

A Prospective Study on the Prevalence of Foreign Bodies in Nasopharyngeal and Oropharyngeal Pathways in Subjects Reporting to the ENT Department

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Received: 13-06-2023 / Revised: 11-07-2023 / Accepted: 08-08-2023

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Conflict of interest: Nil

Abstract:

Background: Foreign bodies in the oropharyngeal and nasopharyngeal pathways can have fatal impacts and are commonly seen in routine medical practice.

Aim: The present study aimed to assess the prevalence of foreign bodies in nasopharyngeal and oropharyngeal pathways in subjects reporting to the ENT (Ear, Nose, and Throat) Department of an Institute.

Methods: The present prospective study assessed 100 subjects from both genders who presented to the Outpatient Department of ENT with foreign body obstruction in oropharyngeal or nasopharyngeal pathways.

Results: More prevalence of foreign bodies was seen in male subjects compared to females from lower to middle-income groups and urban populations. The majority of the foreign bodies in the oropharyngeal pathway were single in number. Majority of the cases presented in the acute period with the most common foreign body being fish bone. Child subjects showed excessive salivation, food refusal, and excessive crying, whereas, adults with nasopharyngeal foreign bodies presented with dysphagia. Following treatment, the hospital stay duration was 24-48 hours.

Conclusion: The study concludes that oropharyngeal and nasopharyngeal foreign bodies are more commonly seen in adult males from the middle age group and urban population compared to females with the most commonly obstructed being chicken bone and fish bones.

Keywords: Foreign Body, Nasopharyngeal Pathway, Oropharyngeal Pathway.

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Introduction

The incidence of foreign bodies in ENT (ear, nose, and throat) are commonly reported to the primary care settings, physicians, emergency surgeons, pediatricians, and/or otorhinolaryngologists.[1] These foreign bodies account for nearly 11% of all the cases reported to the emergency services of the ENT department. These foreign bodies can lead to morbidity and mortality, if not managed properly. Also, these foreign bodies pose a financial burden when managed.[2]

These foreign bodies can be inserted either accidentally or spontaneously in the nasopharyngeal or oropharyngeal regions. These foreign body incidences are reported in both children and adults.[3] Usually, a higher incidence is seen in young subjects that can be attributed to various factors including the absence of watchful caregivers, easy object availability, attention deficit

hyperactivity disorder, insanity, intellectual disabilities, playing, boredom, imitation, and/or curiosity of exploring the orifices.[4]

These foreign body obstructions have varying impacts and outcomes reporting form disturbances showing a low impact with no need of hospitalization to hospitalization and even death. These outcomes are governed by various factors including the anatomical site involved, the dimensions of foreign bodies, the shape of foreign bodies, and their chemical composition. [5] Previous literature data has shown that the incidence of foreign bodies is commonly seen in subjects from the younger age group compared to adult subjects. In the ENT practice, foreign body obstruction of varying nature is reported in subjects from different age groups. [6] In the present study, the majority of the foreign body incidences were seen in male adult

subjects from middle-aged groups. The literature data is scarce with consideration of demographic data with the foreign bodies in the oropharyngeal and nasopharyngeal pathways. [7]

Hence, the present study aimed to assess the prevalence of foreign bodies in nasopharyngeal and oropharyngeal pathways in subjects reporting to the ENT (Ear, Nose, and Throat) Department of an Institute. The demographic data gathered were gender, age, residence, and social status. These data were correlated and categorized with clinical features, foreign body types, method of removing the foreign body, and the duration of hospital stay.

Materials and Methods

The present prospective clinical study was done to assess the prevalence of foreign bodies in nasopharyngeal and oropharyngeal pathways in subjects reporting to the ENT (Ear, Nose, and Throat) Department of an Indian Institute. The study was done at Department of Otorhinolaryngology, Mata Gujari Memorial Medical College, Kishanganj, Bihar. Before study participation, informed consent was taken from all the participants in verbal and written format.

The study included 100 subjects from both genders aged 6 months and above. All the included subjects had a positive history of foreign body ingestion. The included subjects were admitted to the Department of ENT of the institute. For all the subjects, baseline investigations were done and the subjects were screened to assess the foreign body in the nasopharyngeal or oropharyngeal pathway with the help of indirect or direct laryngoscopy under either shirt GA or local anesthesia.

The included 100 participants were then divided into 8 groups based on their age with 0-9 years, 10-19 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, and 70 years and above. Also, foreign bodies were categorized depending on their type as a broken denture, chicken bone, fish bone, coin, and/or sharp metal, etc. The sites of the foreign body were classified as a posterior wall, para tonsil, and tonsil for the oropharyngeal region, and the posterior wall, lateral wall, and roof for the nasopharyngeal region. Also, the number of foreign bodies was recorded.

The subjects were further divided into 3 categories based on their income to high-, middle-, and low-income groups with incomes of >10 lacs, 2-10 lacs, and <2 lacs per annum. The residential areas were assessed as rural, suburban, and urban groups. The clinical features assessed were refusal of food and instant crying in children (>4 years) along with dysphagia, excessive salivation, drooling, choking/Globus, and vomiting. The treatment given was the removal of the foreign body using either FOB (fiber-optic bronchoscopy), IDL (indirect

laryngoscopy), or DL (direct laryngoscopy). The hospital stay duration was the number of days postoperatively.

The data were analyzed with statistical evaluation using SPSS software version 21.0 (IBM, NY, USA) and a chi-square test where the level of significance was kept at $p < 0.05$.

Results

The study assessed 58 males and 42 females. The majority of the study subjects were in the age range of 30-39 years with 165 (n=16) subjects followed by 14% (n=14) subjects from 0-9, 40-49, and 50-59 years of age, 12% (n=12) subjects each from 10-19, 20-29, and 60-69 years of age, and least 6% (n=6) subjects from the age of 70 years or more. There were 8% (n=8), 39% (n=39), and 53% (n=53) subjects from high, middle, and low-income groups respectively. There were 3% (n=3), 64% (n=64), and 33% (n=33) subjects from rural, urban, and semi-urban localities respectively as shown in Table 1.

Among foreign bodies, 76% (n=76) obstructions were in the oropharyngeal region, whereas, 24% (n=24) obstructions were in the nasopharyngeal region. In the oropharyngeal region, 9% (n=9), 47% (n=47), 35% (n=35), 4% (n=4), and 5% (n=5) foreign bodies were in the tonsil, para-tonsil, posterior wall, lateral wall, and inlet regions respectively. In the nasopharyngeal foreign body ingestion, 84% (n=84), 2% (n=2), and 14% (n=14) foreign bodies were in the posterior wall, lateral wall, and roof region respectively as depicted in Table 2. 98% of cases of foreign bodies were reported in the acute phase, whereas, 2% had the chronic presentation.

Concerning the factors of foreign bodies in the study subjects, single foreign body obstruction was seen in 94% (n=94) subjects, and more than one foreign body was seen in 6% (n=6) study subjects. The majority of the foreign bodies were fish bones in 52% (n=52) subjects followed by chicken bones in 32% (n=32) subjects, coins in 4% (n=4) subjects, and sharp metal and broken dentures in 6% (n=6) study subjects each.

The most common reported symptom was dysphagia seen in all 100% (n=100) study subjects followed by Instant crying, excessive salivation, and refusal to eat in children (<4 years) in 10% (n=10) study subjects, vomiting in 8% (n=8) study subjects and choking in coin obstruction in 4% (n=4) study subjects (Table 3). For the management of the foreign bodies in oropharyngeal and nasopharyngeal regions, direct laryngoscopy was done in 56% (n=56) study subjects followed by indirect laryngoscopy in 22% (n=22) study subjects, and FOB (fiberoptic bronchoscopy) in 22% (n=22) study subjects. The duration of hospital stay was 24 hours in 76% (n=76) study subjects followed by 48 hours

in 19% (n=19) study subjects, 72 hours in 5% (n=5) study subjects, and >72 hours in no study subjects as shown in Table 4.

Table 1: Demographic data of study participants

| S. No | Characteristics | Percentage (%) | Frequency (n) |
|-----------|--------------------|----------------|---------------|
| 1. | Gender | | |
| a) | Males | 58 | 58 |
| b) | Females | 42 | 42 |
| 2. | Age (years) | | |
| a) | 0-9 | 14 | 14 |
| b) | 10-19 | 12 | 12 |
| c) | 20-29 | 12 | 12 |
| d) | 30-39 | 16 | 16 |
| e) | 40-49 | 14 | 14 |
| f) | 50-59 | 14 | 14 |
| g) | 60-69 | 12 | 12 |
| h) | 70 and above | 6 | 6 |
| 3. | Income | | |
| a) | High | 8 | 8 |
| b) | Middle | 39 | 39 |
| c) | Low | 53 | 53 |
| 4. | Locality | | |
| a) | Rural | 3 | 3 |
| b) | Urban | 64 | 64 |
| c) | Semi-urban | 33 | 33 |

Table 2: Site of the foreign body in study subjects

| S. No | Site | Percentage (%) | Frequency (n) |
|-----------|-----------------------|----------------|---------------|
| 1. | Oropharyngeal | | |
| a) | Tonsil | 9 | 9 |
| b) | Para-tonsil | 47 | 47 |
| c) | Posterior wall | 35 | 35 |
| d) | Lateral wall | 4 | 4 |
| e) | Inlet | 5 | 5 |
| 2. | Nasopharyngeal | | |
| a) | Posterior wall | 84 | 84 |
| b) | Lateral wall | 2 | 2 |
| c) | Roof | 14 | 14 |

Table 3: Parameters associated with the foreign bodies in the study subjects

| S. No | Foreign body parameter | Percentage (%) | Frequency (n) |
|-----------|---|----------------|---------------|
| 1. | Number | | |
| a) | Single | 94 | 94 |
| b) | >1 | 6 | 6 |
| 2. | Type | | |
| a) | Fishbone | 52 | 52 |
| b) | Chicken bone | 32 | 32 |
| c) | Coin | 4 | 4 |
| d) | Sharp metal | 6 | 6 |
| e) | Broken denture | 6 | 6 |
| 3. | Symptom | | |
| a) | Dysphagia | 100 | 100 |
| b) | Instant cry, excessive salivation, and refusal to eat | 10 | 10 |
| c) | Vomiting | 8 | 8 |
| d) | Choking | 4 | 4 |

Table 4: Treatment and outcomes for foreign bodies in study subjects

| S. No | Management and outcomes | Percentage (%) | Frequency (n) |
|-------|--|----------------|---------------|
| 1. | Management | | |
| 2. | Indirect laryngoscopy | 22 | 22 |
| 3. | Direct laryngoscopy | 56 | 56 |
| 4. | FOB (fiberoptic bronchoscopy) | 22 | 22 |
| 5. | Hospital stays duration (hours) | | |
| a) | 24 | 76 | 76 |
| b) | 48 | 19 | 19 |
| c) | 72 | 5 | 5 |
| d) | >72 | 0 | 0 |

Discussion

The present prospective clinical study was done to assess the prevalence of foreign bodies in nasopharyngeal and oropharyngeal pathways in subjects reporting to the ENT (Ear, Nose, and Throat) Department of an Indian Institute. The study included 58 males and 42 females. The majority of the study subjects were in the age range of 30-39 years with 165 (n=16) subjects followed by 14% (n=14) subjects from 0-9, 40-49, and 50-59 years of age, 12% (n=12) subjects each from 10-19, 20-29, and 60-69 years of age, and least 6% (n=6) subjects from the age of 70 years or more.

There were 8% (n=8), 39% (n=39), and 53% (n=53) subjects from high, middle, and low-income groups respectively. There were 3% (n=3), 64% (n=64), and 33% (n=33) subjects from rural, urban, and semi-urban localities respectively. These demographics were comparable to the previous studies of Shreshtha I et al [8] in 2012 and Thompson SK et al [9] in 2003 where authors assessed subjects with demographics comparable to the present study.

On assessing the site of foreign body obstruction, it was seen that among foreign bodies, 76% (n=76) obstructions were in the oropharyngeal region, whereas, 24% (n=24) obstructions were in the nasopharyngeal region. In the oropharyngeal region, 9% (n=9), 47% (n=47), 35% (n=35), 4% (n=4), and 5% (n=5) foreign bodies were in the tonsil, paratonsil, posterior wall, lateral wall, and inlet regions respectively.

In the nasopharyngeal foreign body ingestion, 84% (n=84), 2% (n=2), and 14% (n=14) foreign bodies were in the posterior wall, lateral wall, and roof region respectively. 98% of cases of foreign bodies were reported in the acute phase, whereas, 2% had the chronic presentation. These results were consistent with the findings of Kim SY et al [10] in 2015 and Kamath P et al [11] in 2006 where authors reported more obstruction in the oropharyngeal region compared to the nasopharyngeal region in the para-tonsillar region and posterior wall region respectively. For the factors of foreign bodies in the study subjects, single foreign body obstruction was seen in 94% (n=94) subjects, and more than one foreign body was seen in 6% (n=6) study subjects.

The majority of the foreign bodies were fish bones in 52% (n=52) subjects followed by chicken bones in 32% (n=32) subjects, coins in 4% (n=4) subjects, and sharp metal and broken dentures in 6% (n=6) study subjects each. The most common reported symptom was dysphagia seen in all 100% (n=100) study subjects followed by Instant crying, excessive salivation, and refusal to eat in children (<4 years) in 10% (n=10) study subjects, vomiting in 8% (n=8) study subjects and choking in coin obstruction in 4% (n=4) study subjects. These results were in agreement with the results of Mukherjee A et al [12] in 2011 and Sarkar S et al [13] in 2010 where authors reported the majority of single foreign body obstruction.

Concerning the management of the foreign bodies in oropharyngeal and nasopharyngeal regions, direct laryngoscopy was done in 56% (n=56) study subjects followed by indirect laryngoscopy in 22% (n=22) study subjects, and FOB (fiberoptic bronchoscopy) in 22% (n=22) study subjects. The duration of hospital stay was 24 hours in 76% (n=76) study subjects followed by 48 hours in 19% (n=19) study subjects, 72 hours in 5% (n=5) study subjects, and >72 hours in no study subjects. These results were in line with the findings of Singh S et al [14] in 2007 and Silva BSR et al [15] in 2009 where authors, in their studies, reported the most common management of foreign bodies by direct laryngoscopy and FOB with hospital stay duration of 24-48 hours.

Conclusion

Considering its limitations, the present study concludes that oropharyngeal and nasopharyngeal foreign bodies are more commonly seen in adult males from the middle age group and urban population compared to females with most commonly obstructed being chicken bone and fish bones. However, further studies are warranted with a larger sample size to reach a definitive conclusion.

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