Archives of Anesthesiology and Critical Care (Spring 2022); 8(2): 169-171.

Available online at http://aacc.tums.ac.ir

Case Report

A Case of Foreign Body Esophagus in a Six Year Old Child Previosly Operated for Esopageal Atresia: The Anesthetic Management

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ARTICLE INFO

Article history:
Received 12 September 2021
Revised 27 September 2021
Accepted 11 October 2021

Keywords:
Child;
Esophageal atresia;
Foreign body;
Thoracotomy

ABSTRACT

Foreign body ingestion is quite common in the pediatric age group. A six year old boy was brought by his parents to the hospital with history of foreign body (marble) ingestion. The child had been previously operated for the esophageal atresia. Imaging revealed a foreign body of 1.5cm size in the esophagus at the atretic part. The foreign body removal was initially attempted via rigid esophagoscopy but could not succeed. Hence, the procedure was changed to right thoracotomy for foreign body retrieval in the same sitting. Patient also had intraoperative itragenic trachea-esophageal fistula formation. General anesthesia was planned using single lumen cuffed ETT of 5.0mm ID for ventilation. Caudal catheter was inserted for postoperative pain management and early recovery following thoracotomy. Such cases of foreign body ingestion in an atretic esophagus should always be planned considering the unexpected extend of surgical procedure and peri-operative complications.

Foreign bodies in tracheobronchial tree and esophagus are not uncommon in preschool and school going age group. Both anatomical and physiological factors make them vulnerable to foreign bodies. Factors such as high up larynx, narrow airways with incomplete development of protective airway reflexes, incomplete posterior dentition, inadequate chewing and poor swallowing coordination predispose children to foreign body in their gut or airway. The esophageal foreign body obstruction after esophageal atresia is also not an unusual occurrence [1].

Here, we report the anesthetic management of a case of six year old child with a marble impacted in the atretic part of the esophagus which was previously operated at day 20 of life for esophageal atresia.

Case Report

A six year old boy was brought by his parents to our hospital with the complaints of decreased appetite and vomiting even on small intake of food. The child had been operated at the age of 20 days of life for the esophageal atresia through right thoracotomy approach with end to end esophageal anastomosis. The child was advised x-ray gastrograffin swallow which revealed the marked narrowing of the esophagus at D4 level with proximal dilated esophagus and distal collapsed esophagus with normal filling of stomach and duodenum. Further evaluation of the child was done by 128- slice MDCT scan chest which revealed a foreign body of 1.5cm size in the esophagus at the atretic part. A team comprising of otolaryngologist, pediatric surgeon and anesthestist discussed the case in detail and the decision to start with rigid esophagoscopy and to proceed with thoracotomy if former procedure fails was taken as it is not uncommon for the foreign body to get impacted in the atretic part of esophagus. The same was explained to the parents. A proper written & informed consent was taken for endoscopic as well as for an open thoracotomy approach.

Pre-anesthetic assessment of the child was done on the previous day evening, the routine laboratory investigations of the child were found within the normal

The authors declare no conflicts of interest.
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range. His weight was 12 kilograms. No history of active fever, upper respiratory tract infection was given by the parents. Airway assessment revealed no anticipated difficulty. On the day of surgery, a good i.v. access was ensured. Basic monitoring connections were established. Vitals were recorded with blood pressure of 108/62 mm of Hg, heart rate of 102 beats/min. and spo2 99% on air. Premedication was done using glycopyrrolate 0.004mg/kg, i.v. drip of Ringer's Lactate was started and 0.5 mg midazolam injection was given. Preoxygenation was started and fentanyl injection 24 microgram was given for analgesia. Induction was done using injection propofol 24 mg and sevoflurane. After ensuring proper bag and mask ventilation, injection succinlycholine 24 mg was given. The child was intubated after 45 seconds with 5.0mm cuffed ETT. Injection atracurium was given after return of spontaneous breathing efforts. The child was maintained on oxygen, nitrous oxide and sevoflurane. First, an attempt was taken by otolaryngologist to remove foreign body via rigid esophagoscope but attempt was futile since foreign body was in atretic part of esophagus and there was surrounding edema. Hence, decision was made to convert it into open surgical procedure via thoracotomy approach. 18G epidural catheter was inserted via caudal approach in left lateral position with the tip of the catheter at the level of T6 vertebra. A test dose of 2% lignocaine plus adrenaline, 0.1ml per kg was given. After 5 minutes, as no signs of intravascular or intrathecal placement of catheter were found, 6ml of 0.25% bupivacaine plus 12 micrograms of injection fentanyl was given via caudal catheter and after 45min again 0.125% injection bupivacaine plus 12 micrograms of injection fentanyl was given. A glass marble of approximately 1.5cm was removed via right thoracotomy approach. An itragenic tracheoesophageal fistula occurred which was repaired successfully. After the conclusion of surgery, the saturation started to fall suddenly, the chest was auscultated which revealed bilateral crepitations in the lungs. The ETT was suctioned where blood was found in the lumen with small clots inside it. Saturation again reached 98%. Reversal was done using injection neostigmine 0.05 mg per kg plus injection glycopyrrolate 0.01mg/kg. The child was extubated uneventfully with spo2 98% on room air.

Discussion

Foreign bodies can have a wide spectrum of presentation. An esophageal foreign body presents with difficulty in food intake, repeated vomiting episodes, drooling of saliva or sometime the event history witnessed by family members.

The gold standard for removal of esophageal foreign body is rigid esophagoscopy done under general anesthesia [2]. Initially rigid esophagoscopy attempt was made in this child but it was not successful since foreign body was in atretic part of esophagus and there was surrounding edema. So, thoracotomy approach for esophageal foreign body removal was opted by the pediatric surgery department.

Foreign body esophagus in a previously operated esophageal atresia case is not an uncommon entity. There are few reports where endoscopic retrieval was not successful in difficult cases [3-4]. In our case, a team of anesthestist, otolaryngologist and pediatric surgeon was made to perform foreign body removal so that if need arise for open procedure like thoracotomy, it can be completed in a single sitting.

Thoracotomy is mostly done through the 5th intercostal space on right side. Two important aspects of thoracic anesthesia in children are technique used for one lung ventilation and the effective analgesia using loco-regional methods as well as systemic analgesics as a part of comprehensive multimodal approach [5]. The lung physiology varies considerably in children and in adults during lateral position. The young children are at increased risk of hypoxemia especially when the position is lateral as during thoracotomy. Small lungs with insignificant hydrostatic gradient in lateral position, more elastic lung tissue and decreased functional residual capacity pave the path towards intraoperative hypoxemia in children [6-8]. Double lumen tubes with lung isolation facilities are mostly used for thoracotomy procedures. Single lumen endobronchial tubes, microcuff tubes, bronchial blockers and marraro bilumen tubes can also be used for pediatric one lung ventilation [9]. They provide the benefit of clean surgical field along with the selective ventilation of the opposite lung. But as the operative site was esophagus in our case we proceeded with single lumen cuffed ETT of 5.0mm I.D. which served the pupose completely in our case.

Post operative pain management is also an important aspect after thoracotomy. Pain decreases the ability to cough leading to retention of secrections and atelectasis and thus delay the recovery. That is why we decided to put caudal catheter in the patient which was removed 48 hours after surgery. 0.125% bupivacaine was supplemented at regular intervals through the caudal catheter. Caudal catheter along with intravenous analgesics led to the rapid recovery and timely discharge of the patient.

Conclusion

Retrieval of foreign body esophagus in a child who had been previously operated for esophageal atresia is always challenging for surgical team as well as for anesthesia team. Unexpected extend of surgical intervention and unexpected intraoperative complications such as tracheo-esophageal fistula although rare but can occur. In such cases, it is always better to have insight of unexpected events and preparedness beforehand. Effective post

operative analgesia involving multimodal techniques of pain relief is the key to rapid recovery of such patients.

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