



Management of a patient posted for laparotomy with severe kyphoscoliosis case report

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Abstract : A 55 year old male patient who presented with ruptured hydatid cyst was posted for laparotomy. He was a known case progressive kyphoscoliosis with ankylosing spondylitis. A preoperative assessment of difficult intubation was done. He was successfully intubated using intubating laryngeal mask airway after trial laryngoscopy failed. Intra operative and post operative period was uneventful.

Keyword : kyphoscoliosis, intubating laryngeal mask airway, ankylosing spondylitis.

Introduction:

Patients presenting with severe kyphoscoliosis are difficult to intubate because of cervical spine rigidity, leading to inadequate extension of head and nonalignment of oral, pharyngeal and laryngeal planes. They are usually managed along the awake limb of difficult airway algorithm. Here we present a case report of 55 years male presenting for laparotomy for ruptured hydatid cyst, with severe kyphoscoliosis and ankylosing spondylitis who was totally uncooperable for awake fiberoptic intubation and was successfully intubated using intubating laryngeal mask airway under general anaesthesia.

Case report:



A 55 years old male presented to surgical outpatient department with history of pain upper abdomen and dyspepsia for last one year. Clinical examination and investigation diagnosed ruptured hydatid cyst. He was posted for laparotomy and proceed.

Fig showing a patient with kyphoscoliosis Pre anaesthetic examination showed that the patient is a known case of progressive thoracolumbar kyphosis and ankylosing spondylitis limiting his ability to lie in supine position and necessitating use of two pillows beneath his head for support. Airway examination showed adequate mouth opening with poor dentition, mallampati grade IV and restricted neck mobility

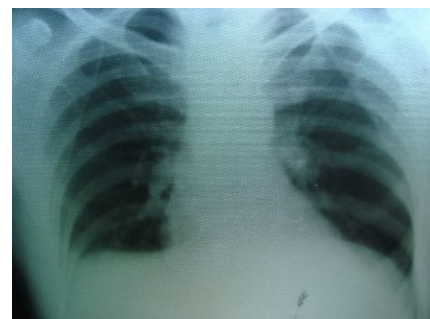
PFT

NAME: Perumal IDNo: 1038

PARAMETER	PRED	PRE BD		POST BD		%CHG
		PT	%	PT	%	
FVC (L)	2.93	2.26	77	2.02	76	-1.8
FEV ₁ (L)	2.45	1.94	79	1.88	77	-3.1
FEV ₁ /FVC %	79	86	109	85	108	-1.4
PEF (L/S)	4.59	2.06	45	2.13	46	3.5
PEF 25-75	3.69	2.13	58	1.96	53	-8.0

Signs Restrictive disorder

PFT results of the patient



chest X-rayPA view

A preoperative assessment of difficult intubation was made. During pre anaesthetic check up his pulmonary function test revealed restrictive type of lung pattern. Bed side tests such as breath holding test and match blowing test are within normal range. On explaining the possibility of difficult intubation, the patient refused to give consent for awake fiberoptic intubation. Use of Intubating laryngeal mask airway under general anaesthesia for intubation was planned if trial laryngoscopy is failed. On the day of surgery patient was premedicated with oral ranitidine 150 mg and two hours before surgery with a sip of water and inj.glycopyrrolate 0.2mg and inj.midazolam 1 mg intramuscularly one hour before. In the operation room the patient was made to lie supine with the head adequately supported on 3 pillows for intubating position.



Routine monitoring like electrocardiogram, noninvasive blood pressure, and pulse oximetry were instituted. Anaesthesia was induced with patient breathing spontaneously incremental concentration of sevoflurane with 50% nitrous oxide in oxygen. With the disappearance of eyelash reflex, relaxation of jaw tone and inspired concentration of sevoflurane 3%, trial laryngoscopy was done. As we are able to visualize only epiglottis, laryngoscope was taken and intubating laryngeal mask size 4 was inserted using single handed rotational technique and cuff was inflated with 30ml of air. Ventilation was checked by absence of pericuff leak on ventilation with airway pressure of 15-20 cm of water and square wave capnograph waveform. A 40 mg propofol was now administered to deepen the plane of anaesthesia for intubation. A normal flexometallic tube of size 7.0 was passed through the ILMA and the patient could be intubated successfully in first attempt itself. Position of tube was confirmed by auscultation and capnography. Muscle relaxation was instituted with inj. vecuronium bromide 0.1 mg/kg, ILMA was removed and maintenance of anaesthesia was done with 66% nitrous oxide in oxygen, sevoflurane and inj.fentanyl 2 mic/kg. Intra operative period was uneventful. At the end of surgery, remaining effect of neuromuscular blockade was reversed with inj.neostigmine 2.5 mg and glycopyrrolate 0.4 mg, patient extubated and shifted to PACU. Patient was given inj. Diclofenac for post op analgesia. As the patient had restrictive lung disease oxygen was given via polymask in the post op period. ABG done on first and second post op day was in normal level. Patient was discharged in the 6th post op day.

Discussion:

Difficult airway is a challenge to anaesthesiologists. Reduced range of motion, or fixed cervical spine in patients with kyphoscoliosis is a major problem in anaesthesia. Such patients are usually managed along the awake limb of difficult airway algorithm. A problem of intubation with standard laryngoscope in such cases is due to nonalignment of the oral/pharyngeal and laryngeal axes

making intubation difficult.

Various options available for intubation in such cases are:

1. Blind nasal intubation
2. Awake fibro optic intubation
3. LMA
4. ILMA
5. Retrograde intubation
6. Surgical airway—tracheostomy.

Along with the difficult airway, most of the patients with severe kyphoscoliosis will have restrictive type of lung pattern. The reduced functional residual capacity and reduced lung compliance in these patients may lead to early desaturation during apneic periods. The risk of post operative pulmonary complications are also very high in these patients.

Use of fiberoptic intubation is the gold standard alternative technique for intubation in these cases, against which all other techniques are compared. The efficacy of ILMA as ventilatory device and aid to blind intubation is well proven and comparable to fiberoptic intubation. The advantage of ILMA is due to (a) easy insertion in patients with immobile neck (b) better use as airway intubator (c) easy maneuver to adjust the position of mask in relation to glottis opening. The disadvantage is its limited use in cases of limited mouth opening (<20mm), presence of large cervical osteophytes or patients with fixed extension deformity of neck. Reported success rate of blind tracheal intubation via ILMA varies between 89.51%-100%. Use of various devices or different types of endotracheal tubes have reported with different success rates. Various methods used for intubation through ILMA are

1. Specialized flexometallic tubes
2. Standard short bevel flexometallic tubes
3. Standard PVC endotracheal tubes
4. Gum elastic bougie through ILMA
5. Cook airway exchanger
6. Fiberoptic bronchoscope through ILMA

Different types of endotracheal tubes have been used by investigators for blind intubation through ILMA. Use of specialized reinforced silicone tube with modified bevel is the standard. Use of short bevel reinforced endotracheal tube with leading edge at side was successfully used by us in this case. The crux of success is always to align ILMA with glottic opening before attempting intubation. High success rate of intubation has also been achieved with use of standard PVC tubes in reverse position for intubation through ILMA. Advantage of use of PVC tube is low cost, easy availability, disposable, more sizes of tubes to choose.

Choice of LMA/ILMA for airway management, in cases of neck malalignment is determination of oropharyngeal axis. An angle between oral and pharyngeal axis >90 degree is required for insertion of LMA/ILMA. Any condition where angle is smaller than 90 degree, alternative ways (retrograde intubation, transtracheal jet ventilation, surgical airway) must be considered for intubation. We chose inhalational induction with sevoflurane in this case to minimize the risk of sudden loss of airway. Use of propofol is also acceptable; however chances of apnoea are higher. Use of muscle relaxant for blind intubation with ILMA is controversial. If the desired depth of anaesthesia is achieved, use of muscle relaxant is not required for intubation. We used a small bolus of propofol for achievement of acquired depth of anaesthesia and hence muscle relaxant was not required. In conclusion inhalation induction with sevoflurane followed by intubation through ILMA is a reasonable option in patients of severe kyphoscoliosis with difficult airway who refuse

awake fiberoptic intubation.

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