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Management of Aerodigestive Tract Foreign Bodies In A Rural Based Tertiary Care Hospital: An Experience of Two Years

[1]Debabrata Das , [2]Tanmoy Maitra, [2]Ashis Kumar Ghosh, [3]Jayanta Saha

Abstract:
Introduction:*Foreign bodies in aerdigestive tract are one of the common emergencies in ENT. A suspicious mind with meticulous history taking may save many lives. The study is about the experience of aerodigestive tract foreign bodies in tertiary care hospital.*
Material & Methods:*This prospective analysis was done in department of ENT,Burdwan Medical College & Hospital in a subgroup of 97 patients in a tenure of 2 yrs , from June2015-June2017.*
Results:*This study includes total 97 cases. Out of them 86 were digestive and 11 were airway foreign bodies.*
Conclusion:*It is the childhood era which got affected most followed by elderly in cases of denture impaction.*
Keywords:*Foreign body, coin, denture*

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I. Introduction

Aerodigestive foreign bodies are one of the common emergencies in ENT. Foreign bodies in airway commonly found in paediatric age group may lead to life threatening situation due to airway obstruction. Foreign bodies in food passage found in both children and adults.A high index of suspicion and early intervention may reduce the mortality and morbidity particularly in childhood age group.The recommended method of removal of an oesophageal and airway foreign body is endoscopic guided[1-3].More than 90%-95% of airway foreign bodies can be removed by rigid and flexible bronchoscopes[4].We are using hypopharyngoscope,oesophagoscope, rigid bronchoscope combined with optical forceps for removal of foreign bodies depending on their location.In our study we studied various parameters like age , sex, site of impaction of foreign body,nature of foreign body,method of removal and complications.

Materials & methods: This prospective analysis was done in department of ENT,Burdwan Medical College & Hospital in a subgroup of 97 patients.All the data regarding interventions done for removal of foreign body from aerodigestive tract in the period of June2015-June2017,collected from the departmental OT register.All patients underwent thorough evaluation to determine the presence of foreign body by means of taking meticulous history radiograph of soft tissue neck lateral view & chest radiograph.X-ray abdomen was done where no evidence of foreign body found in upper aerodigestive tract.

II. Results

Table1: Gender wise distribution of aerodigestive tract foreign bodies

Sl No	Gender	Digestive Tract No	%	Airway No	%
1	Male	52	60.47	7	63.64
2	Female	34	39.53	4	36.36

In our study,out of 97 patients we noted male preponderance with a number of 59cases (60.8%) and females in 38 cases (39.2%).The common site of impaction of foreign body is digestive tract with a number of 86 cases with 11 cases in airway.

Table 2: Age wise distribution of aerodigestive tract foreign bodies

SL No	Age(yrs)	Digestive tract No	%	Airway No	%
1	<10	56	65.12	8	72.73
2	11-20	7	8.12	2	18.18
3	21-30	2	2.33	0	-
4	31-40	1	1.16	0	-
5	41-50	2	2.33	0	-

6	51-60	6	6.98	0	-
7	61-70	9	10.47	1	9.09
8	>70	3	3.49	0	-
Total		86	100	11	100

The above table depicts there is bimodal peak with one at <10 yrs and another is between 61-70 yrs which signifies the extreme ages are the susceptible subgroups of foreign body impaction.

Table 3: Distribution as per lodgement of foreign body in digestive tract

Lodgement site	No of patient	%
Tonsillar fossa	3	3.49
Vallecula	3	3.49
Pyriform sinus	4	4.65
Posterior pharyngeal wall	1	1.16
Cricopharynx	58	67.44
Oesophagus	17	19.77
Total	86	100

According to the site of impaction it is cricopharynx with a number of 58(67.44%) is the commonest site of foreign body lodgement in digestive tract followed by oesophagus(19.77%), pyriform sinus(4.65%),vallecula(3.49%), tonsillar fossa(3.49%), posterior pharyngeal wall(1.16%).

Table 4 : Distribution as per lodgement of foreign body in airway

Lodgement site	No of patient	%
Glottis	1	9.09
Trachaea	1	9.09
Right main bronchus	7	63.64
Left main bronchus	2	18.18
Total	11	100

Amongst the foreign body in airway the Rt. Main bronchus is the commonest site with a no of 7(63.64%) due to its anatomical configuration.

Table 5: Intervention done for removal of foreign body in digestive tract

Intervention	No of patient	%
Oropharyngoscopic examination	11	12.79
Hypopharyngoscopy	58	67.44
Oesophagoscopy	17	19.77
Total	86	100

We used oropharyngoscopic examination, hypophryngoscopy and oesophagoscopy respectively for removal of foreign bodies according to the site in digestive tract.

Table 6: Intervention done for removal of foreign body in airway

Intervention	No of patient	%
Direct Laryngoscopy	1	9.09
Rigid Bronchoscopy	10	90.01
Total	11	100

It is rigid bronchoscopy with optical forceps that is used most in removal of foreign body in airway. One life threatening emergency with a meat bone at laryngeal inlet was dealt with direct laryngoscopic removal.

Table 7: Distribution of cases as per type of foreign body

Sl No	Type	Digestive tract		Airway	
		No	%	No	%
1	Coin	33	38.37	1	9.09
2	Meat bone	24	27.91	2	18.18
3	Denture	15	17.44	-	
4	Meat bolus	7	8.14	-	
5	Safety pin	4	4.65	-	
6	Ordinary pin	2	2.33	-	
7	Tooth Brush	1	1.16	-	
8	Walnut	0	-	2	18.18
9	Plastic whistle	0	-	2	18.18
10	Pea	0	-	4	36.37
Total		86	100	11	100

Varioustypes of foreign bodies that were removed are mentioned in the above mentioned table according to their common occurance. Coin was found to be the most common foreign body in childhood and dentures were common in the elderly.

III. Discussion

The foreign body,when it is taken inside oral cavity it can go any of the two available routes,digestive tract and respiratory tract.In our present study out of 97 patients,86(88.66%) presented with digestive tract foreign body while in other 11 (11.34%) patients foreign body was found in respiratory tract.This is keeping with a large study done by Kamat et al[5] ,where they found 86.2% of foreign body in digestive tract and 13.7% in airway.Hung et al [6]found 76% and 24.7% foreign bodies in digestive tract and airway respectively.Brooks et al[7]found it 80% and 20% respectively.In our study the incidence of foreign body in airway is far much less than that of foreign body in digestive tract. It may be due to misdiagnosis of airway foreign body in rural areas, as in most of the cases due to childhood affection, history is not suggestive due to poor communication. Among the foreign body impacted in food passage the cases range from 3 months to 84 yrs.

Table 8: Distribution of digestive tract foreign body below 10 yrs.

Sl. no	Age(Yrs)	No	%
1	0-1	21	37.5
2	1-5	29	51.79
3	5-10	6	10.71
Total		56	100

The above table clearly depicts 50 cases are in the age group below 5 yrs, it is due to the inherent tendency of children to put everything inside their mouth[8,9,10]

In case of artificial denture impaction it is mostly associated with taking a tablet, food or water. Haste eating, improper chewing are also responsible for impaction of large bolus of food in oesophagus. Elderly diabetics are more prone to this sort of events due to autonomic neuropathy[11].Cause of injuries due to foreign body in aerodigestive tract is attributed to anatomical varitations, childhood behavior, immature swallowing coordination and chewing capacity[12]. In adults associated psychiatric problem, risk taking behaviors, poor vision, sensory abnormality in oral cavity are susceptible to impacted foreign bodies[13]. Spectrum of signs and symptoms may vary according to the site of impaction of foreign body. It can ranges from pain in throat, dysphagia to complete oesophageal obstruction and aspiration[13].

Like that of Kamat et al.[5] our study also showed cricopharynx as the commonest site of foreign body impaction 50.5% and67.44% respectively. This also goes with the study done by Shivkumar et al [14].According to the commonest frequency we observed coin(38.37%) as a predominant foreign body followed by meat bone(27.91%) and others. This observation goes against the study done by Kamatet al[5] in which fish bone is the commonest foreign body. In our study out of 86 foreign bodies in digestive tract 33 are coins. Probably the poor socioeconomic status and ignorance of care givers attributed to the above.Inspite radiography is not confirmatory to detect presence of foreign bodies the advantage of it is far outweighs the disadvantages of missing one. In every cases of suspected foreign body ingestion we performed digital x-ray soft tissue neck(AP & Lateral view) and x-ray chest and abdomen were obtained only if the x-ray neck detects no foreign body. In case of radiolucent foreign bodies in food passage 22 out of 86 cases (25.58%) , we did a flexible fibre optic upper gi endoscopy to confirm the presence of foreign body. If it detected attempt of removal was done. Out of 22 cases only 1 case of meat bolus was removed via flexible endoscopy, rest of the cases were dealt with rigid oesophagoscopy. Out of 21 rigid oesophagoscopies no complications were encountered and the patients were discharged stably. The use of flexible endoscopy in doubtful cases served an useful tool to obviate the risks of general anaesthesia particularlyin elderly edentulous patients.

In the foreign bodies of airway our study revealed an extreme ages of distribution, 9 months to 62 yrs. Most common age group was under 10 yrs.The most common site of lodgement was right main bronchus (7 cases,63.64%) while 2 cases(18.18%) were in left main bronchus. This distribution is due to the anatomical configuration of right bronchus[15].In our study the vegetative foreign body, pea was found to be the most common airway foreign body, this observation goes with the study done by Bhadoliya et al[16] in which he also found vegetable foreign body as commonest occurance. Cases of suspected foreign body aspiration may present with normal auscultatory and radiologic finding, in this particular cases suspicious history of foreign body aspiration should guide us to put the patient for bronchoscopy. The most common presentation of airway foreign body in our study was dyspnea with cough, which is similar to the study done by Kim et al[17]. The presence of triad of inspiratory stridor, wheeze and diminished air entry in a child at play with a history of sudden cessation of breath is highly suggestive of an airway foreign body[18].

X ray chest is of very limited value because it is often normal in most of the cases. In our series out of 11 cases, we found 9 cases(81.81%) to have normal radiograph which is similar to the observation done by Bhadoliya et al[16]. He found 32(76.19%) normal x-rays out of 42 cases.

IV. Conclusion

This study gives an overview of incidence amongst foreign bodies in aerodigestive tract. The childhood age group below 11 yrs is most commonly affected. In our study coin followed by meat bone are the most common foreign bodies in digestive tract while cricopharynx is the most common site of impaction. Hypopharyngoscopic removal under general anaesthesia is the most common intervention done. In case of radiolucent foreign bodies in digestive tract, the examination with flexible endoscope prior rigid oesophagoscopy is preferred to detect the foreign body.Among the airway foreign bodies the pea, a vegetative foreign body was found to be the most common. The most common site of lodgement is right main bronchus and rigid ventilating bronchoscopy under general anaesthesia with retrieval through optical forceps is most commonly done. Negative radiological finding does not rule out foreign bodies. Meticulous history and thorough examination are the key factors to guide us for prompt management. This study also highlights the nature of foreign bodies most commonly encountered in children are coin which is not suitable for their age. This above fact points us to the fact that proper educational strategies to parents and safe childhood behavior are some of the ways to prevent this kind of surgical emergencies.

Fig1:Chestxray PA view showing coin at the level of cricopharynxchest,abdomen showing FB

Fig2:AP and lateral view of neck

Fig3:X-ray soft tissue neckShowingincreased width of prevertebral soft tissue shadow (H/O accidental denture ingestion)

Fig4:Denture after removal

Fig5:X-ray soft tissue neck lateral View showing end of tooth brushles

Fig6:X-ray neck AP view showing FB in soft tissue neck

Fig7:Oropharyngeal approach for removal of foreign body

Fig8:Foreign body after removal

Fig9:X-ray soft tissue neck AP & lateral view showing open safety pin

Fig10:X-ray soft tissue neck AP & lateral view showing linear foreign body

Fig11:X-ray soft tissue neck AP view showing a round foreign body with sharp edges.

Fig12:Foreign body after removal

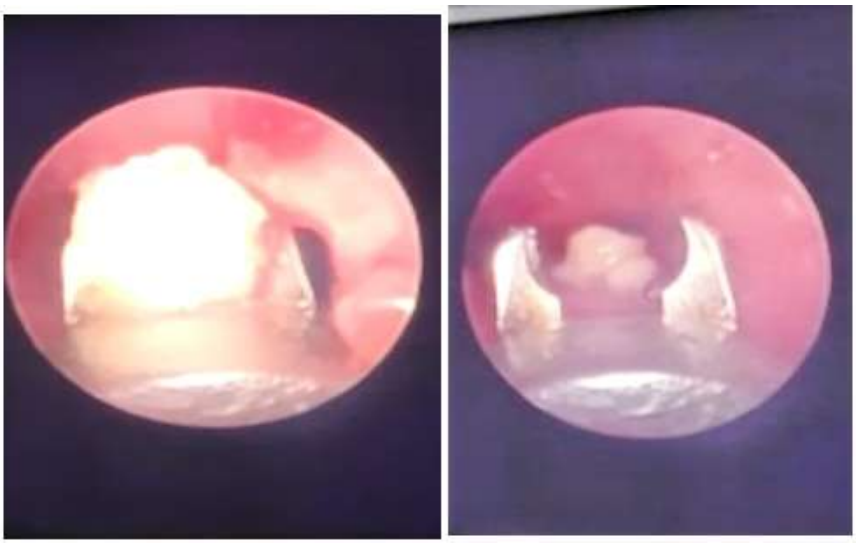

Fig 13,14: Removal of walnut and peanut from rtmain bronchus and trachea respectively

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