

Review And New Use For The Univent Tube

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Abstract

The univent tube has been used mainly for one lung anesthesia. There are other clinical settings where the tube was found to be useful. The univent tube can be used in cases of difficult intubation while supplementing oxygen and monitoring ETCO₂.

Macintosh first used the gum-elastic bougie as an aid to intubation in 1943 when he found that the tracheal tube could obstruct his view of the cords. The lubricated gum elastic catheter was therefore first threaded through the tube and then gently placed into the trachea. The tube was pushed down into the trachea over the catheter and the catheter removed. The technique was also used when exposure of the larynx was inadequate [1]. The technique is now commonly advocated when the cords cannot be seen at laryngoscopy. The catheter briefly retains the approximate shape into which it is bent. It is important to keep the catheter in the midline and to bend the distal end forward after it has been passed through the tracheal tube. The catheter can then be advanced blindly towards the cords and the tube then 'railroaded' over the catheter. It is necessary to check very carefully that the tube has passed into the trachea. In addition to listening to the chest and observing chest movement it is mandatory to listen over the stomach and if possible to measure expired carbon dioxide levels to exclude accidental esophageal intubation.

Many anesthesiologists adopt this technique when the cords cannot be seen at intubation. A suitable catheter should therefore be available in every anesthetic room.

The Univent tube was first introduced in the early 1980's [2], the Univent bronchial-blocker tube (Fuji Systems Corp., Tokyo, Japan) consists of a single lumen endotracheal tube (SLT) with a moveable bronchial blocker incorporated into a second lumen on the tube's concave surface [Fig.1].

Figure 1

Figure 1: The Univent tube



Following conventional endotracheal intubation, one-lung ventilation (OLV) can be provided by advancing the bronchial blocker into the non-ventilated lung (either blindly or preferably aided by a fiber-optic bronchoscope (FOB)), and inflating the blocker cuff. The Univent tube is marketed in 0.5-mm increments from I.D. 6.0 mm to 9.0 mm and now pediatric sizes are also available. It can be used as an alternative to the double lumen endotracheal tube (DLT) for providing OLV in most of the same clinical applications. The Univent tube is preferred to a conventional DLT for surgical procedures where lengthy post-operative mechanical ventilation is anticipated [3]. The Univent tube may be left in place at the end of the procedure (with the blocker fully retracted and secured), thus avoiding a potentially dangerous change from DLT to SLT. In addition, the larger I.D. 8.5 and 9.0 Univent tubes can be used during procedures where diagnostic bronchoscopy (requiring the larger FOB with a forceps channel) is performed prior to OLV [4].

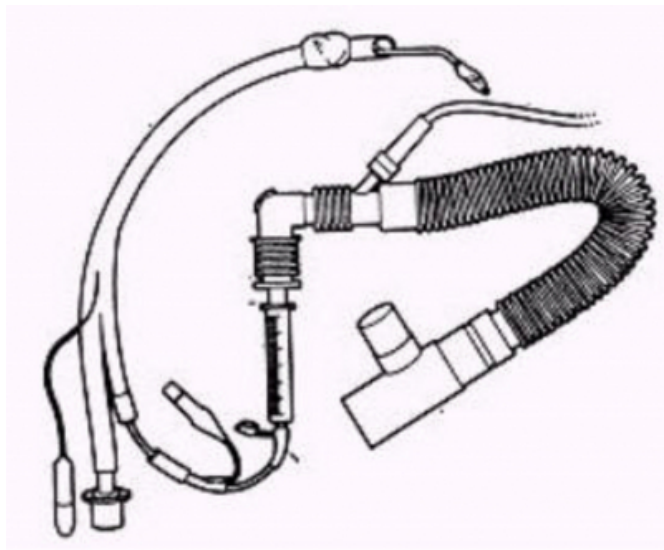
Other positive attributes of the Univent tube include its

relative ease of insertion and positioning [3], the ability to selectively block a single lobar bronchus [6] and its use when rapid sequence intubation is required [7]. As with the DLT, continuous positive airway pressure (CPAP) can be applied to the bronchial blocker lumen as an effective means of treating intraoperative hypoxemia during OLV [8]

Unusual reported uses of the Univent tube include OLV in patients with tracheotomies [9] and nasal intubation in a patient with a small oral aperture [10]. Ransom et al recently reported using the blocker lumen to provide high frequency jet ventilation during carinal repair following tumor resection [11]. We have found that the Univent tube can also be of great help in some cases of difficult intubation [12]. The blocker can be used as a gum-elastic bougie. The blocker of the Univent can be connected to oxygen supply and capnography at the same time and hence has an advantage over the gum elastic boogie. Select a tube size with an external diameter appropriate for the patient (Inspect and test both the main cuff and the bronchial blocker cuff. Fully deflate both cuffs, apply a water-soluble lubricant to the bronchial cuff, and push the bronchial blocker into its channel and lock into place. Connect the blocker to oxygen fresh gas flow with a capnograph incorporated in the circuit [Fig.2].

Figure 2

Figure 2: The Univent tube with the blocker connected to oxygen and Capnograph attached to the circuit



The natural concave curve of the tube should be directed anteriorly and forward under the epiglottis. With the aid of

laryngoscope and a Magill forceps insert the blocker into the trachea, and confirm correct placement by the capnograph reading. The Univent tube can then be slipped into the trachea beside the blocker and then the blocker can be pulled out of the trachea.

CONCLUSION

The described technique is superior to the gum-elastic bougie because the system is composed of one unit. Hypoxia is eliminated by the administration of oxygen. The confirmation of tracheal intubation by capnography is more reassuring.

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