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CASE REPORT

A SAFE TECHNIQUE OF ANAESTHESIA FOR BRONCHOSCOPY & REMOVAL OF FOREIGN BODY IN TRACHEOBRONCHIAL TREE IN CHILDREN: A CASE REPORT

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SUMMARY: A case report of successful removal of F.B from tracheo-bronchial tree in a child under general anaesthesia & skeletal muscle relaxation and ventilation given by Jet-Ventilator through no-6 (Fig.) Ureteric bougie.

INTRODUCTION: Anaesthesia for bronchoscopy in paediatric age group is a challenging job always.(1) General condition of babies with FB tracheo-bronchial tree, will be precarious,. Sufficient time for detailed clinical examination, laboratory investigations, and pre-operative preparation cannot be expected.

The child has to be shifted to operation room for endoscopy &removal of foreign body directly from emergency department or from radiology department. During bronchoscopy the air-way has to be shared by anesthesiologist and the E N T surgeon(2) Prevention of dangerous cardiovascular reflexes, continuous ventilation and oxygenation are mandatory requirements.(3) Here is one such method of anaesthesia.

MATERIALS:

No 4, 4. 5, & 5 Portex endotracheal tube (plain).
No 6 (French) Ureteric catheter (bougie).
JET Ventilator from Anesthetics India, Bombay.
40 cft Oxygen cylinder with double stage pressure regulator.
Boyle's Anaesthesia machine.
Macintosh laryngoscope with pediatric blade.
Rigid bronchoscope 3 mm internal diameter, with FB removing forceps.

CASE REPORT: Chi. M., a 6 year old male child was brought to Emergency Dept. of Mamata General hospital with inspiratory and expiratory strider. There was H/O ingestion of date fruit, & while crying he suddenly became breathless & developed stridor& restlessness.

On examination, the baby was semiconscious, cold clammy, blue, and was having inspiratory and expiratory strider. Provisional diagnosis of F B in tracheo bronchial tree was made. After oxygenating the baby for a few minutes, we tried to push out F B by thoraco-abdominal compression, after keeping the baby in prone and head down position.

We tried to feel the F B with our fingers, and none of these maneuvers were successful. We immediately decided to shift to Operation Room for bronchoscopy and removal of F B with Oxygen supplementation by mask. On the way to OR in the Radiology department we got x-ray chest done and in did not show Foreign body.

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We continued giving Oxygen by mask, and shifted baby to OR. In OR, we continued giving 100%oxygen, by mask by IPPV. We kept one emergency tracheostomy set ready. One of my colleagues took a good I v line, and started Slow ringer's lactate infusion.

We gave Atropine 0.3 mg. IV, and tried to expose Glottis, by Macintosh laryngoscope. We could see glottis, and F.B, just below glottis. When we tried to catch it was going down into trachea. We intubated baby with No 4 .5 portex (plain) endotracheal tube, and we gave 100% oxygen by ippv by Ayre's T piece circuit.

When we started ippv with 100%O2, baby's sensorium started improving. Then we had to give Ketamine 10 mgs IV and Succinyl choline 10 mgs IV. Meanwhile we made ready the Jet ventilator from Anesthetics Company Bombay and oxygen source by 40 cft oxygen cylinder, with double stage regulator. We disconnected connector of proximal end of endotracheal tube, and passed ureteric catheter no 6 (French) and adjusted so that distal end of catheter lies above carina.

Proximal end of ureteric catheter (bougie), was connected to JET Ventilator. Flow was adjusted by single stage press button control, and the pressure was adjusted near double stage regulator, starting with low pressure and gradually increasing. We stopped the increase pressure when the ventilation of both lungs was just adequate. This precaution we have taken to achieve adequate ventilation of both lungs, and to prevent damage to lungs by excessive pressure of oxygen.

Then we pulled the endotracheal tube out of trachea, keeping ureteric catheter in situ in trachea and IPPV continues with Jet ventilator. The endotracheal tube was fixed to the angle of mouth of the baby, & this had minimized rattling of ureteric catheter by high flow of oxygen.

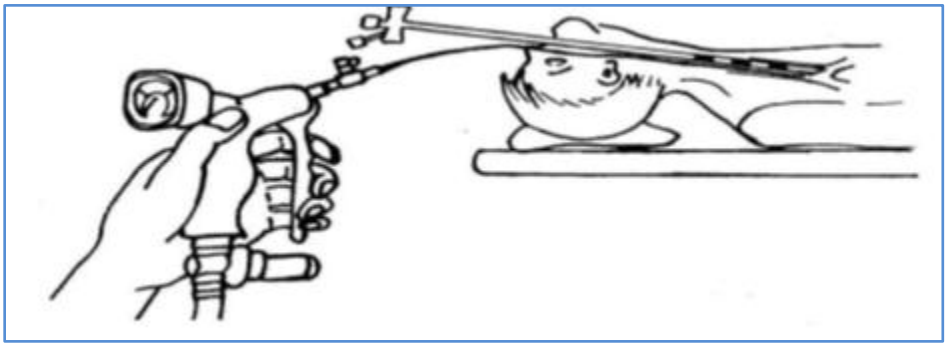

Fig. 1

Bronchoscopy was done with rigid bronchoscope of 3mm internal diameter by the side of the ureteric bougie. The ureteric catheter was in trachea and baby was getting ventilation & oxygenation uninterruptedly, by JET ventilator. Intermittent doses of Ketamine 5 mgs IV & succinyl choline 10 mg iv were given whenever situation demanded. We gave 0.1 mg Atropine whenever bradycardia developed. The foreign body was removed successfully with foreign body removal forceps &bronchoscope together, but the ureteric bougie was still in the trachea ventilating the patient.

Time taken for bronchoscopy &removal of foreign body was 20 minutes and throughout this period baby was getting satisfactory ventilation &oxygenation. Then we pushed endotracheal tube back into trachea, and pulled out the ureteric catheter out of trachea. We connected to Ayres's T piece circuit, and continued IPPV till the baby was conscious and breathing spontaneously.

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Then we kept baby in lateral position, did oral toilet perfectly, and extubated. We administered Dexamethasone 2mgs im and 2mgs iv .We shifted the baby into recovery room, with instructions(1) to watch for croup(2) administer oxygen by mask,(3) continue i v fluids, slowly.(4) Inj Decadron 2 mgs iv bid(5) Nil by mouth till further instructions.(6) Continue nursing in lateral position.

After 6 hours when baby was perfectly conscious and talking, we gave feeding of milk under our supervision. We allowed solid food by mouth on 1st post op day. We tapered Decadron in next 3 days, and stopped completely on 4th post op day. We allowed discharge on 4th post op day, when the baby was in perfect health.

DISCUSSION: Bronchoscopy & removal of foreign bodies in trachea bronchial tree will be an emergency procedure., and the safe anesthesia demands(1) protection of patient from dangerous & life threatening reflexes,(2) Ensure continuous oxygenation &ventilation of both lungs,(3) provide sufficient depth of anesthesia & muscle relaxation(4) Prevention of post-operative croup & respiratory insufficiency,. For satisfying all these requirements, a number of anesthesia techniques have been suggested. Pre oxygenation will bring the patient to safer side and give us some time to plan &arrange equipment for anesthesia & bronchoscopy.(4)

Apneic oxygenation will allow the surgeon to do bronchoscopy for a short time may be less than 5 minutes (5) but it is always risky. Jet ventilation through side port of bronchoscope also will allow surgeon to do bronchoscopy for short time and intermittently bronchoscope has to be brought out of mouth for allowing anesthesiologist to ventilate the lungs, in this way it prolongs the total duration of procedure, & prolongs anesthesia time in a patient with precarious general condition.(6)

Ventilating bronchoscope will allow comfortable bronchoscopy for a longer time, bronchoscope has to be brought out of bronchus into trachea whenever patient de saturates, and while catching foreign body with forceps and while removing the foreign body ventilation has to be interrupted.(7) CPAP with 100% oxygen will not ensure ventilation continuously and reduces venous return and cardiac output.(8) In a patient with precarious general condition this is going to be dangerous. Ventilation with high frequency jet ventilation demands costly equipment and produces a lot of unwanted sound in O R.(9)

Manual jet ventilation through ureteric bougie will ensure continuous ventilation, oxygenation, and allows surgeon to do his job uninterruptedly. We tried epidural cannula and soft polythene catheters for jet ventilation but with high flow of oxygen these catheters were getting displaced. Ureteric bougie is sufficiently stiff& rattling is less, hence less chances of getting displaced.

CONCLUSION: Manual jet ventilation through ureteric bougie introduced into trachea will ensure satisfactory ventilation &oxygenation, and allows surgeon to carry out bronchoscopy and removal of foreign body in tracheo bronchial tree. As this technique ensures continuous ventilation &satisfactory oxygenation, this technique allows surgeon to do bronchoscopy for a longer time.

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