BEAD; A DIFFICULT TRACHEOBRONCHIAL FOREIGN BODY TO RETRIEVE; BRONCHOSCOPIST PERSPECTIVE.

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ABSTRACT

To know the efficacy of different instruments in retrieval of bead from tracheobronchial tree.

BACKGROUND: Bead is uncommon object in western world and therefore rarely recorded as a foreign body in tracheobronchial tree. No specific instrument being named for its retrieval. Our study focuses on different instruments we used and its outcome.

MATERIAL AND METHODS: This was retrospective study of foreign body bead impaction in tracheobronchial tree. All patients subjected to bronchoscopy with definite clinical findings of bead impaction on radiology or bronchoscopic examination were recorded, with different instruments used. In all cases Karlstorz rigid bronchoscopes of size 3.0 to 5.0 with fiber optic light used. Long bronchoscopic screw forceps, malleable forceps. Large nasal killian forceps was used after tracheostomy in some cases. Study period: 1st January 2008 to December 2012.

Site: ENT A unit Hayatabad Medical Complex Peshawar.

RESULTS: In our study of 3 years 32 cases were recorded with bead impaction in tracheobroncheal tree. 21(65.62%) were male and 11 (34.37%) female. Age ranges below 1 year was 1 (3%) case, between 1year and 2 years 6 (18.75%) cases, 2 years to 3 years 21(65.62%) and 3 years and above 4 (12.5%) cases recorded. 21(65.62%) beads were retrieved with malleable forceps, 8 (25%) with long screw forceps, 1 (3%) after tracheostomy with long killan nasal forceps and 2 (6.25%) impacted beads were referred to cardiothoracic department for thoracotomy. 3 (9.37%) beads were impacted in main trachea, 19 (59.53%) in right main bronchus and 10 (31.25%) in left main bronchus.

CONCLUSION: Bead is one of the difficult foreign body tracheobroncheal tree and needs special instruments for its removal.

KEY WORDS: Beads, Bronchoscopy,

INTRODUCTION:

Foreign body aspiration is a very frequently occurring situation in pediatric practice; however. Foreign body aspiration can result in a great variety of symptoms of varying severity, or it even can be completely asymptomatic. These differences stem in part from a variety of diverse cultural, social and economic factors that include the parents' attitudes, eating habits, the availability and types of potentially threatening objects, and prevention strategies.¹

Sometimes, Foreign body aspiration can be life threatening, acting as a significant cause of fatal home accidents in children younger than 6 years² and even in developed countries like United states has a mortality ranges more than 300 deaths per year. This higher occurrence in

children has also been confirmed in a retrospective Brazilian study.³

Foreign body aspiration occurs commonly in children between 1 and 3 years of age and consists most frequently of peanuts, seeds and other food particles and less frequently of plastic and metal particles.

Usually, there is a suggestive history of choking, although the classic clinical presentation with coughing, wheezing, and diminished air inflow is seen in less than 40% of the patients.⁴

Diagnosis of foreign body aspiration begins with patient history and clinical exploration and can be strengthened by radiographic findings. The most common indicators are air trapping, signs of infection, atelectasis, or radio opaque foreign bodies.⁵ Hence, its important to note that

children with these characteristic symptoms should undergo prompt bronchoscopy, regardless of radiographic findings⁶. Nowadays, bronchoscopy is essential if foreign body aspiration is suspected, first to confirm the diagnosis and also because it can be used for therapeutic treatment in the same stage. Before the advent of bronchoscopic techniques, the mortality rate for foreign body aspiration was around 50% of the cases.⁷ Now, with bronchoscopy available and advances in anesthesiology and surgical procedures, both mortality and morbidity have markedly diminished.^{8,9} Foreign body aspiration and its evolution can lead to complications such as pneumomediastinum, pneumothorax, bronchial stenosis, abscess, atelectasis, foreign body dislodgment, and bronchospasm.^{4, 6, 10}

MATERIAL AND METHODS:

This was a retrospective study from 1st January 2008 to December 2012 in ENT and Head and Neck Surgery Department, Postgraduate Medical Institute, Hayatabad Medical Complex, Peshawar. In our study long thin malleable forceps, which was passed in the hole and the prongs opened up distal to the other end used along with long screw forceps which was inserted in the hole to fix inside and retrieved the foreign body. Record of foreign body bead impaction in tracheobroncheal tree, and its retrieval by different instruments were studied. All the cases of foreign bodies tracheobroncheal tree studied and patients with bead in tracheobroncheal tree selected. All the cases studied for impact bead retrieval by different instruments. All patients subjected to bronchoscopy with definite clinical findings of bead impaction on radiology or bronchoscopic examinations were recorded, with different instruments used. In all cases Karlstorz rigid bronchoscopes of size 3.0 to 5.0 with fiber optic light used. Long bronchoscopic screw forceps, malleable forceps and nasal killian forceps later after tracheostomy used.

Study period: 1st January 2008 to December 2012.

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RESULTS:

In our study of 3 years 32 cases were recorded with bead impaction in tracheobroncheal tree. 21(65.62%) were male and 11 (34.37%) female. Age ranges below 1 year was 1 (3%) case, between 1 year and 2 years 6 (18.75%) cases, 2 years to 3 years 21(65.62%) and 3 years and above 4 (12.5%) cases recorded. 21(65.62%) beads were retrieved with malleable forceps, 8 (25%) with long screw forceps, 1 (3%) after tracheostomy with long killian nasal forceps and 2 (6.25%) impacted beads were referred to cardiothoracic department for thoracotomy. 3 (9.37%) beads were impacted in main trachea, 19 (59.53%) in right main bronchus and 10 (31.25%) in left main bronchus.

DISCUSSION:

Aspirated foreign bodies continue to present challenges to otorhinolaryngologists. The major issue involves the accurate diagnosis, speedy and safe retrieval of the foreign body. The accurate diagnosis may elude even the experienced physician because often the initial choking incidents are not witnessed and the delayed symptoms may mimic other common conditions such as asthma, pneumonia, or upper respiratory tract infections.¹¹ Presentation of foreign body tracheobroncheal tree varies depending on a number of factors. Age of the patient, type, size, site of foreign body and interval between inhalation and removal.¹²

In our case series of tracheobroncheal foreign bodies confirms the findings of studies by Cantaneo AJ and Wiseman NE. et al that majority of the children presenting with foreign body aspiration were under the age of 3 years.¹³

¹⁴ In our study 65% of children were below the age of 3 years. The natural urge to explore the objects by mouth, lack of molar teeth to crush nuts, crying and playing while eating and lack of parental supervision contributes to this hazard in this age group. While some literature age ranges

from 1 year to 15 as some of foreign bodies are more common in adult age group.¹⁵

The male to female ratio in our study was almost 2:1 which is in concurrence with data recorded by Aravind Sehgal and Wiseman in his study.^{5,8} Beed is netted in thin thread to make "tasbih" used for prayers and also as jewellery by girls in villages. Children usually break up this thread and play with beads. As children have habit to put everything in mouth and play with it, chew, laugh and talk, make them vulnerable to inhale these objects. Beed by its shape and slippery nature is a difficult foreign body to retrieve. Beed is not used in western world, so in international literature, its difficult to find it as tracheobronchial tree foreign body. For this reason in Western world, no attempts have been initiated to make instrument for bead. Grasping by forceps is really difficult as it is usually fixed to tracheobronchial tree according to its size. As the bead in its middle have hole for thread to pass make the only access to bronchoscopist to pass his preferred instrument for retrieval. Dropping the foreign body during retrieval is a potentially life-threatening complication.¹⁶ The vocal cords should be well relaxed either by residual topicalization, paralysis, or an adequate depth of anesthesia, before removal of the foreign body. Dropping the foreign body has a higher correlation with the experience level of the bronchoscopist.¹⁷ The foreign body like bead has higher chance to fall down at vocal cord level, it is highly recommended to push the bead in a bronchus otherwise there is potential risk of complete air way obstruction.¹⁸

On two occasions bronchoscopist used option of tracheostomy and retrieved bead using long killian nasal forceps through tracheostomy. 2 cases in this study were sent to cardiothoracic unit for impacted beads for removal by thoracotomy procedure. Similar to our study Naseer et al used effectively same thin malleable instrument in 83% of cases, while contrary to our findings the age group of maximal bead foreign bodies were around 6 to 8 years.¹⁹

Foreign body impaction in tracheobronchial tree occurs commonly in the right main bronchus than the left and less frequently in the larynx and trachea,¹⁴ this is because of anatomical position of right main bronchus, as it is more vertical and has larger diameter leading to more air entry than the left bronchus. In our study the common site for foreign body lodgment was right main bronchus followed by left main bronchus which is also found in study done by Tariq as well.²⁰ The location of lodging of the foreign bodies in the right main bronchus 59%, 31% in left main bronchus and 9% in trachea.

CONCLUSION

Foreign body aspiration by children is a serious and life-threatening situation that requires special attention of parents and health-care providers. The symptoms are nonspecific, and the chest radiograph findings are frequently normal or display abnormalities uncharacteristic for foreign body aspiration. Instruments specifically for removal of bead should be designed to avoid morbidity and more serious complications. Attention must be given to early recognition of foreign body aspiration, as well as to prompt identification of complications caused by the bronchoscopy.

Table 1: Sex distribution.

Sex	No	%
Male	21	65 %
Female	11	35 %

Table 2: Age distribution.

1m to 1year	1	3.15%
1yr to 2years	6	18.75%
2 years to 3years	21	65.62%
3years and above	4	12.5%

Table 3 Instruments.

Instruments	No of cases	Percentage
Long screw forceps	8	25%
Malleable forceps	21	65%
Long nasal killian	2	6.25%

Table 4: Site of impaction of bead

Site	No	Percentage
Trachea	3	9.375%
Right main bronchus	19	59.37%
Left main bronchus	10	31.25%

Plain x-ray film: bead in right main bronchus

Plain x-ray film: bead in trachea

CT Scan Chest: bead in right main bronchus

Bead grasped by passing malleable forceps through the hole and then held open

Bead grasped by passing malleable forceps through the hole and then held open

Long screw forceps.

Malleable forceps held open

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