Comments on Published Articles

Airway management techniques for one lung ventilation in children - what else!

Sir,

Airway management for one lung ventilation (OLV) for thoracic surgery is challenging for children not only because of unique airway anatomy, but also different physiology when compared with adults. After the first reported independent lung ventilation in adults by Carlon and co-workers in 1978, the airway gadgets for OLV still remains limited in children.

The provision for OLV for open thoracic procedures may be achieved by direct manipulation using the lung retractors or packs by the surgeons.[1] With the advancement of technology, the thoracoscopic procedures in children are increasingly being performed in all age groups. This requires a deflated and silent lung to provide an "adequate working space in a relatively small anatomic compartment."[1] This journal published a review article where in authors have discussed the OLV strategies in children undergoing video assisted thoracoscopic surgery.[2] Though the authors have described the various techniques but these may be applicable to larger children only. The OLV in smaller children and infants needs to be elaborated. The smallest size of available conventional double lumen tube is 26 Fr, which is suitable for children above 8 years of age.[3,4] The smallest, Univent tube® is 3.5 mm internal diameter and used for children more than 6 years of age.[3,4] The smallest Arndt paediatric endobronchial blocker is 5 Fr and may be suitable for children more than 2 years as it requires at least a 4.5-mm internal diameter endotracheal tube.[1,3,4]

Conventionally, the blocker is inserted thorough the endotracheal tube and positioned in the desired bronchus. This limitation can be managed with insertion of 5 Fr Arndt paediatric endobronchial blocker through an extraluminal technique rather than its intraluminal conventional placement.[1] This permits placement of smaller size endotracheal tube and feasible for smaller children as well.[1]

The other option of OLV in infants and smaller children is Marraro Paediatric Endobronchial Bilumen Tube.[5] This comprises of two uncuffed tubes, bronchial tube being longer than the tracheal tube and attached laterally to each other except at the short free section at the beginning.[5] This tube has been reported to be effective for OLV in children up to 3 years.[5] This tube provides optimal OLV, oxygenation maintenance, prevention of contamination of the healthy lung, selective administration of surfactant and independent lung ventilation.[5]

The role of high frequency jet ventilation (HFJV) and high frequency oscillatory ventilation (HFOV) for thoracic surgery has been found to be useful in children requiring OLV.[1,3,6] For small duration thoracoscopic procedures, HFJV and HFOV may be considered an alternative technique for providing OLV.[3] HFOV provides an optimal operating field by constant distending pressures in the airways and thus maintaining optimal lung volumes.[3] The limitation of monitoring expired carbon dioxide (CO_2) can be tackled with transcutaneous CO_2 ($PtcCO_2$) monitoring.

Other techniques include the use of 'double-access-port endotracheal tube' which consists of combining two conventional Murphy-type tubes.[7] Here, two endotracheal tubes (one 0.5 mm larger than the other) are assembled in such a way as to provide a separate channel/lumen for placement of an blocker and a channel for ventilation.[7]

One more technique is described for OLV includes the use of intubating laryngeal mask airway through which a lengthened single-lumen tracheal tube (microlaryngeal tube) is intubated to the main bronchus.[8] Swivel connector is used for this assembly. The tube is positioned in the desired bronchus guided by fibrescope. For ventilation of both the lungs, connector of double lumen tube is used.

To conclude, OLV remains challenging for children and alternate options needs to be explored in future.

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