Induction and intubation in a Kleeblattschadel syndromic child with posterior cranial distractors

Sir,

Posterior external cranial distractors are used for surgical correction in patients with craniosynostoses. Presence of a posterior external cranial distractor is challenging to the anesthesiologists as the child cannot be placed supine, even for intubation.

This female child was born with an abnormally shaped large head and was diagnosed to have Kleeblattschadel syndrome, hydrocephalus, and pancraniosynostoses. Anterior craniofacial reconstruction was done at 2 months and posterior cranial expansion with foramen magnum decompression at 4 months. External distractors were placed for posterior cranial fossa expansion at 8 months. Now, 1-year-old and posted for posterior external cranial distractor removal in prone position.

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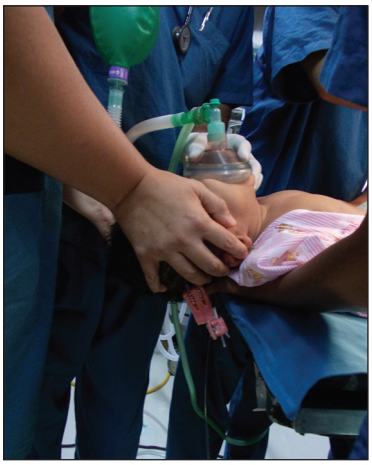

Figure 1: Child at edge of table with head supported by assistant

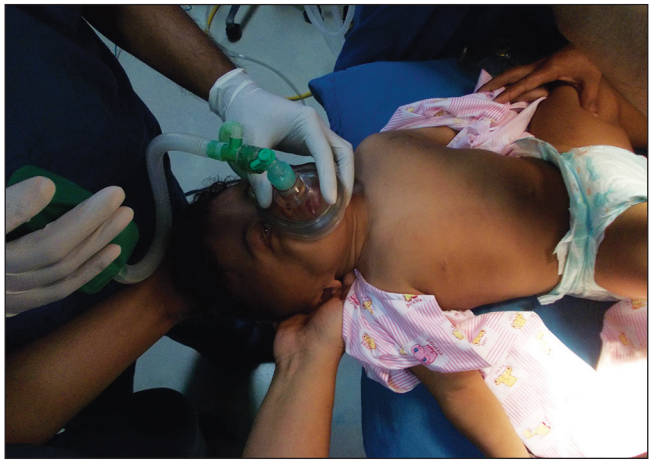

Figure 2: Head being supported by assistant

On examination, the child was mentally retarded, head was large (49 cm), and external distractors extended from one temporal region to other across the occiput. After distractor placement whenever awake the child was carried by someone with the head supported. While asleep, she was kept in prone position.

Though the patient had a large head, during previous surgeries laryngoscopy and intubation was done without much difficulty following inhalation induction. But this time due to presence of the posterior distractors, it was not possible to position the child in supine or even lateral position for induction and intubation.

So this time for induction and intubation, the child was positioned in such a way that the body up to shoulder was resting on the table, with the shoulder at the edge of operation theatre (OT) table. The head with posterior distractor and neck were supported by an assistant [Figures 1 and 2]. The child was induced with 8% sevoflurane in oxygen using a Jackson-Rees circuit. A check laryngoscopy showed epiglottis and posterior commissure. Injection vecuronium 0.1 mg/kg was given, positive pressure ventilation done with 2% sevoflurane in oxygen for 3 min and trachea intubated with a 4.5 size oral endotracheal tube and correct placement was confirmed.

Anesthesia was maintained with fentanyl 2 μ/kg with oxygen, nitrous oxide, and sevoflurane (40:60:1%-2%). The posterior external cranial distractor was removed keeping the child prone and suturing done in prone and lateral positions. The child was extubated at end of surgery uneventfully in supine position.

Kleeblattschadel syndrome (cloverleaf skull) is a birth defect characterized by abnormalities of the skull and facial bones. There is premature fusing of fibrous sutures, changing growth pattern of skull.[1] The treatment of pansynostosis comprises of expanding of anterior and posterior cranial vaults, generally performed as two separate procedures.[2] Excision of the prematurely fused suture and correction of the associated skull deformities allows normal cranial vault development to occur.[3] Posterior calvarial distraction is a safe and efficient method of calvarial expansion.[4]

A large head compared to adults on a weight basis,[5] make intubation difficult in infants. In addition to hydrocephalus, the presence of posterior external cranial distractor in place, made intubating conditions more complicated in this child. Children won't allow removal of distractor under local anesthesia before induction and fiberoptic intubation in an infant is technically difficult. The technique we adopted is simple and can be applied whenever a child with huge hydrocephalus needs intubation.

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