

A Novel Tool to Prevent Endotracheal Tube Compression in Cleft Palate Surgery

Dear Editor,

Compression of endotracheal tube in palatopharyngeal surgery is an inherent problem. Many modifications of the Davis mouth gag have been used.¹ The tongue blade has also undergone various modifications to prevent endotracheal tube compression. A slot and a middle groove have been incorporated to prevent the tube compression.² This definitely reduced the magnitude of the problem. Later, Sommerlad extended the length of the slot almost to the base of the blade to avoid compression against the lower jaw.³ This caused herniation of the tube through the long slot and a piece of the sterile metal foil suture packet was placed over the tube before positioning the tongue blade.³ Agarwal et al,⁴ have incorporated two parallel bars over the lingual surface of the tongue blade. Although the free zone on lingual surface of tongue blade houses the lower lip, the problem of compression of endotracheal tube remains at the bending point at lip where the overlying tongue blade compressed the endotracheal tube against the teeth of lower jaw.

To solve this problem we modified the connector portion of the endotracheal tube. We devised a small metal L-shaped tube and attached it to the outer end of the endotracheal tube (figure 1). The other end of the metal tube was attached to the tubing of the anaesthesia machine. This metal tube is placed over the lower teeth area. The tongue blade was placed over this area (figure 2), thus avoiding any compression at the lower teeth area. We fixed the tube to the lower dentition with 27° French dental wire or silk. The packing of the throat with soaked gauze was ensured in all the cases. We used this modification in over 150 patients undergoing palatopharyngeal and intra-oral surgery over three years. We did not encounter any case of tube compression.



Figure 1: L-shaped metal rod used to prevent endotracheal compression during palatopharyngeal or intraoral surgery



Figure 2: Metal rod with tongue blade

Endotracheal tube compression occurs at two places. The first place that it occurs is the site of application of tongue blade against the tongue. This problem has been overcome by the use of a groove in the tongue blade. The second compression occurs at the site where the tongue blade presses against the lower alveolar margin. This problem can be avoided by inserting a metal bend in this area. This metal bend needs to be fixed with lower dentition with a dental wire or a stitch. Only one size of the bend is sufficient in most of the cases. Only in younger children, it needs to be adjusted.

This modification allows better mouth opening without the fear of the tube compression. The risk of trauma to lower dentition is minimized by placing a swab between the teeth and the blade. We have used this modification in a large number of patients and have not encountered any trauma to lower dentition. Further to prevent the compression, one can use coil-reinforced endotracheal tube. These tubes can be re-used. There are two likely problems with the use of L-shaped metal tube. One prob-

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lem is that the endotracheal tube might dislodge from the L-shaped metal tube. This can be easily avoided by tying the tube with the wire or stitch. The other problem is that it has a larger outer diameter, which makes its use in infants difficult.

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