anaesthetist, and or by an experienced paediatric otolaryngologist. Endotracheal intubation is confirmed by visualisation of tracheal rings with fiber-optic bronchoscope. If this cannot not be facilitated a tracheostomy is performed. The umbilical cord is clamped only once the airway is secured.

CASE 1

Indication: Large right sided neck mass causing tracheal compression

Airway management: No view obtained with Miller blade; partial view of larynx was facilitated with a Parsons laryngoscope. A Cook exchange catheter was advanced, but it was not possible to pass an endotracheal tube due to external compression from the mass. A tracheostomy was performed on uteroplacental circulation.

April 2018

CASE 3

Indication: Severe Pierre Robin Sequence.

Airway management: A Cook exchange catheter was placed with a Parsons Laryngoscope. An ETT was railroaded over this, and tracheal rings confirmed on bronchoscopy.

Mar 2019

CASE 2

Indication: Large neck mass, appearances consistent with cystic hygroma

Airway management:

Laryngoscopy was not possible with Miller blade. A Cook exchange catheter was placed using Parsons laryngoscope, and an endotracheal tube was railroaded. However, the team were unable to identify tracheal rings and thus a tracheostomy was performed on uteroplacental circulation

Dec 2018

CASE 4

Indication: Large right sided cervical and facial mass

Airway management:

Laryngoscopy with Cmac D Blade. A 2.2fr Richard-Wolf flexible bronchoscope loaded with a 3.0 uncuffed ETT was then passed orally. The carina was visualized and ETT successfully sited.

Aug 2019



DISCUSSION

Due to distorted anatomy and the uteroplacental circulation, it is our policy to confirm endotracheal intubation by two means before uteroplacental circulation is interrupted. Firstly, visualisation of the ET tube passing through the cords, and secondly visualisation of the tracheal rings by bronchoscopy through the ETT. Our team has found ETCO₂ to be unreliable in the EXIT setting.

As demonstrated by Case 2, if both criteria are not met, alternative measures are taken to secure the airway prior to clamping the cord.

Our management evolved from direct laryngoscopy, to a 2-person technique of video laryngoscopy and fiber-optic intubation. This allows immediate confirmation by our criteria with no blind element to the procedure.

This series demonstrates how the adoption of new techniques and careful planning can lead to safer management in high intensity environments such as EXIT procedures.

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