

Of water bags and wind pipes: The travails of securing airway in occipital encephalocele

Despite the advances in the anaesthetic management of neurosurgical patients, difficulty in securing the airway remains a major cause of anesthesia-related morbidity. In this issue of JNRP, Yildırım *et al* describe their experience in the airway management of 17 neonates with occipital encephalocele. They describe two simple techniques that they used to overcome the difficulty in securing the airway in their patients.^[1]

Although encephalocele surgery has become rare following major improvements in the antenatal care, this problem persists in the rural areas where access to medical care remains far from satisfactory. The two major aims of the anesthesiologists while caring for children with occipital encephalocele intraoperatively are to avoid premature rupture of the encephalocele and to manage a possible difficult airway due to restricted neck movement and inability to achieve optimal position for intubation of the trachea.

The largest series of anaesthesia for encephalocele comprising 118 children with an average age of 1.5 years has been published very recently from the All India Institute of Medical Sciences, New Delhi, India.^[2] Occipital encephaloceles constituted 67% of the series. Difficult mask ventilation and intubation were encountered in 5.9% and 19.5% of children, respectively. Forty-eight percent of children with occipital encephalocele were intubated by direct laryngoscopy in the lateral position in this series. The majority of the remaining literature is limited to several case reports that have described methods to facilitate intubation in patients with occipital encephalocele. Quezado *et al*^[3] and Mowafi *et al*^[4] have used a platform of rolled up blankets with the head hanging from the edge of the table to facilitate intubation in such patients, while Manhas *et al* used additional manpower to lift the child (one person to support the head and shoulder and a second person to lift the torso

and legs) to aid intubation after attempts to intubate in the lateral position failed.^[5] Dey *et al* used a third person to extend the neck to successfully intubate a neonate in whom the two earlier described techniques at intubation failed.^[6] Thus, anesthesiologists have always depended on personal ingenuity and locally available material to tide over the individual crises. No single contraption that assures a high degree of success with certainty has emerged till date.

Several aids, which were not available till a few years ago, are currently in use for securing airway in neonates.^[7] Laryngeal mask airway, Truview PCD™ Infant (Truphatek, Netanya, Israel), AIRTRAQ® Disposable Optical Laryngoscope (Prodol Meditec, Vizcaya, Spain), GlideScope® Video Laryngoscope (Verathon, Bothell, WA, USA), and Storz DCI® Video Laryngoscope (Karl Storz, Tuttlingen, Germany) are being used to facilitate intubation in neonates and smaller children in difficult situations. These devices require familiarity and experience before they can be used successfully. It is important that they be used as first-choice techniques rather than as rescue aids. All the above devices, however, have been used only in non-neurosurgical situations. Experience is lacking with them in a neurosurgical setting and in encephaloceles, in particular. It remains to be investigated if these devices are helpful in the presence of large encephaloceles that render supine positioning difficult.

Apart from problems of intubation, there are also other concerns that might need the anesthesiologist's attention in patients with occipital encephalocele. Jagger *et al* have reported multiple episodes of raised intracranial pressures and low cerebral perfusion pressures in patients with occipital encephalocele.^[8] Creighton *et al* in a series of 31 patients with occipital encephalocele have observed disturbances in central autonomic control and defective temperature regulation in these children.^[9] In this series, more than 50% of the patients had non-neurological congenital malformations too, which included extracranial malformations like Klippel-Feil deformity (8/31), cleft palate (5/31), hydrocephalus, subglottic stenosis, and micrognathia. All these anomalies could potentially compound the problem of intubation in a patient with large occipital encephalocele. Other coexisting abnormalities in these patients include

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agenesis of corpus callosum, congenital heart diseases, lumbar meningocele, and spinal deformities. The physiological immaturity in neonates is another concern as many of these children present for surgery within the first few days after birth.

To summarize, for the time being, airway management in occipital encephalocele remains a challenge. Anesthesiologists will have to find pragmatic solutions in individual cases, keeping in view the basic tenets of not losing control on the airway and the ability to ventilate until the tracheal tube is safely secured and mechanical ventilation satisfactorily instituted. Problems, outside the airway management, discussed above, also should be given serious consideration. Future studies should evaluate the modern airway gadgets for their suitability in the context of neonatal encephalocele.

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