

The Horseshoe Hold: Navigating the Neonatal Airway Around an Occipital Encephalocele

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Background

Encephalocele

- An encephalocele is a neural tube defect involving a skull defect and spread of intracranial structures extracranially.
- Arises from a failure of separation between surface ectoderm from neuroectoderm.
- Occipital encephaloceles (OE) are the most common, usually over the midline.
- Incidence: 0.8-5.6/10,000 live births, more common in females than males
 - Associated with hydrocephalus in 60% of OE cases.

Complications of Encephalocele

- Complications relate to size, location, and composition of the herniation.
- Injury to the skin can cause rupture of the encephalocele and a large volume loss of CSF leading to rapid hemodynamic instability.
- Patient cannot be placed supine on a flat surface for induction of anesthesia.

References

References available on request, email:
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Case Presentation

A three-day old male born via C-section at 37 4/7 weeks with an occipital encephalocele.

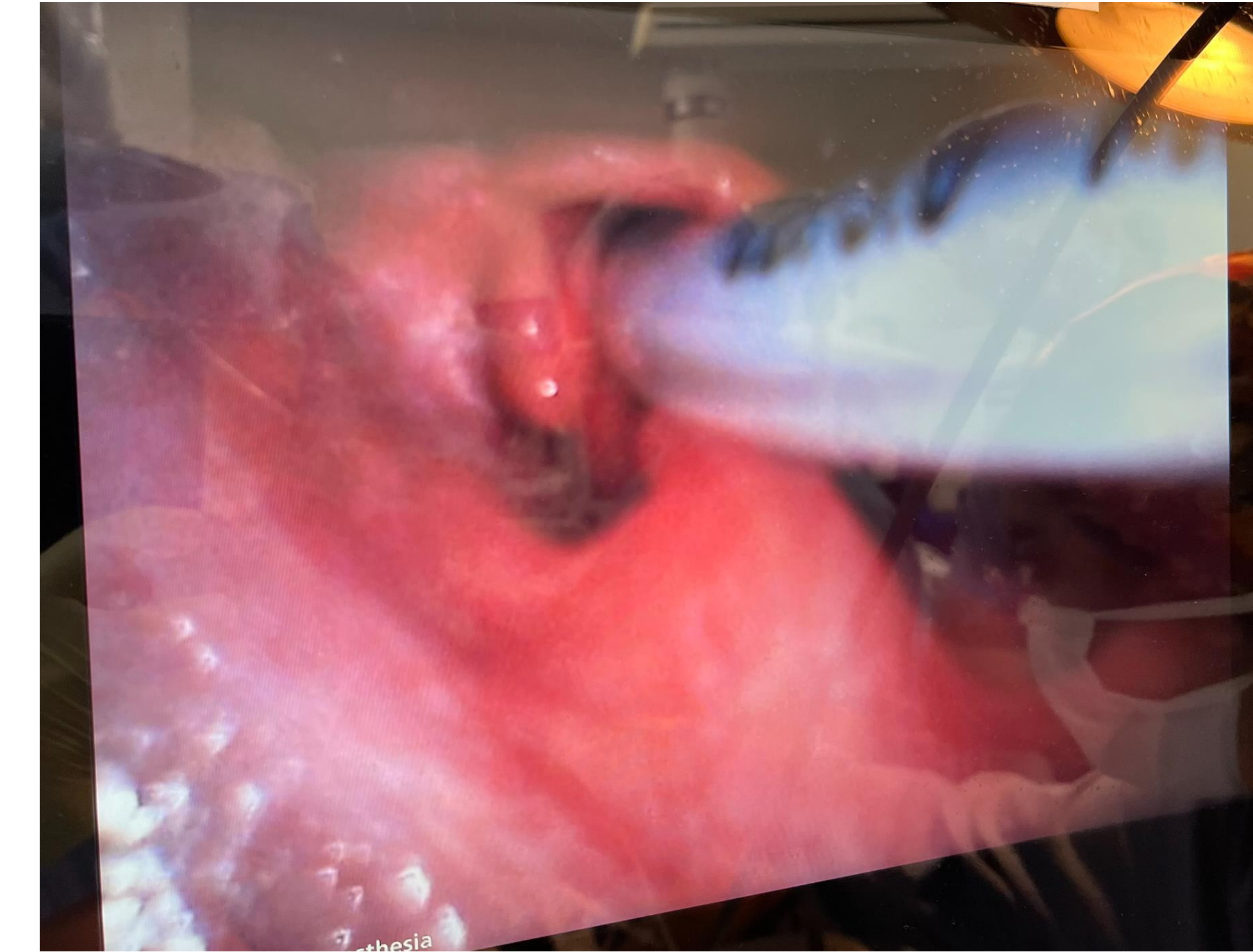
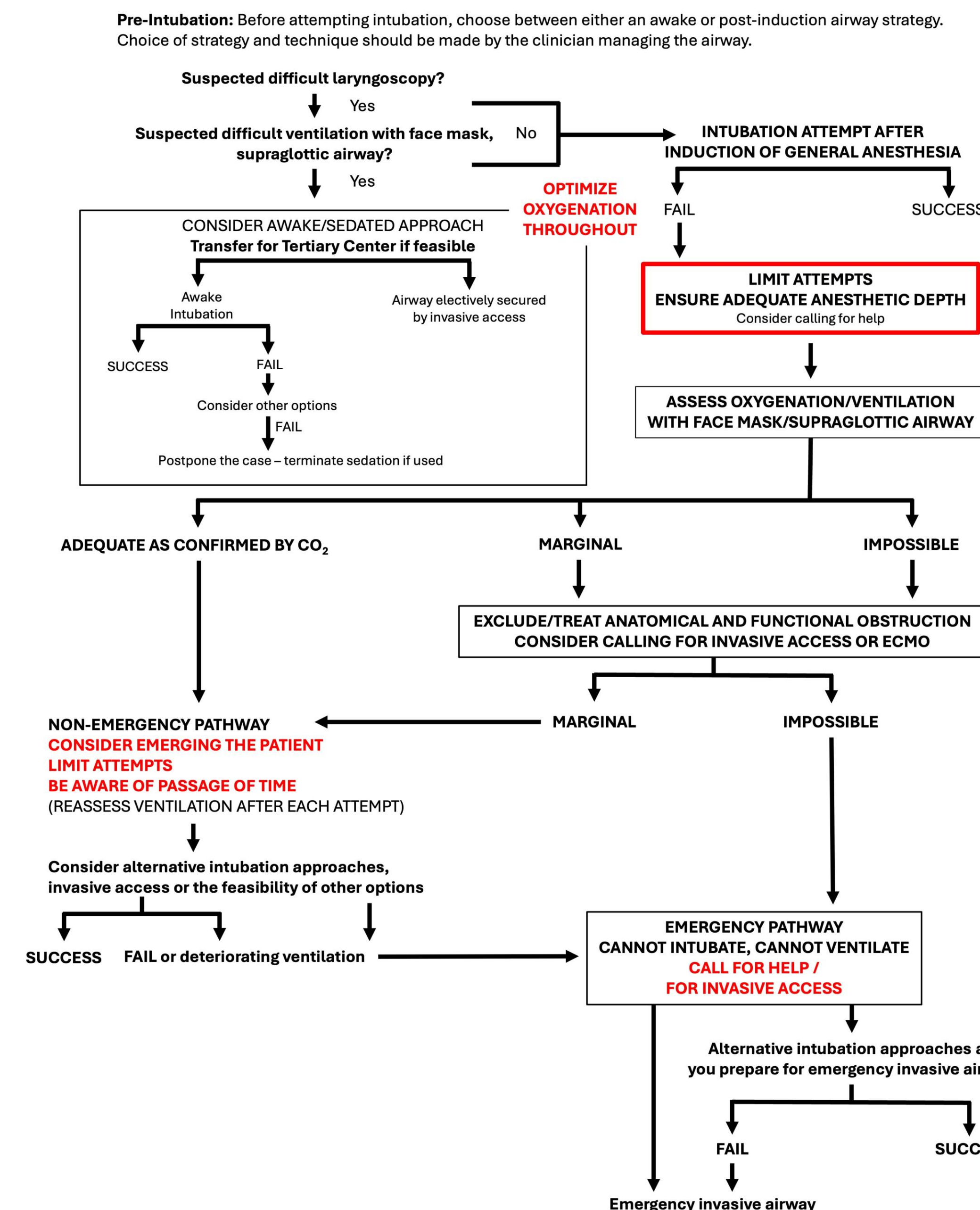
Past Medical History

- Chiari malformation
- Right-sided hydrocephalus
- Fetal growth restriction
- Prolonged INR (1.9) 2/2 mild Factor VII deficiency

Airway Positioning and Management

- Goal was to prevent trauma to the fragile encephalocele and to optimize positioning for successful first attempt at intubation.
- Patient was intubated supine with the head placed in a horseshoe headrest.
- Encephalocele was stabilized throughout induction by the neurosurgery team.
- Patient was preoxygenated, pretreated with glycopyrrolate to limit secretions, and induced with incremental dosing of ketamine to maintain spontaneous respirations.
- Video laryngoscopy used – Miller 0 with size 3 ETT.
- Paralyzed with rocuronium and maintained with sevoflurane.
- Patient was carefully prone in the horseshoe headrest for surgery.

Pediatric Difficult Airway Algorithm



View of airway on videoscope



CT of Mass



Head positioning for intubation

Discussion

Hospital course: Patient extubated to face mask, transported to NICU. VP shunt placed 2 weeks later.

- Medically complicated course but discharged from NICU after 1 month.
 - At 6 months, babbling, responds to sounds, recognizes familiar faces, sits unassisted, transfers objects
- Alternative approaches considered: lateral positioning, maintain spontaneous respirations, fiberoptic
- Concerns: longer duration, distorted view of airway structures while lateral, secretions may obscure view
 - Difficulty of surgical airway in neonates (short neck and relatively thick anterior neck tissues)