Retrospective Review of Surgical Management of Foreign Body Ingestion

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SUMMARY

Endoscopic examination and removal of foreign body under general anaesthesia are recommended for persistent symptomatic patient with or without significant findings on radiological examination. This report evaluates the management outcome of surgical removal of foreign body ingestion in upper gastrointestinal tract. A total of 70 cases with full documentation were reviewed retrospectively from June 1998 until December 2007. There were 32 male and 38 female with age range from 6 months to 87 years old (mean: 36.9 years). Sixty five patients (93%) were adults and 15 (7%) were below 13 years. Fish bones were the most common foreign body found (44.3%). Radiologically, foreign bodies were highly suspicious in 51 cases (76.1%). Intraoperatively, thirty six cases (70.6%) were positive. From 16 cases (23.9%) with normal radiograph, 10 cases (62.5%) were found to have foreign bodies. Therefore the plain radiograph is helpful, but clinical presentation is more reliable to determine surgical removal under general anaesthesia.

KEY WORDS:
Foreign body, Fish bone, Plain radiograph, Endoscopic examination

INTRODUCTION

Foreign body ingestion is one of the commonest cases seen in Otorhinolaryngology practice. Presentation may be varied include odynophagia, dysphagia or choking. It is usually related to the types of foreign body[1]. Most of small and blunt edge ingested foreign body pass harmlessly and spontaneously through the gastrointestinal tract. Nevertheless, big and sharp edge foreign body has higher possibilities to lodge at the narrow part of gastrointestinal tract and subsequently may cause complication such as abscess and esophageal perforation. Therefore, impacted foreign body requires urgent surgical attention. Endoscopic examination using direct laryngoscope rigid oesophagoscopy is the procedure of choice to remove the foreign body under control environment. It is safe to be done even to younger children[2].

We analyzed retrospectively and reported the various clinical presentations, type of foreign bodies, radiological and intraoperative findings for 70 cases of foreign body ingestion who underwent endoscopic examination with or without endoscopic removal of foreign body under general anesthesia.

MATERIALS AND METHODS

This study was performed at the Otorhinolaryngology Department, University Kebangsaan Malaysia Medical Centre, Malaysia. The medical records of 70 patients with full documentation were analyzed. All cases underwent examination under general anaesthesia with direct larynoscopy and rigid oesophagoscopy from June 1998 till December 2007 were included. The indications for endoscopy examination include symptomatic patient with highly suspected foreign body ingestion with or without significant finding from radiological investigation. Demographic data, duration of impaction, types of foreign body ingestion, clinical presentation, radiological and endoscopic findings were documented.

RESULTS

There were 70 cases enrolled in this study who underwent surgical management because of suspected foreign body ingestion. They comprised of 32 males (46%) and 38 females (54%). Age ranged from 6 months to 81 years old with mean age of 36.9 years. Sixty five patients (93%) were adults and 15 patients (7%) were children below 13 years old.

From the history, fish bones were the commonest object accidentally ingested (44.3%). This was followed by chicken bones (22.8%), coins (14.3%), dentures (8.6%), seafood shells (2.9%), meat (1.4%), bolster (1.4%), plastic cap (1.4%) and 2 patients (2.9%) were unsure of type of fish bone ingested (Table I). Most cases with coins ingestion were from children between 1 year old and 10 years old. There was only one case of coin ingestions by a mentally challenged adult. Fifty four patients (77.1%) presented to us within 24 hours of foreign body ingestion and 16 patients (22.9%) after 24 hours. Three of them after a week and one of them after two weeks.

Majority of patients came with odynophagia (82.8%). Seven patients (10%) had other symptoms such as dysphagia, vomiting and choking. Five patients (10%) were asymptomatic (Table II). In children, the foreign body ingestions were witnessed by family members or caretaker in 33.3%.

Upon examination, 2 patients (2.9%) had fever. Both of them presented to us after 4 and 5 days foreign body ingestion. Nineteen patients (27%) had neck tenderness, 57 patients (81.4%) had normal oral cavity examination and only 8 patients (11.4%) had pooling of saliva.

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Fifty three patients (75.7%) were examined with indirect laryngoscopy/ and 70º rigid laryngoscopy/ and flexible nasopharyngolaryngopy at presentation. Out of these, 31 cases (44.3%) were found to have normal findings and 7 cases had foreign body stuck at pyriform fossa (4), vallecula (1), vocal cord (1), tonsil (1). 10 patients had pooling of saliva and 5 patients had injected arytenoid and aryepiglottic fold and another one patient had slough at base of tongue. Fourteen patients (20%, 3 of them were adult) were uncooperative for this examination. No documentation was made for the remaining 3 cases.

Plain x-ray is the most popular radiological examination done (95.7%) to visualize the site of foreign body. The most common x-ray done is lateral (Figure 1) and anteroposterior neck x-ray with soft tissue view. Out of these numbers, foreign bodies were highly suspicious in 51 cases (76.1%) with evidence of opacities, air trapping or prevertebral widening (Table III). Intraoperatively, thirty six cases (70.6%) were positive. However 15 cases (29.4%) turn up to be negative findings (no foreign body seen intraoperatively). Whereas 16 cases (23.9%) which showed no signs of foreign bodies from radiological examination turn up to be positive findings intraoperatively in 10 cases (62.5%). There were 6 cases (19.4%) of fish bones ingestion which showed normal findings radiologically. Coins ingestion in all patients was well demonstrated in plain neck or chest x-ray. Two patients underwent computed tomography scan due to suspicious of abscess. However no frank abscess was noted intraoperatively and they were treated conservatively.

Intraoperatively, foreign bodies were identified in 48 cases (68.6%). Twelve cases (17.1%) showed evidence of foreign bodies' impaction with no more present of foreign body which was most probably already spontaneously passed out through alimentary tract. Another 10 cases (14.3%) showed normal findings. Out of 48 cases, foreign body most commonly lodged in upper oesophagus (70.8%). Seventeen cases of foreign bodies identified at cricopharyngeus area with 9 cases of coins ingestion. Other sites include tonsil (6.3%), hypopharynx (8.3%), larynx (n=2, 4.2%), middle oesophagus (6.3%) and lower oesophagus (4.2%) (Table IV).

Post operatively 8 patients were put on Ryles tube feeding for up to 3 days due to mucosal tear. Four of them secondary to post fish bone ingestion. However, there were no major complications such as oesophageal perforation or retropharyngeal abscess.

Table I: Types of foreign body ingestion

Types of foreign body	Number	Percentage (%)
Fish Bone	31	44.3
Chicken Bone	16	22.8
Coin	10	14.3
Denture	6	8.6
Seafood Shell	2	2.9
Meat	1	1.4
Gauze	1	1.4
Plastic Cap	1	1.4
Unidentified	2	2.9

Table II: Clinical presentation of patients suspected fish bone ingestion

Symptom	Number	Percentage (%)
Odynophagia	58	82.8
Dysphagia	2	2.9
Choking	1	1.4
Vomiting	2	2.9
Change of voice	2	2.9
Asymptomatic	5	7.1

Table III: Plain radiograph findings of patients suspected foreign body ingestion

Findings	Number	Percentage (%)
Opacities	40	59.7
Air pocket	8	11.9
Prevertebra widening	3	4.5
Normal	16	23.9

Table IV: Location of foreign body impacted

Site	Number	Percentage (%)
Oropharynx	3	6.3
Hypopharynx	4	8.3
Larynx	2	4.2
Upper oesophagus	34	70.8
Middle oesophagus	3	6.5
Lower oesophagus	2	4.2

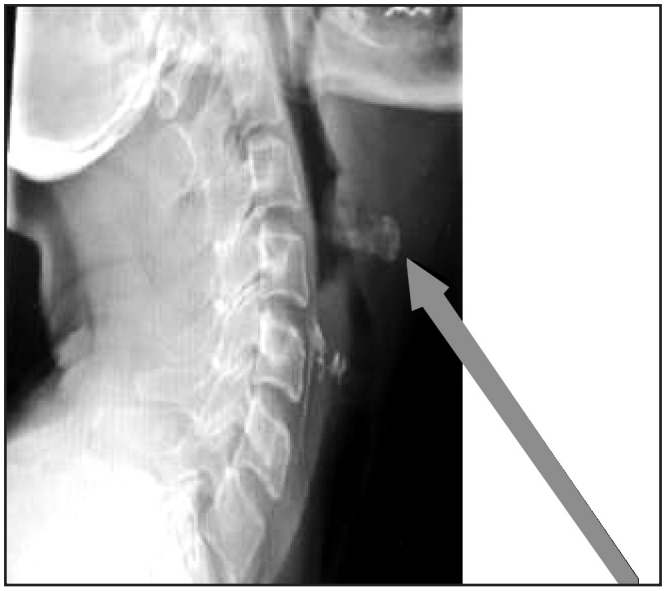

Fig. 1: Lateral neck X ray showed Fish bone at the upper oesophagus (Arrow)

Fig. 2: Fish bone after removal

DISCUSSION

Ingestion of foreign body is one of the most common cases encountered by an Otorhinolaryngologist. The types of foreign body ingestion are usually related to age and eating habits. The commonest type of foreign body ingestion in adult was fish bone (44.3%) (Figure 2), most probably because fish is the most popular dish in Asian country. It is consistent with other reports of foreign body's ingestion in Asian population[2-4].

Whereas in children, coins are the most common objects swallowed[5, 6]. We reported that 60% of the children swallowed this object. Children have a natural tendency to place objects in the mouth[7] especially coins which are rounded in shape and has attractive shining colour.

There are varieties of clinical presentations in patients with foreign body ingestion. Odynophagia is the commonest symptom in bigger children and adults that brings them to the hospital. However, it is difficult to elicit the symptoms from younger children, who came to the hospital with history of foreign body ingestion witness by family members. Some of them may present with choking, drooling of saliva, vomiting or refused to eat. Most of patient presented to us within 24 hours of foreign body ingestion because of the severity of the pain endured. However, we also reported that 22.9% of the patients came after 24 hours of foreign body ingestion and two of them only came after a week of foreign body ingestion. This is most probably because some patient who presented to casualty or outpatient clinic with foreign body ingestion with minimal symptoms and normal radiological findings were being advised to be observed at home and only came back once the symptom persists or worsens.

Indirect laryngoscopy, rigid laryngoscopy and flexible nasopharyngoscopy are very useful methods used to determine the site of foreign body. However we only able to visualize at the level of hypopharynx and larynx and we also need patients's cooperation. This is important to avoid further injury and dislodgement of foreign body.

Radiograph is a valuable investigation[8]. A plain film will demonstrate well an opaque foreign body such as metal, glass and gravel and the site of arrest. However, it is difficult to detect radiolucent object such as rubber, meat, chicken bones and wood[9, 10]. Hence, it is important to look for other signs of foreign body impaction such as air trapping or prevertebral widening. Seventy six percent of our cases showed significant findings from plain x-ray. Our patients had anteroposterior and lateral radiographs of the neck and chest to determine the presence, type and location of foreign body. However, no foreign body was identified intraoperatively in 11 cases. These may be due to foreign body already dislodged and spontaneously passed out through alimentary tract. We also found that not all types of fish bones showed positive findings radiologically. There were 19.4% of fish bones failed to be demonstrated on the plain radiograph. However, the type of fish bone was not analyzed due to incomplete documentation.

Coins are well demonstrated on plain radiograph. Steve CL *et al* reported that single coin is readily identified by most examiners with a range of 91.3-100%[5]. Computed tomography scan and magnetic resonance imaging have been suggested to visualize a nonradiopaque object and surrounding structures and soft tissues[10]. However, it has limited value due to cost effectiveness, longer time required and limited availability in clinical settings. We proceeded with computed tomography scan for cases highly suspicious of abscess. Ibrahim T *et al*[9] reported that ultrasonography is superior to plain and soft tissue radiographies in detecting nonradiopaque foreign bodies. However ultrasonography is not routinely done in our centre.

In our study, 68.8% cases of foreign body ingestions were identified intraoperatively with 70.8% were found at upper oesophagus. Most oesophageal foreign bodies are reported to lodge in upper oesophagus[3]. As we know, the narrowest part of the oesophagus is the commencement at the cricopharyngeal sphincter, 15cm from the incisor teeth. We also found that 50% of these foreign bodies impacted at cricopharyngeal area. Therefore, it is important for us to inspect the upper oesophagus carefully before pushing down the rigid scope further. This is to avoid further damage of the mucosa lining which is most probably already disrupted by the presence of sharp object. This is also important to avoid the migration of foreign body. We also reported that some patients still required surgical management even though foreign body was being visualized during examination in the clinic or ward. This is due to the fact that they were not cooperative for the removal under local anaesthesia especially in children. There was no major complication observed in our study. Some minor complication such as mucosal tear was treated conservatively with antibiotics. Eight patients were kept nil by mouth and put on Ryles tube feeding for 1 or 2 days. All of them recovered well. Factors that might predispose patients to complication include delayed presentation, type and size of foreign body ingestion and medical illness such as diabetes mellitus.

In conclusion, we would like to emphasize on the importance of clinical presentation in determining the requirement of surgical removal under general anaesthesia. The plain radiograph is helpful, but clinical presentation is more reliable to determine surgical removal under general anaesthesia.

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