INCIDENCE OF THE NATURE OF FOREIGN BODY IN CASES OF FOREIGN BODY BRONCHUS – ONE YEAR (2013) RETROSPECTIVE ANALYSIS & ANAESTHETIC MANAGEMENT

Geetha C¹, Rupa Kumari A², Deepraj Singh B³

HOW TO CITE THIS ARTICLE:

Geetha C, Rupa Kumari A, Deepraj Singh B. "Incidence of the Nature of Foreign Body in Cases of Foreign Body Bronchus – One Year (2013) Retrospective Analysis & Anesthetic Management". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 16, February 23; Page: 2719-2725, DOI: 10.14260/jemds/2015/393

ABSTRACT: A retrospective analysis done at Government ENT Hospital Osmania Medical College Hyderabad, a tertiary care institute dedicated only for ear nose and throat surgeries is one of the few institutes with very large collection of otolaryngological cases including head and neck surgeries, of various ENT emergencies admitted in a one year 2013. The data collected of all the cases of foreign body bronchus admitted in the year 2013 is analyzed and statistically presented into different categories depending on the incidence of the nature of foreign body, age and gender significance, management with their morbidity and mortality.

KEYWORDS: Foreign body bronchus, Bronchoscopy, Jet Ventilation.

INTRODUCTION: This study of foreign body bronchus throws light on the nature of foreign bodies across all age groups/sex encountered during the year 2013 at the Government ENT Hospital, Hyderabad. It provides an insight into the incidence of commonly found foreign bodies and the associated anaesthetic management.

STUDY REPORT: The study includes the following:

1. Nature of foreign body.
2. Incidence among various age groups.
3. Incidence among male/female.
4. Outcomes of the bronchoscopies performed.
5. Associated anaesthetic management based on the nature and location of the foreign bodies and discussion.

Nature of foreign body (Fig. 1): The total numbers of bronchoscopies performed for foreign body bronchus across the year were eighty (80). The foreign bodies found can be classified as:

- i. Organic foreign bodies.
- ii. Inorganic foreign bodies.
- iii. Mucous plugs and,
- iv. Others.

In a few cases there were no foreign bodies present. The incidence of organic foreign bodies was more than the inorganic foreign bodies. The organic foreign bodies found were Custard apple seeds, Sapota seeds, and Groundnuts. It was observed that Groundnut seeds contributed the highest number - in about 28 patients out of the 80 patients who underwent bronchoscopies for foreign body bronchus. This was followed by Custard apple seeds – 12 patients; Sapota seeds – 4 patients.

ORIGINAL ARTICLE

The incidence of these organic foreign bodies like custard apple seeds showed seasonal variation, the highest during October to December. Since the other organic foreign bodies are available all-round the year, their incidence was scattered.

The inorganic foreign bodies found and removed were metal pins (4 cases) which included safety pins and scarf pins. The others were plastic whistles (6 cases) in the age group of patients between 4 to 9 years.

Mucous plugs were removed in 12 cases while the others include chalk pieces, Sapota pulp, coins at the level of larynx broken tracheostomy tube in a 65 year old male patient.

Fig. 1

Incidence among various age Groups: (Fig. 2): The highest number of foreign bodies were found in patients between 01 – 02 years of age (28 cases) followed by children less than 1 year (27 cases). 16 cases were observed in patients over 4 years of age, 7 cases in patients between 02-03 years and 2 cases between 03-04 years of age.

Fig. 2

ORIGINAL ARTICLE

INCIDENCE AMONG MALE/FEMALE: (FIG 3): The number of male patients (44) was more than female patients (36).

Fig. 3

OUTCOMES OF THE BRONCHOSCOPIES PERFORMED: (FIG4): The retrieval of foreign body and recovery of the patients was successful in 79 cases while 1 case succumbed to the procedure. This patient was 8 months old infant and the foreign body was a seed with spiky projections lodged in the right bronchus Datura seed. The thorny surface got lodged into the mucous membrane and retrieval took a long time. It involved trauma, mucosal tears and bleeding leading to cardiac arrest.

Fig. 4

Anesthetic management based on nature of foreign body and location and Discussion: The bronchoscopies performed were either diagnostic or therapeutic. In most of the cases, these were done as emergencies because history of foreign body inhalation was given and since most of these patients were children general anaesthesia is preferred¹.because history of foreign body inhalation was given. As in all other cases, preanaesthetic assessment was done – bilateral air entry checked, X-ray examined history of any medical ailments elicited, high risk explained and consent obtained.

Pre-Operative Oxygen saturation was noted in the operation theatre. Patient pre-medicated with Atropine and Hydrocortisone. Later patients induced with inhalation anesthetic – Sevoflurane and muscle relaxant – Suxamethonium was administered according to weight. There are reports of Nitrous Oxide² anaesthesia for bronchoscopy In our study we used only 100% oxygen. Laryngoscopy

ORIGINAL ARTICLE

---

performed to enable the surgeon to pass the bronchoscope³ into the trachea. Once the bronchoscope was in place, Jet ventilation was administered through the bronchoscope. Confirmation of the position of bronchoscope in trachea was done by auscultation of chest for air entry, observing the chest lift and monitoring oxygen saturation. Patients maintained by intermittent Suxamethonium. Intra-operatively patient monitored by precordial stethoscope.

Jet ventilation administered taking care to avoid barotrauma. Jet ventilation offers the advantage of ventilation during the procedure of removal and also clears the pooling secretions by flushing, thereby improving the visibility of foreign body. Ventilation stopped when the foreign body is held and extracted.

Muscle relaxation ensured during the removal of foreign body so that the foreign body does not slip out and get stuck at the sub-glottic level which is the narrowest portion of the pediatric airway. Metal foreign bodies such as safety pins,⁴ nail may traumatize the airway passage during its removal

In cases of organic foreign bodies especially groundnuts which have a tendency to soften and break during removal; larger pieces were extracted telescopically and thorough suctioning performed. Smaller pieces if present were coughed out by the patient upon recovery. In the case of non-breakable organic foreign bodies such as Sapota seeds, Custard apple seeds, the removal was done in one go.

After the removal of foreign body, patients intubated and positive pressure ventilation administered. Subsequent to complete recovery, patient extubated and encouraged to cough to bring out any small pieces of foreign body if present along with secretions.

In cases where only mucous plugs were found, thorough suctioning was done and patient recovered leading to improvement of air entry.

In the cases involving removal of sharp objects such as metal pins, the procedure was difficult leading to trauma and bleeding. This was controlled and hemostasis secured with adrenalin swab. Later patient was reversed and extubated.

A case of foreign body, coin in the larynx in an adult male, and the patient was premedicated with Glycopyrrolate, Ondansetron, Hydrocortisone and later induced with Propofol. Muscle relaxant Suxamethonium was later administered. Laryngoscopy was performed and the coin was visualized in a vertical position between the vocal cords. It was removed with telescopic forceps without the use of bronchoscope.

Similarly in a case of an adult female with Sapota pulp in the sub-glottic area and exhibiting mild stridor, the same procedure was adopted and the pulp removed successfully with complete recovery of the patient.

Some of the technical difficulties and complications encountered during these bronchoscopies include the removal of Sapota seed and groundnut in two cases where they slipped during extraction at the sub-glottic area. The foreign body was then pushed down into one of the bronchus and adequate relaxation ensured. The procedure was once again repeated and the foreign body removed.

In another case, the foreign body was stuck in the bronchoscope itself while removal and ventilation was not possible. Then the bronchoscope was removed and replaced again under vision but patient could not be ventilated. Patient was then intubated with oral endotracheal tube removing the bronchoscope and ventilated.

ORIGINAL ARTICLE

Bronchoscopy was performed in another case for long standing foreign body⁵ removed and patient intubated. During this procedure, a small portion of the foreign body (groundnut) got into the oral endotracheal tube and patient could not be ventilated. Immediately, patient extubated and another tube was passed and patient recovered.

Time taken to remove the foreign body poses another problem. In certain cases, the foreign body would dislodge and fall into other bronchus. In such cases until it was localized and also in diagnostic bronchoscopies, an eye piece was attached to the bronchoscope to enable the surgeon to visualize while anaesthesia maintained with side arm technique.

This reduced the time of Jet ventilation and reduced the incidence of other associated complications with Jet ventilation. The side arm technique enabled the use Oxygen and Nitrous Oxide to deliver inhalation anaesthetics thereby reducing the dosage of muscle relaxants. Once the foreign body was localized, Jet ventilation was given and the routine procedure for the removal of foreign body bronchus was performed. Bradycardia and Hypoxia are other associated complications in children undergoing bronchoscopy for which adequate caution need to be taken.

Fig. 5: Coin In between Vocal Cords

Fig. 6: Broken tracheostomy tube

Fig. 7: Nail in Lt Main Bronchus

Fig. 8: Safety pin Rt main Bronchus

CONCLUSION: Government ENT hospital Osmania Medical College Hyderabad a tertiary care hospital and referral centre for all cases of foreign body bronchus has admitted a total of 80 cases of foreign body bronchus presented to our casualty for which emergency bronchoscopy was done⁶. All cases except one recovered well. We encountered custard apple seeds as most common foreign body in bronchus during the months of November and December. 3 month old infant with bath soap in the rt. Main bronchus was the youngest child whereas a 65yr old male with broken tracheotomy tube in the right main bronchus was the oldest patient. One child has become bad on the table during the procedure a 3 year old female child with small Datura seed as foreign body in Rt. Main bronchus with 5 days history died on the table the cause being trauma to right main bronchus.

REFERENCES:

1. Cummins CF, English IC, Loder RE, Parish C. General anaesthesia for bronchoscopy; an assessment of 1, 310 cases. *Anesth Analg*. 1958 Nov-Dec; 37 (6): 336–337.
2. Brown D and Young JV. Nitrous oxide anaesthesia for bronchoscopy; a method suitable for out-patients. *Br Med J*. 1959 Mar 14; 1(5123): 692–695.
3. J. M. Gilyoma and P. L. Chalya, "Endoscopic procedures for removal of foreign bodies of the aerodigestive tract: the Bugando Medical Centre experience," *BMC Ear, Nose and Throat Disorders*, vol. 11, no. 1, article 2, 2011.
4. N. Al-Sarraf, H. Jamal-Eddine, F. Khaja, and A. K. Ayed, "Headscarf pin tracheobronchial aspiration: a distinct clinical entity," *Interactive Cardiovascular and Thoracic Surgery*, vol. 9, no. 2, pp. 187–190, 2009.
5. T.H. Wu, Y.-L. Cheng, C. Tzao, H. Chang, C.-M. Hsieh, and S.-C. Lee, "Longstanding tracheobronchial foreign body in an adult," *Respiratory Care*, vol. 57, no. 5, pp. 808–810, 2012.
6. M. B. Ramos, A. Fernández-Villar, J. E. Rivo et al., "Extraction of airway foreign bodies in adults: experience from 1987–2008," *Interactive Cardiovascular and Thoracic Surgery*, vol. 9, no. 3, pp. 402–405, 2009.

ORIGINAL ARTICLE

AUTHORS:

1. Geetha C.
2. Rupa Kumari A.
3. Deepraj Singh B.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Anaesthesiology, Govt. ENT Hospital, Osmania Medical College, Hyderabad.
2. Associate Professor, Department of Anaesthesiology, Govt. Medical College, Nizamabad, Telangana.
3. Professor, Department of Anaesthesiology, Govt. ENT Hospital, Osmania Medical College, Hyderabad.

FINANCIAL OR OTHER

COMPETING INTERESTS: None

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Deepraj Singh B,
1-7-145/15,
Opp. Usha Mayuri Talkies,
Musheerabad,
Hyderabad-500020.
E-mail: drdeepraj@gmail.com

Date of Submission: 15/01/2015.
Date of Peer Review: 16/01/2015.
Date of Acceptance: 13/02/2015.
Date of Publishing: 21/02/2015.