



Foreign Bodies Surpassed in Ear, Nose, Throat during COVID-19 Lockdown: Triage and Challenges

Gerald Parisutham Sebastian*, Rajeswari Subbarayan and Selvarajan Nagarajan

Department of Otolaryngology, Thanjavur Medical College, India

Abstract

Coronavirus Disease (COVID-19) is defined as illness caused by novel coronavirus now called SARS-CoV2. Foreign bodies in aero-digestive tract are life threatening and are of frequent occurrence during COVID-19 Lock down. Otolaryngologists are exposed to high risk aerosol generating emergency procedures like tracheostomies and in rigid endoscopy procedures in retrieval of foreign bodies. The decision of waiting for COVID-19 RT-PCR report before the emergency procedure is still a debate. We followed strict safety protocols like personal protective equipment, face shield, goggles and N-95 masks during the procedures performed in operation theatre. This case study observes surpassed foreign bodies in ear, nose, throat and some of the challenges of otolaryngologist during the triage of procedures performed for retrieval with safety precautions during this COVID-19 pandemic lock down.

Keywords: COVID-19; SARS-Cov-2; Aero-digestive tract; PPE; N-95

Introduction

The FB corresponds on average, to 10% of the cases of emergencies in Otorhinolaryngology and may evolve with complications in 21% of the cases [1,2]. Foreign body aspiration, inoculation and ingestion occur frequently in paediatric age group, which necessities emergency removal by otolaryngologist. The inoculation may be either accidental or voluntary in children where as impaction of foreign body is accidental in adults. Several factors make critical situation for the occurrence of complications, like multiple attempts to remove by onlookers and unskilled health professionals, inexperienced clinician in the handling of foreign bodies and lack of suitable hospital infrastructure. The management of retrieval of foreign body depends upon the type, nature, location and duration of placement. The procedure conducted in retrieval depends upon the location. Auricular foreign body removed by otoendoscopy guided Alligator and Hartman tweezers. Nasal foreign bodies removed according to the nature and type by Bayonet and Kelly tweezers or by Nasal endoscopy. Esophagoscopy and bronchoscopy were done under general anesthesia with orotracheal intubation for removal of foreign bodies located in cricopharynx and bronchus respectively. The Health care team in the operating room was kept to a minimum in number. The air exchanges were kept above 25 cycles per hour in the operating room.

Air conditioning and laminar flow were switched off during the procedure. The temperature in the operating room was maintained at 20°C. The operating surgeon entered the operating room 10 min after intubation and exits before extubation. All health care team in the operating room wore full PPE with coveralls, N95 mask and hood. Donning and doffing were done in the designated areas with an observer noting and guiding the proper technique with ultimate safety precautions. General anesthesia with endotracheal intubation is again risky for health care team due to viral transmission in aerosols. We analyzed cases managed in OPD and who underwent rigid endoscopy procedures for retrieval of foreign body under general anesthesia. All patients are subjected to proper history, diagnostic evaluation by radiology according to site of location of FB and a preoperative or intraoperative nasopharyngeal swab for COVID-19 and CT chest for CORADS Grading.

Materials and Method

We carried out cross sectional study of 43 patients with diagnosis of foreign body lodged in ear, nose and throat attended in the Department of Otolaryngology, Thanjavur Medical College, Thanjavur during the period from April 2020 through October 2020. We took into consideration the age, sex, site of location of the foreign body, and procedure performed in removal of the foreign body with COVID-19 RT-PCR status.

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*Correspondence:

Gerald Parisutham Sebastian,
Department of Otolaryngology,
Thanjavur Medical College, Tamilnadu,
India, Tel: 919443447564;
E-mail: drgerald94@gmail.com

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Table 1: Ear.

S.no	Age in years/sex	History	Type of foreign body	Procedure done	COVID-19 rt-pcr
1	3/male	Accidental inoculation	Bead	Otoendoscopy and removal	Not done
2	4 /female	Accidental inoculation	Paper	Otoendoscopy and removal	Not done
3	3 /male	Accidental inoculation	Eraser	Otoendoscopy and removal	Not done
4	5 /male	Accidental inoculation	Thermocol sponge	Otoendoscopy and removal	Not done
5	4 /male	Accidental inoculation	Color crayons	Otoendoscopy and removal	Not done
6	5 /male	Accidental inoculation	Toy piece	Otoendoscopy and removal	Not done
7	5 /male	Accidental inoculation	Rubber	Otoendoscopy and removal	Not done
8	22 /male	Accidental inoculation	Live insect	Otoendoscopy and removal	Not done
9	30 /male	Accidental inoculation	Cotton bud	Otoendoscopy and removal	Not done
10	60 /female	Accidental inoculation	Live insect	Otoendoscopy and removal	Not done

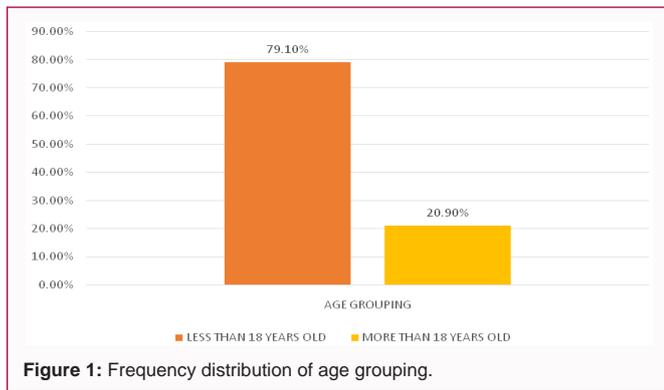


Figure 1: Frequency distribution of age grouping.

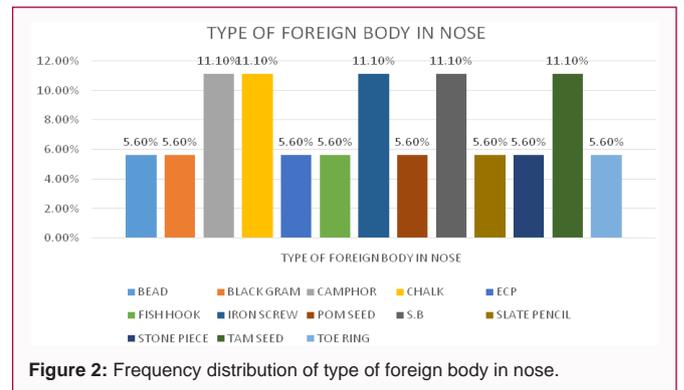


Figure 2: Frequency distribution of type of foreign body in nose.

Case Study

Analysis and Results

Among forty three patients who came with foreign body ear, nose and throat most of them were male (65.1%) and remaining were female. Mean age group of sample were 12.8 years old, ranging from 1 to 62 years old.

Age grouping (Table 1).

Mean age group - 12.8 years old (Chart 1).

Among the study populations, most of the foreign body inoculation seen in nose (41.9%), next to it were throat (34.9%) and least were ear (23.3%) (Charts 2-4) (Tables 2-4).

Discussion

Aerosol generating procedures transmit SARS-CoV-2 through droplets extensively. Droplet transmission occurs when a person is in close contact within 1metre or exposed to his/her mucosa or conjunctiva to respiratory droplets. The virus particles can also remain in airborne for 3 h. It has been analyzed recently that airborne transmission may be possible in specific procedures like endotracheal intubation, tracheostomy, rigid endoscopy, manual ventilation before intubation. It has been well-documented that Otorhinolaryngologists are at high risk of getting infected as they come in close contact with the patient during examination as high viral loads of COVID-19 being present in the upper aerodigestive tract in the infected patients.

Risk of transmission depends on duration of exposure, manipulation in oropharynx, nasopharynx, and use of energy devices. WHO recommends airborne precautions for aerosol generating

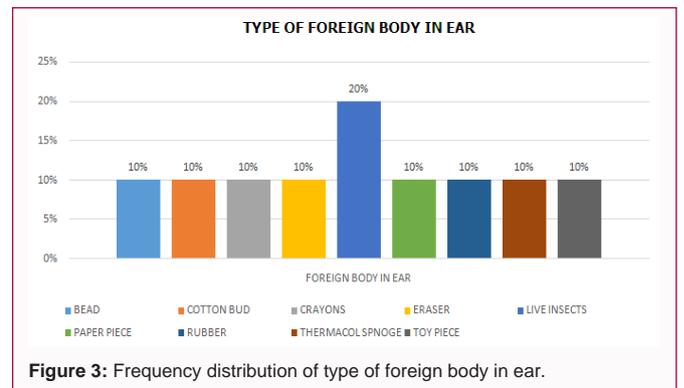


Figure 3: Frequency distribution of type of foreign body in ear.

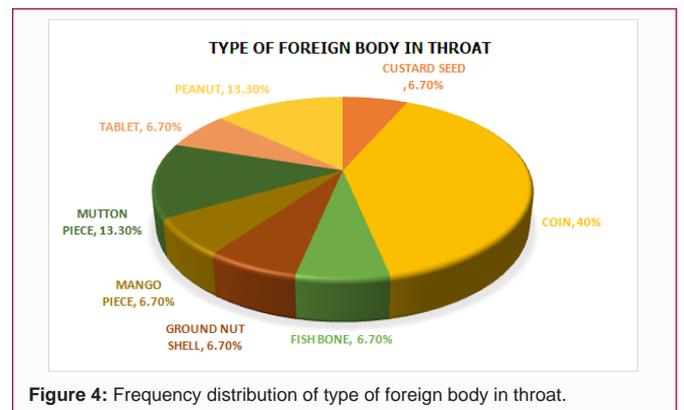


Figure 4: Frequency distribution of type of foreign body in throat.

procedures like use of PPE, N-95 or elastomeric respirator masks, donning and doffing procedures, vigorous hand washing practices [3].

Table 2: Nose.

S.no	Age/sex	History/symptoms	Investigations	Type of foreign body	Procedure done	COVID-19 rt-pcr status
1	3 yrs/fch	Accidental inoculation	CT PNS	Bead	Nasal endoscopy & foreign body removal	Negative
2	5 yrs/fch	Accidental inoculation	CT PNS	Chalk piece	Anterior rhinoscopy & foreign body removal	Not done
3	2 yrs/mch	Accidental inoculation	CT PNS	Shirt button	Nasal endoscopy & foreign body removal	Negative
4	3 yrs/fch	Accidental inoculation	CT PNS	Pomegranate seed	Anterior rhinoscopy & foreign body removal	Not done
5	6 yrs/fch	Accidental inoculation	CT PNS	Slate pencil	Anterior rhinoscopy & foreign body removal	Not done
6	4 yrs/fch	Accidental inoculation	CT PNS	Stone piece	Anterior rhinoscopy & foreign body removal	Not done
7	5 yrs/mch	Accidental inoculation	CT PNS	Tamarind seed	Nasal endoscopy & foreign body removal	Negative
8	4 yrs/mch	Accidental inoculation	CT PNS	Camphor	Anterior rhinoscopy & foreign body removal	Not done
9	4 yrs/mch	Accidental inoculation	CT PNS	Iron screw	Anterior rhinoscopy & foreign body removal	Not done
10	3 yrs/mch	Accidental inoculation	CT PNS	Black gram	Anterior rhinoscopy & foreign body removal	Not done
11	1 yrs/fch	Accidental inoculation	CT PNS	Toe ring	Nasal endoscopy & foreign body removal	Negative
12	1 ½ yrs/mch	Accidental inoculation	CT PNS	Shirt button	Nasal endoscopy & foreign body removal	Negative
13	3 yrs/fch	Accidental inoculation	CT PNS	Camphor	Anterior rhinoscopy & foreign body removal	Not done
14	3 ½ yrs/fch	Accidental inoculation	CT PNS	Embroidery cloth piece	Nasal endoscopy & foreign body removal	Negative
15	3 yrs/mch	Accidental inoculation	CT PNS	Chalk piece	Anterior rhinoscopy & foreign body removal	Not done
16	3 yrs/mch	Accidental inoculation	CT PNS	Iron screw	Anterior rhinoscopy & foreign body removal	Negative
17	22/f	Accidental inoculation	CT PNS	Neglected tamarind seed	Nasal endoscopy & foreign body removal	Negative
18	17/m	Accidental inoculation	CT PNS	Fishing hook	Anterior rhinoscopy & foreign body removal	Negative

Table 3: Throat.

S.no	Age/sex	History/symptoms	Investigation	Type of foreign body	Procedure done	COVID-19 rt-pcr status
1	1 ½ yrs/mch	Accidental ingestion	CT NECK	Groundnut shell	Rigid esophagoscopy	Negative
2	10 yrs/mch	Accidental ingestion	CT NECK	Coin	Rigid esophagoscopy	Negative
3	2 yrs/mch	Accidental ingestion	CT NECK	Coin	Rigid esophagoscopy	Negative
4	11 yrs/mch	Accidental ingestion	CT NECK	Coin	Rigid esophagoscopy	Negative
5	2 yrs/mch	Accidental ingestion	CT NECK	Coin	Rigid esophagoscopy	Negative
6	5 yrs/fch	Accidental ingestion	CT NECK	Coin	Rigid esophagoscopy	Negative
7	12 yrs/mch	Accidental ingestion	CT NECK	Coin	Rigid esophagoscopy	Negative
8	40 yrs/m	Accidental ingestion	CT NECK	Tablet with cover	Rigid esophagoscopy	Negative
9	47 yrs/f	Dysphagia	CT NECK	Mutton bolus	Rigid esophagoscopy	Negative
10	62 yrs/f	Odynophagia	CT NECK	Fish bone	Rigid esophagoscopy	Negative
11	40 yrs/m	Dysphagia	CT NECK	Mutton bolus	Rigid esophagoscopy	Negative
12	55 yrs/m	Dysphagia	CT NECK	Mango seed	Rigid esophagoscopy	Negative
13	18 month/m	Inspiratory stridor	CT CHEST, CXR	Groundnut	Rigid bronchoscopy	Negative
14	2 yr/m	Recurrent lower respiratory tract infection	CT CHEST, CXR	Peanut	Rigid bronchoscopy	Negative
15	3 yr/f	Accidental ingestion	CT CHEST, CXR	Custard apple seed	Rigid bronchoscopy	Negative

We recommend elastomeric respirators with filter type N-P99- 100 level masks, properly fitted goggles, face shields and PPE during all foreign body removal procedures especially for rigid bronchoscopy which are high risk aerosol generating procedures. We maintained social distancing and allowed only less number of well trained health care workers inside the theatre during the procedure.

Proper doffing and hand washing by the health workers involved during the procedure can help drastically in reducing the viral transmission. Wearing appropriate face mask during pre and postoperatively by the patient and minimizing the duration of procedure and stay in operation theatres are highly recommended. We were cautious and followed all safety precautions for emergency

cases until the swab report arrives. Patient discharged as early as possible after postoperative period unless necessities for follow up needed.

Foreign bodies during COVID-19 surpassed during lockdown, as the duration of stay at home has increased now a days. We encountered both extremes of history in children like stridor, or a stable child with no proper history of aspiration, other than recurrent LRT infections. Hence we suggest proper history and suspicion in paediatric age group as it determines the treatment modality in emergencies. In addition to that we also routinely asked history pertaining to COVID like fever, cough, breathlessness, residential address, contact history and travel history which helped us to be more

Table 4: Frequency distribution of age grouping.

S. no	Age grouping	Frequency (43)	Percent (%)
1	Less than 18 years old	34	79.1
2	More than 18 years old	9	20.9

Table 5: Frequency distribution of type of foreign body in nose.

S. no	Type of foreign body in nose	Frequency (18)	Percent
1	Bead	1	5.60%
2	Black gram	1	5.60%
3	Camphor	2	11.10%
4	Chalk	2	11.10%
5	Ecp	1	5.60%
6	Fish hook	1	5.60%
7	Iron screw	2	11.10%
8	Pom. seed	1	5.60%
9	S.b	2	11.10%
10	Slate pencil	1	5.60%
11	Stone piece	1	5.60%
12	Tam. seed	2	11.10%
13	Toe ring	1	5.60%
	Total	18	100%

cautious in few cases. For all stable cases we took CT chest so that we can look for CORADS grading and need not wait for swab report. If CT chest was suspicious of COVID pneumonia, then we planned for the procedure in a COVID-19 suspect theatre rather than the routine emergency theatre. We had separate team of anesthetist, staff and health care workers for COVID-19 suspect theatre to reduce the exposure.

Proper ventilation, adequate muscle relaxation and smooth extubation by anesthetist play a major role to reduce the exposure. Foreign body removal is not easy. It requires proper instruments and skill for successful retrieval. We used Storz ventilating rigid bronchoscopy with telescope for good visualization and optical forceps for removal of bronchus FB during COVID without multiple attempts which minimized the duration of procedure. Luckily we didn't encounter complications post operatively in all rigid endoscopy procedures. COVID-19 report came out to be negative for patients in all procedures done under General anesthesia.

Conclusion

While lockdowns enforced worldwide in controlling the transmission of COVID-19, they have a negative impact on the routine function of otolaryngology services for both emergency and non emergency cases. Every institution frame protocols for screening, triage and management of non-COVID patients with due precautions and ensure that emergencies in otolaryngology get attended timely and safety precautions enforced in preventing spread of infection among both patients and healthcare team. Based on our

experience, we have found that there were increasing numbers of foreign bodies during COVID-19 pandemic lockdown compared to pre-lockdown. As the absolute management for aerodigestive foreign body is early retrieval, even during COVID-19 the decision of wait and watch policy is not followed because it may cause acute life-threatening complications at any time. So it's better to manage every patient as COVID-19 suspect during this pandemic. We suggested and implemented pre-operative proper clinical history, testing with nasopharyngeal swab for RT-PCR and CT chest for all patients, so that we could be more precautious with patients as well by limiting the health care professionals in operation theatre. We maintained strict postoperative quarantine for the patients until swab results.

Since the children bound to be locked inside home due to lockdown, indoor playful activities were also increased with toys, stationary craft material; electronic gadgets backed up with button battery and associated with accidental exploration of unknown objects prone for accidental inoculation, ingestion and aspiration in the absence of care givers [4]. Frequent occurrence of foreign body in old age group was probably because people started concentrating more on experimenting their cooking recipes and frequent consumption of non-vegetarian recipes with poor masticating habits. The parents of children should be more cautious during lockdown for continuous supervision of their kid's activities so that we can prevent these frequent occurrences of foreign bodies to get locked in ear, nose and throat during COVID pandemic lockdown and avoid the stress faced by family members for hospital stay and general anesthesia. Prevention is the only way for both pediatric and geriatric population where as precautions in safety is the prime aspects of health care workers during retrieval by emergency procedures during the period of pandemic situation [5-7].

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