

## Study to Assess Prevalence of Tracheo- Bronchial Foreign Bodies Cases Reported to Tertiary Care Centre

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### ABSTRACT

**Background:** Tracheo-bronchial foreign bodies continue to present challenges to otolaryngologists. The major issues involve the accurate diagnosis and speedy, safe retrieval of the foreign body. Accidental foreign-body aspiration in the respiratory tract can lead to considerable morbidity and mortality in both adults and children. Hence; under the light of above mentioned data, the present study was undertaken for assessing the prevalence of Tracheo- bronchial foreign body cases.

**Materials & Methods:** Data of a total of 250 patients was analysed during the study period. The overall prevalence of tracheobronchial foreign body cases was assessed. Complete demographic details of all the cases were obtained from the data record files. Patient data, clinical history, radiographic and bronchoscopic findings were also obtained from their record files for defining the epidemiology of the patients. Record of Preoperative Chest X-ray was also obtained. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

**Results:** The prevalence of tracheobronchial foreign body cases was 11.2 percent (28 cases). Needles were found in 39.29 percent of the cases, while peanuts were found in 28.57 percent of the cases. Plastic objects were found in 21.43

percent of the cases. Right bronchial tree was involved in 39.3 percent of the cases, while foreign body was found in left bronchial tree in 28.57 percent of the cases. Tranche was found in 21.43 percent of the cases.

**Conclusion:** Because of associated high mortality with foreign body aspiration, it is required to rapidly recognize from the patient's history and start the prompt by bronchoscopy and extraction of the aspirated foreign body.


**Key words:** Tracheobronchial, Foreign Bodies.

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### INTRODUCTION

Tracheo-bronchial foreign bodies continue to present challenges to otolaryngologists. The major issues involve the accurate diagnosis and speedy, safe retrieval of the foreign body. The accurate diagnosis may elude physicians because often the initial choking incidents are not witnessed and the delayed residual symptoms may mimic other common conditions.<sup>1-3</sup>

Accidental foreign-body aspiration in the respiratory tract can lead to considerable morbidity and mortality in both adults and children. The maximum prevalence rate is found among children below the age of 3 years. Mortality and diseases caused by airway foreign bodies are more common among children due to their narrow airway and immature protective mechanisms. Diagnosis and treatment of this condition require high awareness and an enquiring attitude to all aspiration symptoms. False or delayed

diagnosis can lead to significant complications. Most aspirated foreign bodies are organic substances; the most prevalent being nuts and beans in children and food pieces and bone in adults. The most common inorganic bodies which are aspirated in children are beads, clips, and small parts of toys and stationery, such as the bottom of pens.<sup>4-6</sup> Right from the day of Killian who dared to remove the pork bone with a rigid bronchoscope from 63 year old farmer under local anaesthesia in 1957, incidence of tracheo-bronchial foreign bodies have changed markedly. The Council of America cited the inhalation of foreign bodies, as a leading cause of accidental death at home, in children younger than 6 years of age.<sup>7</sup> Hence; under the light of above mentioned data, the present study was undertaken for assessing the prevalence of Tracheo- bronchial foreign body cases.

**MATERIALS & METHODS**

The present study was conducted in the Department of ENT, S P Medical College, Bikaner, Rajasthan (India) and it included assessment prevalence of tracheobronchial foreign body cases. Ethical approval was obtained from institutional ethical committee in written after explaining in detail the entire research protocol. Data of a total of 250 patients was analysed during the study period. The overall prevalence of tracheobronchial foreign body

cases was assessed. Complete demographic details of all the cases were obtained from the data record files. Patient data, clinical history, radiographic and bronchoscopic findings were also obtained from their record files for defining the epidemiology of the patients. Record of Preoperative Chest X-ray was also obtained. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test was used for assessment of level of significance.

**Table 1: Prevalence Tracheobronchial foreign body cases**

Parameter		Number of patients	Percentage of patients
Prevalence	Tracheobronchial foreign body cases	28	11.2

**Table 2: Demographic data**

Parameter		Number of patients	Percentage of patients
Age group (years)	Less than 25	12	42.86
	25 to 45	9	32.14
	More than 45	7	25
Gender	Male	16	57.14
	Females	12	42.86
Residence	Rural	19	67.86
	Urban	9	32.14

**Table 3: Types of foreign bodies**

Type of foreign bodies	Number of patients	Percentage
Needles	11	39.29
Peanuts	8	28.57
Plastic object	6	21.43
Miscellaneous	3	10.71

**Table 4: Location of foreign body**

Location	Number of patients	Percentage
Right bronchial tree	11	39.30
Left bronchial tree	8	28.57
Trachea	6	21.43

**RESULTS**

In the present study, a total of 250 patients were analysed. Out of these 250 patients, the overall 42.86 percent of the patients belonged to the age group of less than 25 years. Mean age of the patients was 18.8 years. 57.14 percent of the patients were males while the remaining were females. 67.86 percent of the patients had rural residence while the remaining had urban residence. In the present study, needles were found in 39.29 percent of the cases, while peanuts were found in 28.57 percent of the cases. Plastic objects were found in 21.43 percent of the cases. Right bronchial tree was involved in 39.3 percent of the cases, while foreign body was found in left bronchial tree in 28.57 percent of the cases. Tranche was found in 21.43 percent of the cases.

**DISCUSSION**

Foreign bodies in the airway are a dire emergency and are a challenge to the otolaryngologist. They require prompt medical attention and rapid airway access. They occur less frequently in adult. The larynx performs an effective sphincteric action to protect the lower airways and it is unusual for a foreign body to get aspirated than to be swallowed. Laryngotracheal foreign bodies are seen more in children, and the common age group is below 15 years.<sup>6-9</sup> Hence; under the light of above mentioned data, the present study was undertaken for assessing the prevalence of Tracheo- bronchial foreign body cases.

In the present study, the overall prevalence of tracheobronchial foreign body cases was 11.2 percent (28 cases). 42.86 percent of

the patients belonged to the age group of less than 25 years. Mean age of the patients was 18.8 years. 57.14 percent of the patients were males while the remaining were females. 67.86 percent of the patients had rural residence while the remaining had urban residence. Eroğlu A et al described foreign body aspiration in the tracheobronchial tree, a common emergency with serious consequences. They reviewed the records of 357 patients who were admitted to hospital during a 10-year period for the treatment of aspirated foreign body into the tracheobronchial tree. Of these cases, 42.4% were male and 57.6% female. Their ages ranged from 4 months to 70 years (average of 10.8 years). The most common manifestation was coughing, with subsequent dyspnea and wheezing. All underwent rigid bronchoscopy for the removal of the foreign body. Foreign bodies were localized in the right bronchial tree in 188 cases (52.7%), the left in 107 cases (30%) and trachea in 39 cases (10.9%). Foreign bodies were not found during bronchoscopy in 23 cases (6.4%). The foreign bodies were: needles (n=125), peanuts (n=110), plastic objects (n=52), and miscellaneous (n=47). Foreign bodies were removed by bronchoscopy in all but six cases (1.7%), who underwent limited thoracotomy. The series had a mortality of 0.56 percent (two deaths) following removal of foreign body. Foreign body aspiration are rapidly recognized from the patient's history and easily treated by bronchoscopy and extraction of the aspirated foreign body.<sup>11</sup>

In the present study, needles were found in 39.29 percent of the cases, while peanuts were found in 28.57 percent of the cases. Plastic objects were found in 21.43 percent of the cases. Right bronchial tree was involved in 39.3 percent of the cases, while foreign body was found in left bronchial tree in 28.57 percent of the cases. Tranche was found in 21.43 percent of the cases. Pinto A et al determined the role of plain chest radiography in the evaluation of patients with suspected foreign-body aspiration. During a 5-year period, 31 patients (18 men and 13 women; age range 6 months to 85 years) were referred to our observation for clinical suspicion of foreign-body aspiration. Clinically, the patients presented with cough in 27/31 cases (87.1%), decreased breath sounds in 22/31 (71%), choking in 18/31 (58.1%), fever in 7/31 (22.6%) and cyanosis in 5/31 (16.1%). Suspected foreign-body aspiration had occurred 2-72 h before hospitalisation. Within 2 h of hospitalisation, all patients underwent plain chest radiography performed in the upright position (two projections) in 10/31 (32.3%) patients and in the supine decubitus position in the remaining 21 (67.7%) patients. Plain chest radiography was subsequently integrated with multislice computed tomography (MSCT) of the chest in 3/31 (9.7%) patients and with bronchoscopy in 27/31 (87.1%) patients. Plain chest radiography showed the presence of a foreign body in the tracheobronchial tree in 7/31 (22.6%) patients, who subsequently underwent successful bronchoscopy in all cases. Foreign bodies included tooth fragment (three cases), nail (two cases), metallic spiral of a ball-point pen (one case) and an earring (one case). In the remaining 24/31 patients, plain chest radiography was positive in 14 cases, showing atelectasis (seven cases), pneumonia (six cases), pulmonary hyperinflation (one case) and pneumomediastinum (one case). Such findings had been caused by an aspirated foreign body, which was subsequently removed by means of bronchoscopy in all 14 patients. Moreover, three of the remaining ten patients with negative plain chest radiograph

were submitted to MSCT of the chest, which required in 1 case tracheobronchial aspiration of a foreign body that was subsequently removed by means of bronchoscopy. Overall, plain chest radiography showed the presence of foreign-body aspiration and/or pleuroparenchymal lesions in 21/31 patients (67.7%); bronchoscopy was positive in 23/27 patients (85.2%), localising the foreign body in the right main bronchus in 16/27 patients (59.3%), left main bronchus in 7/27 patients (25.9%), intermediate bronchus in 2/27 patients (7.4%) and right lower lobe bronchus in 2/27 patients (7.4%). No late complications were observed within 6 months of hospital discharge. Plain chest radiography remains the initial imaging modality for patients with clinically suspected tracheobronchial aspiration of a foreign body.<sup>12</sup> Siddiqui MA et al studied the problem of foreign body aspiration in the community. The total number of patients was 94 (62 male and 32 female). Ages ranged from 4 months to 45 years (mean age 3.77 years), 85% of children being under the age of 5 years. One hundred bronchoscopies (6 repeat bronchoscopies) and one thoracotomy were carried out. Foreign bodies were removed from 60 patients (64%). Six (10%) did not have any definite history, while 15 patients (21%) with definite history of foreign body aspiration had negative bronchoscopy. An aspirated Fis-Fis (Alfalfa, Lucerne) seed accounted for more than one-third of all foreign bodies. The most frequent symptoms, signs, radiological findings and site of foreign body lodgement in the tracheobronchial tree are discussed. They concluded that a negative history, clinical examination and chest x-ray do not necessarily exclude aspirated foreign body material. Bronchoscopy is the most effective diagnostic and therapeutic modality to prevent complications related to neglected foreign body aspiration.<sup>13</sup>

## CONCLUSION

From the above results, the authors concluded that because of associated high mortality with foreign body aspiration, it is required to rapidly recognize from the patient's history and start the prompt by bronchoscopy and extraction of the aspirated foreign body.

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