

## Anaesthetic management of a neonate with congenital giant occipital encephalocele

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### ABSTRACT

Encephalocele is a broad term representing herniation of cranial contents through a congenital defect in the cranium. A giant occipital encephalocele presents a challenge to anaesthesiologist. Anaesthetic challenges in management of occipital encephalocele include securing the airway, intraoperative prone position and its associated complications, careful securing of the endotracheal tube and accurate assessment of blood loss. We report a case of a giant occipital encephalocele and discuss its anaesthetic concerns.

**Key word:** giant occipital encephalocele, thoracic meningocele, lateral position

### INTRODUCTION

Encephalocele is a form of neural tube defect, characterized by protrusion out of the meninges and brain tissue through a bony skull defect. As per the site of origin, these encephaloceles have been classified into different types. Occipital encephalocele is the commonest of all encephalocele. A giant occipital encephalocele presents a challenge to anaesthesiologist.<sup>1</sup> It is due to failure of the anterior neural tube to close, which may be due to genetic, infection or toxic reasons. The population incidence of this congenital anomaly is estimated to vary from 1 per 300 to 1 per 10000 live births.<sup>2-5</sup>

### CASE REPORT

A two day-old neonate weighing 3 kg presented with a large cystic swelling measuring 28 × 20 cm (Figure -1), arising from the occipital region. A rare, small thoracic meningocele was also present. On physical examination, neonate was active having no neurological deficit and no other associated congenital abnormality. The cardiac and respiratory system examination was within normal limits. Magnetic Resonance Imaging (MRI) brain showed giant occipital encephalocele with occipital lobe and part of

brainstem herniating in the swelling. After clinical-pathological evaluation the patient was posted for excision of large swelling.



Fig. 1

Before the procedure, multipara monitor was attached in form of ECG, NIBP, SPO<sub>2</sub>, and temperature probe. I.V. fluid 10% dextrose was given according to Holiday and Segar formula. Inj. atropine 0.01 mg/kg was given as premedication. Preoxygenation was done with 100% O<sub>2</sub>. Induction was done with sevoflurane 8% in 100% O<sub>2</sub> in lateral position. After confirming adequate mask ventilation, muscle relaxation was achieved with succinylcholine 2 mg/kg and the neonate was intubated in lateral position only. Confirming endotracheal placement of tube and after proper tube

fixation, the baby was put into prone position taking extreme care to prevent the accidental extubation of the tube. Anaesthesia was maintained with N<sub>2</sub>O: O<sub>2</sub> 60: 40, sevoflurane 1-2%, atracurium 0.45 mg/kg and Inj fentanyl 1 µg/kg. Thereafter, we proceeded uneventfully till the end of surgery. Patient was reversed by using Inj atropine 0.01 mg/kg and Inj. neostigmine 0.07 mg/kg. Regular and spontaneous respiration was achieved. Patient was successfully extubated and shifted to ICU.

## DISCUSSION

Encephalocele is protrusion of part of neural elements in a sac. Occipital encephalocele is most frequent followed by parietal, trans-sphenoidal, fronto-ethmoidal and nasal. Securing the airway is the major anaesthetic challenge in management of occipital encephalocele.<sup>1</sup> Awake tracheal intubation in lateral position may be performed in these patients to avoid pressure on the sac. Anaesthesia may also be induced in supine position with sac protected by elevating it on a doughnut-shaped support. Placing the patient's head beyond the edge of table is another approach to intubate the patient and may be used as an alternative to intubation in the lateral position. Although long acting non-depolarizing muscle relaxants may be used to facilitate tracheal intubation, these are usually avoided after consulting with surgeon, if he has to use a nerve stimulator to identify functional neural elements.

Due attention must be exercised in regard to blood loss, maintenance of body temperature, prone position and its associated complications and careful securing of the endotracheal tube.<sup>6,7</sup> Children with encephalocele have an increased

incidence of latex allergy, which can manifest as intraoperative cardiovascular collapse and bronchospasm.

The neurological prognosis in such children depends on the amount of neural tissue that has herniated through the sac. The neural tissue is often dysplastic and gliotic but the presence of microcephaly with a large posterior encephalocele containing significant brain tissue is a predictor of poor neurological outcome. Size of the encephalocele itself is not a guide to prognosis. The decision regarding surgery is dependent on various factors including the amount of neural tissue in the sac, other congenital anomalies, etc. Occipital, parietal, frontal, and frontonasal types may be approached without opening the cranium. The decision must involve the family and other medical personnel.

## CONCLUSION

Managing a case of encephalocele includes looking for other congenital abnormalities, expertise in handling airway, intraoperative care mainly involving proper positioning, blood loss replacement and latex allergy prevention.

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