

Glass holding technique for bag and mask ventilation: An alternative in neonates and infants

Sir,

Anesthetizing pediatric patients is a challenge owing to differences in anatomy, physiology and body composition compared to adult patients, among other features. One of the main areas of concern is managing the airway. The airway of a neonate specifically, has some characteristic differences such as a large occiput, large tongue, floppy epiglottis, and an anteriorly placed and angled glottis.^[1]

In the sequence of events involved in airway management, the first and perhaps the most important step is bag and mask ventilation. Classically, the EC clamp technique of mask holding has been described, wherein the thumb and index finger form a “C” on the mask surface to maintain an adequate seal and the little, ring and middle finger form an “E” on the mandible for jaw lift.^[2] Although quite effective in older children, it is difficult to perform in neonates and infants owing to limited space available. Using only the little finger for jaw lift usually suffices in these cases.

We propose an alternate technique of mask holding in infants and neonates for the purpose of maintenance of anesthesia for short procedures, as well as bag and mask ventilation prior to intubation. It involves using the index finger and thumb to form a seal with the mask in a way similar to classical EC clamp technique, but using the other three fingers and rest of the palmer surface of the hand to engulf the under-surface of the chin or the mandible, very much like holding a glass. The eyes as a protocol are covered and protected with soft padding to avoid inadvertent pressure while holding the mask. Because of the generalized grip, there is no undue pressure on the underlying soft tissue below the chin, which might interfere with the maintenance of a patent airway [Figure 1]. In addition, neck extension can be adjusted by gentle movement at the wrist.

We theorize that the reason for ease in ventilation using this strategy is because in the described age group of patients, maintaining an adequate seal is more important than jaw lift or neck extension, which is of more significance in older children and adults. Maintaining neutral position of the head while ventilating and intubating infants and neonates has been mentioned in the literature.^[3]

This method of holding the mask was incorporated into practice after accidental use as a rescue technique in difficult



Figure 1: Glass holding technique of mask holding demonstrated in a neonate (left) and an infant (right)

bag and mask ventilation cases. Using this technique for mask ventilation in neonates and infants, in our experience of about 80 patients till date, found ease of performance irrespective of the level of experience or exposure to neonatal anesthesia. Performance fatigue was also less and less airway related mishaps were noted, specially when beginners or trainees were involved. We used circular transparent masks along with Jackson Rees circuit, which best suited this type of technique of mask holding.

A similar modification was mentioned by Podder *et al.*^[4] in older pediatric patients aged one to four in ophthalmic procedures for spontaneous ventilation, but with the anesthetist at the side of the patient holding the mask from below like a claw, for easy surgical access.

To conclude, we would like to emphasize the difference in anatomy and thus a different approach of bag and mask ventilation in neonates and infants. Moreover, the uses of an alternative rescue technique of holding the mask in a specific group of pediatric patients with unanticipated difficulty with conventional modes of mask holding.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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| Website: www.saudija.org | Quick Response Code |
| DOI: 10.4103/1658-354X.177342 |  |
| How to cite this article: Prakash S, Dhar M, Ranjan P, Gupta BK, Pai VK. Glass holding technique for bag and mask ventilation: An alternative in neonates and infants. <i>Saudi J Anaesth</i> 2016;10:487-8. | |