

Placing an Arndt Endobronchial Blocker in Small Children for One Lung Ventilation

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Introduction: Arndt and colleagues have described the use of a wire-guided, endobronchial blocker (WEB Cook Critical Care, Bloomington, IN, USA) placed through a multiport adaptor for single lung ventilation in adults.¹ The WEB is placed coaxially through the blocker port of the adaptor, which also has a port for passage of a fiberoptic bronchoscope and ports for connections to the anaesthesia breathing circuit and endotracheal tube (ETT). The fiberoptic bronchoscope port has a plastic sealing port cap, and the blocker port has a plastic Tuohy-Borst connector that locks the catheter in place and maintains an airtight seal.² In small children who require ETT size 4.5 or 5 mm ID, the current recommended technique to place the WEB has several disadvantages:

1. It is difficult to pass a WEB and a neonatal fibroscope together through an indwelling ETT size 5.0 mm ID or smaller. The largest part of WEB is at the balloon.
2. The ETT becomes completely or partially obstructed, airway pressure increases, ventilation and oxygenation of the child becomes compromised or impossible.
3. The wire loop of the WEB commonly slips out of the bronchoscope end; and the process has to be repeated, which time is consuming.

Methods: We modified the classic technique to first pass the WEB blindly, gently and separately, and then pass the bronchoscope to verify the position of WEB.

1. Place an endotracheal tube in mid trachea and tape it to the opposite side of the lung to be blocked (Fig. 1).

Figure 1



2. Turn the head to the opposite side the lung needing to be blocked (Fig. 2).

Figure 2



3. To pass the WEB to the left lung, we place the endobronchial blocker port to patient's right and vice versa.
4. Pass the WEB first through the blocker port (Fig. 3), connect to breathing circle and advance WEB until resistance is encountered.

Figure 3



5. A bronchoscope is used to verify the position of WEB in the correct bronchus. The WEB is pulled back to just below the carina under direct vision (Fig. 4).

Figure 4



6. Ventilation is uninterrupted during placement of the WEB and verifying its position.

Results: This technique allowed us to place WEB easily and in a relatively short time in small children who require ETT size 4.5 or 5 mm ID, without interrupting ventilation and oxygenation.

Discussion: This technique allowed us to provide isolated lung anesthesia in small children.

Refs:

1. Arndt G.A. et. al., Anaesthesiol Scand 1999
2. Hammer G B. et. al., Pediatric Anesthesia 2002