

Frequency of Patients Passing an Impacted Esophageal Meat Bolus by Conservative Method Alone

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Abstract

Objectives: To determine the frequency of patients passing the impacted esophageal meat bolus by conservative management

Methods: After obtaining permission from ethical committee of Hospital, a total of 62 patients meeting the study criteria were recruited in the study which was conducted in Department of Otorhinolaryngology, Services Hospital, Lahore. Demographic information (name, age, gender, contact) was also obtained. Patients with clinical suspicion of impacted esophageal food bolus of age 20-50 years of either gender were included. Patients with known esophageal abnormalities like stricture, web or growth on either barium swallow or esophagogastroduodenoscopy, peptic ulcer and GERD were excluded. After taking informed written consent from each patient, single intravenous dose of buscopan 20mg was given to each patient. Each patient was followed by the researcher himself for 24 hours to assess the passage of food bolus.

Results: 20-50 years was the age range in our study, with mean age being $34.10 \pm .63$ years. Majority of the patients 32 (51.61%) were between 20 to 35 years of age. Out of 62 subjects, 37 (59.68%) were male, 25 (40.32%) were females with male to female ratio 1.5:1. In our study, Frequency of patients passing the impacted esophageal meat bolus by conservative management was found in 51 (82.26%) patients.

Conclusion: This study concluded that there is a high frequency of patients passing the impacted esophageal meat bolus by conservative management.

Keywords: Esophagus, foreign body, conservative management.

Introduction

The accidental impaction of a meatbolus in the esophagus is a common occurrence especially in an under-developed society.¹ After rear and nose, the esophagus is the third commonest site for foreign body impaction.² up to eighty percent of impacted foreign bodies are held up just above the cricopharynx.³ 13 episodes per 100,000 population of foreign body impaction are reported annually.⁴ In a study by Damghani M et al⁵, foreign bodies were detected in 77% of the esophagoscopies and in the

rest, inflammation, ulcer, and stricture formation was found. In another study, 77.8% were detected to have foreign bodies and in the remaining, soft tissue mass, bleeding, ulcer, edema, and abscess were reported.⁶

Higher incidence of foreign body ingestion occurs in pediatric population in between six months to six years of age while in adult population foreign body impactions more commonly occur among patients with known mental retardation, mental impairment caused by liquor and old age and psychiatric illnesses as reported by Lee et al.⁷ Usually, two types of foreign bodies are encountered, true foreign bodies (coins, buttons) and food related foreign bodies. Most Foreign body impactions are seen in children at the narrowest portion of the alimentary tract which is the cricopharynx that lies 15cm from the upper central incisors.^{1,8}

Majority of impacted esophageal foreign bodies (80%–90%) pass spontaneously without any surgical intervention.^{9,10} However, approximately 10%–20%

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of cases of foreign body impactions require rigid or flexible endoscopic removal under general or local anesthesia, whereas, less than 1% will need open surgery for foreign body removal or to treat complications.^{10,11} American Society of Gastrointestinal Endoscopy (ASGE) guideline, for management of impacted foreign bodies, suggests immediate surgical intervention for patients who are having absolute dysphagia.¹² If the patient is not in distress, they are observed for 24 hours, before opting for any invasive procedures.¹³

Many pharmacological or non-pharmacological prokinetic agents have been used to dislodge the impacted food bolus with variable success.^{14,15} A survey conducted in UK showed that the majority of practitioners did not immediately proceed to rigid endoscopy; rather, they preferred antispasmodic drugs (83%), the most common being hyoscine butylbromide (Buscopan) and diazepam, that usually allows the esophageal lumen to relax and facilitate the passage of the impacted bolus.¹⁶ Rate of complications increase in the hands of an inexperienced surgeon in managing unrecognized distal esophageal food bolus impactions.¹⁷ In a study, about 80% of cases, the impacted bolus may pass uneventfully through the gastrointestinal tract without endoscopic aid.¹⁸

The purpose of this study was to determine the frequency of patients passing the impacted esophageal meat bolus by conservative method alone in local population. Previously the available literature on this is scarce, so our study will not only be a useful addition to the existing literature, but will also provide us with local statistics. As in majority of our setups, the patients with impacted meat bolus do not take the conservative trials, instead they are subjected to endoscopic removal or surgery, thus the results of our study will encourage the clinicians to develop a conservative approach in these particular patients, hence avoiding the invasive procedures in order to reduce the morbidity of the affected.

Methods

This was a descriptive, case series study conducted in the Department of Otorhinolaryngology Unit I, Services Hospital, Lahore, from 2nd September 2017 to 1st March 2018. The calculated sample size was 62

cases with 95% confidence level, 10% margin of error and taking frequency of patients passing the impacted esophageal meat bolus by conservative method alone as 80.0%⁵ by using following formula.

$$\begin{aligned} \text{sample size} &= n \\ &= \frac{(Z_{1-\alpha/2} P(1-P))^2}{d^2} \end{aligned}$$

Non-probability, Consecutive sampling was used.

Study cases between age of 20-50 years of both genders were selected according to the following criteria. Patients with clinical suspicion of impacted esophageal food bolus (Presence of any food bolus in esophagus on x-ray (radiolucent shadow) and with dysphagia (difficulty in swallowing), odynophagia (painful swallowing), anorexia (sense of vomiting) on history, and duration of symptoms of ≤ 24 hours were included in the research.

Patients with known esophageal abnormalities like stricture, web or growth on either barium swallow or esophagogastroduodenoscopy (OGD), patients with history of peptic ulcer (assessed on history and medical record) and patients with history of gastroesophageal reflux disease (assessed on history and medical record) were excluded from the study.

After ethical approval and written informed consent from 62 patients presenting to ENT emergency of Services Hospital Lahore, who fulfilled the inclusion and exclusion criteria were recruited. A single intravenous dose of Buscopan 20mg was given to each patient. Each patient was followed by the researcher himself for 24 hours to assess the passage of food. The patients who continued to exhibit symptoms of impaction for more than 24 hours, were taken to theatre for endoscopic removal under GA. All patients who were able to eat and drink without any difficulty were discharged from the ward. This research data was recorded on a specially formulated proforma which consisted of two parts. Part 1 includes the patient's bio-data; part 2 consists the study variables.

Statistical Analysis

The data was processed using SPSS version 22 and analyzed. The results were presented as mean and standard deviation for quantitative variables i.e. age

and duration of symptoms. Frequency and percentage were calculated for qualitative variables like gender, type of food bolus (meat/chicken/other including non-organic foreign bodies), site of impaction in esophagus (upper/middle/lower), previous history of food impaction (yes/no) and passage of impacted esophageal food bolus (yes/no).

Effect modifiers like age, gender, duration of symptoms, type of food bolus (meat/chicken/other), site of impaction in esophagus (upper/middle/lower) and previous history of food impaction (yes/no) were controlled through stratifications. Post-stratification chi square was applied to see their effects on outcome and p value ≤ 0.05 was considered as significant

Results

Age range in this study was from 20 to 50 years with mean age of 34.10 ± 7.63 years. Majority of the patients, 32 in number (51.61%) were between 20 to 35 years.

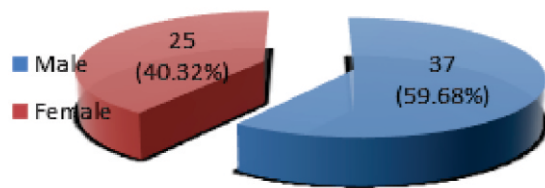


Figure I: Distribution of Patients According to Gender (n=62).

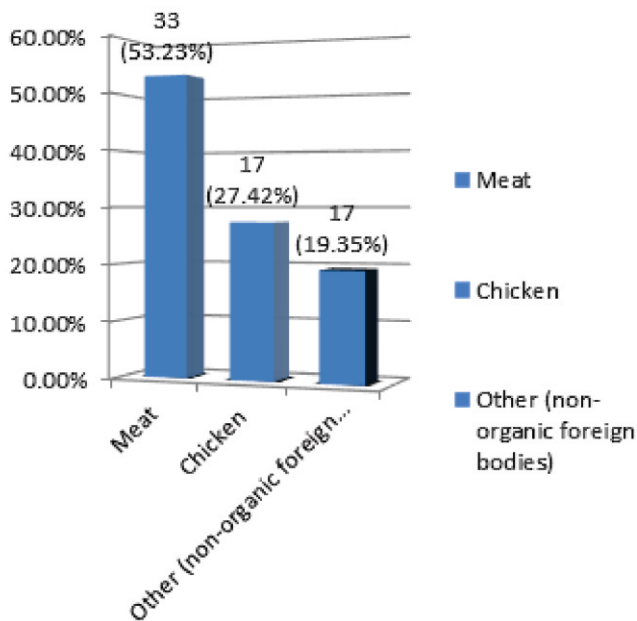


Figure II: Distribution of Patients According to the Type of Bolus (n=62)

Out of 62 patients, 37 (59.68%) were male and 25 (40.32%) were females with male to female ratio 1.5:1 as shown in Figure I. Mean duration of symptoms was 11.53 ± 5.68 hours. Distribution of patients according to the type of bolus as shown in Figure II.

In our study, Frequency of patients passing the impacted esophageal food bolus by conservative management was found in 51 (82.26%) patients.

Table I & II have shown the stratification of passage of impacted esophageal food bolus with respect to site of impaction and type of food bolus respectively.

Table 1: Stratification of Passage of Impacted esophageal Food Bolus with Respect to Site of Impaction in Esophagus.

Site of impaction in esophagus	passage of impacted esophageal food bolus		p-value
	Yes	No	
Upper	16	04	0.607
Middle	18	05	
Lower	17	02	

Table 2: Stratification of passage of impacted esophageal food bolus with respect to type of food bolus.

Type of food bolus	Passage of impacted esophageal food bolus		p-value
	Yes	No	
Meat	28	05	0.277
Chicken	15	02	
Other (non-organic foreign bodies)	08	04	

Discussion

Foreign body (FB) ingestion and esophageal food impactions are a common ENT emergency. In adults, FB ingestion occurs more commonly in those with psychiatric illnesses, alcohol intoxication, and incarcerated individuals in quest of secondary gain.¹⁹⁻²² A research conducted on 262 adult individuals with FB ingestion and impaction cases, 92% were deliberate, and 85% of patients had an underlying mental health issue. Patients with underlying esophageal pathology often present with food bolus impaction. Known cases of congenital malformations are also at increased risk for FB impaction. Certain occupations like carpenters and tailors have higher chances of FB ingestion as they hold nails and pins in their mouth while working.²³

We have conducted this study to determine the

frequency of patients passing the impacted esophageal meat bolus by conservative method alone. Age range in this study was from 20 to 50 years with mean age of 34.10 ± 7.63 years. Majority of the patients 32 (51.61%) were between 20 to 35 years of age. Out of 62 patients, 37 (59.68%) were male and 25 (40.32%) were females with male to female ratio 1.5:1. In our study, Frequency of patients passing the impacted esophageal meat bolus by conservative method was found in 51 (82.26%) patients. A survey conducted among UK practitioners showed that the majority did not usually proceed immediately to rigid endoscopy for removal of meat bolus impaction; rather, they gave precedence to use of antispasmodic drugs (83%), to try to induce spontaneous passage of the impacted meat bolus.¹⁶ In a study, in about 80% of cases, the ingested material passes uneventfully through the upper gastrointestinal tract.¹⁸

Success rate by conservative management alone was 68% better than the endoscopic approach in the study conducted by Basavaraj and Penumetcha. The literature search revealed one case study and two retrospective cohort studies comparing hyoscine butylbromide against no invasive treatment for esophageal meat bolus impaction. Another study has shown 82% success rate of conservative management using intravenous hyoscine. Hyoscine butylbromide is widely used in the management of esophageal meat bolus impaction. With the total of 74 subjects, the above-mentioned studies concluded that there was no significant difference in disimpaction rates between those patients treated with hyoscine butylbromide and those who received no treatment. The lack of statistical supremacy to small sample sizes suggests further studies are needed.²³⁻²⁵ The evidence for hyoscine butylbromide as a treatment for esophageal soft food bolus obstruction is questioned in a publication from 2007. The evidence backing the use of hyoscine butylbromide appears to stem from a recommendation in a 1997 textbook that misquotes a 1991 study detailing 10 out of 16 patients which were given “antispasmodics”, were spontaneously relieved of the obstruction. The study is questioned as a cohort of only 16 patients, which provides results of low statistical power and more relevantly, none of the 5 different “antispasmodic” drugs used in the study actually included hyoscine butylbromide.

A literature review showed that four retrospective

cohort studies and one case report were acknowledged. These case studies stated disimpaction rates of 100%, 100%, 100%, 80% and 65%, with prokinetics alone respectively. One patient suffered a mucosal tear to the oesophagus. The prokinetic agents vary in each study, the literature on the use of fizzy drinks in esophageal soft food bolus obstruction has a small patient number. Nevertheless, the results of the studies were positive, with 79% of cases experiencing disimpaction with a prokinetic agent alone or with barium meal for imaging. This combination therapy has not been formulated in a larger study. Larger trials are required to provide evidence in favor of their use. However, considering the fact that carbonated drinks are inexpensive, safe and apparently effective to some extent, their use in the management of esophageal soft food bolus disimpaction may be recommended.²⁴

Other known pharmacological agents include glucagon, which reduces esophageal motility and relaxes the lower esophageal sphincter. However, it is not recommended to be effective in treating impacted esophageal coins in pediatric population, but it has been used in the managing esophageal soft food bolus obstruction. A comprehensive research revealed a randomized controlled trial showing no significant difference when comparing glucagon combined with diazepam against placebo for management of esophageal soft food bolus impaction. Two studies investigating 92 and 222 cases of esophageal soft food bolus obstruction were carried out. In the first study, all 92 patients were given glucagon and 30 were dis-impacted without endoscopy. 10 out of 106 patients were given glucagon and 20 out of 116 patients that were given no medication, dis-impacted without further intervention in the second study.²¹ The results suggest that administration of glucagon gives similar results in relieving esophageal soft food bolus obstruction as oppose to when no medication is given.

A large number of clinicians dealing with this emergency are not well versed with the protocols of treating patients suffering from food bolus impaction. This is the reason that small number of patients were taken to the OR within 12-hours observation, or they could not get any medical treatment. Such patients are exposed to unnecessary endoscopy and anesthesia related risks. Therefore, operating rooms and surgeons become overworked.

Conclusion

This study concluded that there is a high frequency of patients passing the impacted esophageal meat bolus by conservative method alone. So, we recommend that conservative approach should be encouraged in these particular patients and avoid the invasive procedures in order to lessen the morbidity associated with rigid endoscopies.

Author's Contributions

DA: Data Collection

SHS: Introduction, literature review, Discussion

GM,AAA: Article references

MQN: Statistical Analysis

MAA: Edited

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