

BEAD IN TRACHEOBRONCHIAL TREE: A THERAPEUTIC CHALLENGE

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ABSTRACT

Objective: To find out management strategy of bead as a foreign body in tracheobronchial tree.

Material and Methods: We managed thirty children having bead in tracheobronchial tree. As most of them were in respiratory distress, they were treated on emergency basis. On bronchoscopy, due to rounded and slippery nature of the bead, the extraction is not possible with ordinary forceps. But due to a small hole inside the bead, we were able to pass a minute forceps into this hole and upon opening the prongs of this forceps, beads were extracted. In case of failure, tracheostomy was done or help of cardiothoracic surgeon for thoracotomy was sought.

Results: Our study consists of thirty children having bead in tracheobronchial tree. Males were 18 (60%) and females were 12(40%). Fifteen (50%) patients were in between 6-8 years. Twenty five (83.3%) children came within 24hours after bead inhalation. In about 18(60%) cases foreign body was lying in trachea. Beads were removed through bronchoscopy in 25 (83.3%) cases, while 3(10%) beads were removed through tracheostomy and 2(6.6%) beads were openly removed through thoracotomy. Mortality was nil while morbidity was found in 5(16.6%) cases.

Conclusion: Foreign body in tracheobronchial tree can be managed easily with the present bronchoscopic technique and special extraction instruments but bead is still a challenging foreign body and at times need further surgical options like tracheostomy or thoracotomy.

Key Words: Foreign Body, Bead, Bronchoscopy, Tracheostomy, Thoracotomy.

INTRODUCTION

Aspirated and ingested foreign bodies continue to present challenges to otolaryngologist but their management has refined in recent years from diagnostic and therapeutic point of view¹. History, physical examination and radiologic evaluation performed in time can lead to safe and successful foreign body retrieval. Advancement in video endoscopic instruments and anaesthetic technique enable the airway surgeon to achieve simultaneous airway stabilization and foreign body removal². Initially the morbidity and mortality was high but with the advent of rigid and flexible fiberoptic bronchoscope and with the development of sophisticated foreign body extraction instruments, the morbidity and mortality has been decreased^{3,4}.

Some foreign bodies like bead has subjected otolaryngologist to great challenge to manage due to its typical rounded and slippery nature, non availability of a proper instrument and

experience of bronchoscopist.^{5,6} Extraction failure rate and complications are rare in the hands of experienced individuals and open surgical removal is seldom necessary.⁷

In this study we have stressed to individualize the foreign body and to find out a mechanism for the removal of bead, which is difficult to grasp and extract with the available conventional instruments.

MATERIAL AND METHODS

A total of 30 children having bead in tracheo-bronchial tree were managed in the department of ENT and Head and Neck Surgery Lady Reading Hospital from 1st January 2005 to 31st December 2005.

The inclusion criteria was those patients

- (i) Who gave definite history of bead aspiration
- (ii) X-rays showed typical shadow of bead

(iii) Suspected cases of foreign body inhalation that proved upon bronchoscopy as bead.

All other types of foreign bodies were excluded. Majority of these patients were referred from emergency department while some cases were sent from paediatric department. Because of its bigger size, bead usually lies in trachea and the children having bead in the trachea, breathe through the small hole inside the bead. These children are in severe respiratory distress and are usually cyanosed. We arranged emergency bronchoscopy and tried all available forceps, most of them failed for the extraction of this slippery and rounded shape foreign body. One forceps having elongated thread like body with minute prongs upon its end proved helpful. This was introduced into the hole of the bead, the beads were extracted easily with the open prongs. In case of failure, tracheostomy was done or help of cardiothoracic surgeon for thoracotomy along with bronchoscopy was sought.

RESULTS

In this study of thirty cases, there were eighteen (60%) males and twelve (40%) females. Majority were in the age group of 6-8 years (50%) as given in table No 1. Twenty-five (83.3%) cases presented within 24 hours while five (16.6%) came after 24 hours of bead inhalation. At bronchoscopy, eighteen (60%) beads were lying in the trachea, 10 (33.3%) right main bronchus while 2 (6.6%) in left main bronchus as given in table No 2. Table 3 is showing the different management techniques applied in the study. Twenty-five (83.3%) children were discharged next day following successful bronchoscopy with removal of bead while three (10%) children remained admitted with us for five days for tracheostomy care and decannulation. Two (6.6%) post thoracotomy cases were managed in thoracic ICU for about ten days. No mortality occurred in our study. The morbidity was 16.6 % (5/30) including 3 cases of tracheostomy and 2 cases of thoracotomy.

DISCUSSION

Foreign body aspiration is an extremely serious problem in childhood with varied clinical presentation demanding high degree of suspicion

AGE OF THE PATIENTS

Age in Years	No. of Cases n=30	% age
3-4Years.	02	6.66%
4-5 Years.	10	33.33%
6-8 Years.	15	50%
9-10 Years.	03	10%

Table 1

on the part of clinicians.⁸ Timely diagnosis and appropriate treatment is important to prevent long term serious pulmonary complications like consolidation, pneumonia, collapse, pneumothorax and bronchiectasis.^{9,10}

Success rate for removal of foreign bodies by endoscopes has reached from 95% to 99% with the modern techniques of endoscopy and anaesthesia. Also the mortality and morbidity has decreased which is now as low as (0%-1.8%) according to various studies.^{11, 12}

SITE OF OBSTRUCTION

Site of obstruction	No of Patients	% age
Trachea	18	60 %
Right main bronchus	10	33.3 %
Left main bronchus	02	6.6 %

Table 2

The mortality and morbidity also depends on the type of foreign body e.g. bead, the extraction of which through bronchoscopy and ordinary forceps is very difficult and some time open removal through thoracotomy and bronchotomy is required.¹³ In the past inhalation of bead was not common and various authors like Gibson WS et al¹⁴ and John IA et al¹⁵ have described bead as unusual foreign body and they faced difficulties in extraction of this foreign body. But now-a-days the bead is freely available in the form of 'tasbih' and abundance of cheap Jewelry, the thread of which when broken by the children, the beads scatter on the ground at homes.

MANAGEMENT TECHNIQUE

Management Technique	No of Patients	% age
Bronchoscopy	25	83.33%
Bronchoscopy and tracheostomy	03	10 %
Bronchoscopy and thoracotomy	02	6.66%

Table 3

The children have the habit of putting the beads in to their mouth and when they laugh, cry or sneeze they inhale them easily. Because of this reason the bead has now been reported in various studies.^{5,16,17,18} But the problem is non-availability of proper instruments, which can hold and extract this rounded and slippery foreign body. Usually many attempts and lot of experience is needed to extract this foreign body and some time help of thoracic surgeon is required. We extracted twenty five beads successfully with the help of a fine, thread like forceps which was passed through the small hole inside the bead and upon opening the prongs of this forceps, the beads were extracted easily but

the manipulation of this instrument need practice. Children in our study were little older (5-10 years) as compared to other studies.^{3,18} But the sex ratio was similar and males were more as in other studies.^{3,5}

The outcome of our study was also not very different even with this difficult foreign body as compared to national and international studies carried by Qureshi IL et al¹⁰ and Sucu N et al¹⁸. Only in two beads we took the help of thoracic surgeon by performing thoracotomy along with bronchoscopy, which is helpful in localization of the foreign body as mentioned by Khan SH et al⁹. We are not familiar with the procedure adopted by Umopathy N et al⁶ of combined fluoroscopic and endoscopic approach for the removal of difficult, obstructed foreign body in tracheobronchial tree.

CONCLUSION

Foreign body removal through bronchoscopy is no more a difficult task, but some foreign bodies like beads are still challenging to otolaryngologist, and the cause of high morbidity.

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