

## Oesophageal foreign bodies caused by meat consumed during the Sacrifice Feast: Our single-centre experience

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### Abstract

**Objectives:** To compare the frequency of oesophageal foreign bodies during the month of Eid-ul-Adha with other months.

**Methods:** This retrospective study was conducted at YüzüncüYil University Hospital, Van, Turkey, during 2012-16, and comprised individuals who were treated for bone and/or meat fragments lodged in the oesophagus. The number of hospital admissions with diagnosis of oesophageal foreign bodies during Eid-ul-Adha episodes were extricated and compares with similar date for the other months. Minitab 13 was used for statistical computations.

**Results:** Among the 289 cases in the study, a pronounced increase in the number of patients was observed during Eid-ul-Adha, with the most frequent symptoms in 263(91%) patients being dysphagia and odynophagia. The number of patients with oesophageal foreign bodies diagnosed during Eid-ul-Adha were significantly higher than the other months ( $p < 0.05$ ).

**Conclusion:** An increase in cases of oesophageal foreign bodies was found during Eid-ul-Adha.

**Keywords:** Oesophagus, Foreign body, Eid ul-Adha. (JPMA 68: 1193; 2018)

### Introduction

Oesophageal foreign bodies are a common problem encountered in children and adults and it can lead to severe morbidity and mortality.<sup>1,2</sup>

Foreign bodies ingested by children tend to be more rounded than those observed in adults. In the latter, food-related foreign bodies are more likely to be ingested, and frequently the food is found to be unchewed.<sup>3</sup>

In children, a foreign body may be seen in the oesophagus in cases where they are in the habit of putting things that they have grabbed into their mouths, their chewing functions are also not sufficiently developed. They also tend to put objects into their mouths which cannot be swallowed. Regarding the aetiology in adults, while swallowing a foreign body without noticing due to loss of feeling in the hard palate is an issue for those who use total dental prostheses, incidence in adults occurs because of swallowing a piece of food before adequately chewing, as happens with some obese people. It is also common in chronic alcoholics, epileptic patients, and the mentally challenged.<sup>1</sup>

Eid-ul-Adha is a religious festival celebrated by Muslims

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worldwide as a commemoration of the Prophet Ibrahim's (Abraham's) willingness to sacrifice his son Ismael to Allah. It is celebrated once a year and lasts three days. During this festival, sacrificial animals are sacrificed for the sake of Allah. In Eid-ul-Adha, the conditions necessary for the sacrificial animal to be slaughtered are that the person carrying out this duty is in full mental health and financially secure according to religious measures. Although the purpose of this worship is primarily to gain the esteem of Allah, from a social aspect, it also strengthens the relationship between people and ensures that people who cannot afford to meet their nutritional needs due to limited financial resources can benefit from this.

The number of patients with bone and/or meat lodged in the oesophagus in our clinic has reached to serious levels and these cases spiked in certain months compared to the rest of the year. Subsequent to determining this, our clinic planned to investigate which months saw the number of these cases increase, and identify the cause of this increase.

The current study was planned to provide evidence of a pathology increasing in frequency with religious celebration in the international literature, as well as to create awareness of this subject in doctors working in areas where Muslims are concentrated.

### Patients and Methods

This retrospective study was conducted at Yüzüncü Yil

University Hospital (YYUH), Van, Turkey, and comprised date related to 2012-16 period.

YYUH is a reference hospital located in eastern Turkey and serves population from the surrounding areas.

The dates of Eid-ul-Adha from 2012 to 2016 were determined (Table-1), and the relationship between the dates the patients sought medical treatment and the dates of Eid-ul-Adha was statistically analysed.

Data for patients who presented with foreign objects in the oesophagus were collected from the records of the automated information system of the hospital and examined individually. Patient information, such as age, gender and the use of green health cards, which are an indicator of socio-economic status, disease symptoms, type of foreign object, foreign object localisation, diagnostic radiological procedures and treatment interventions applied, and the dates when the patients sought medical treatment were determined for all cases.

Those who ingested foreign bodies other than pieces of bone and/or meat (coins, plastic or metal objects, etc.) were excluded from the study.

Symptoms of each case, foreign body localisation, diagnosis and treatment modalities, morbidity, and mortality were all retrospectively reviewed.

Eid-ul-Adha dates from 2012-2016 were determined and the relationship between the dates patients sought medical attentions and the Eid-ul-Adha dates was investigated.

Descriptive statistics for the studied variables were presented as number and percentage. The proportion of

patients for the days and months were compared with Z test for two proportions. A level of 5% was considered statistically significant and MINITAB 13 was used for all statistical computations.

## Results

Of the 615 cases presenting with foreign objects in the oesophagus, 326(53%) were excluded owing to the nature of the foreign body. Of the 289(47%) patients who ingested pieces of bone and/or meat, 113(39%) were male, 176(61%) were female, and the overall mean age was  $66.55 \pm 14.84$  years.

It was found that 194(67.12%) cases were in the 60-79 age-group. Besides, 262(90.65%) patients were using the free health service the green health card, indicating that most patients were of low socio-economic status.

The most frequent symptoms in 263(91%) of patients were dysphagia and odynophagia. In 165(57%) cases, aspiration to the respiratory tract because of an inability to swallow the secretions resulted in respiratory distress.

Of the cases of foreign bodies, in 182(62.99%) the oesophagus was in the first stenosis, in 96(33.21%) second stenosis, 9(3.11%) were located inside the mouth, and 2(0.69%) were distal.

Cervical postero-anterior and lateral radiographs and postero-anterior chest-X-rays were taken for the diagnosis of all patients. In 47(16.37%) suspected cases, cervical and thoracic computerised tomography (CT) were requested to confirm the diagnosis.

In all cases, foreign bodies were evaluated by rigid

**Table-1:** Eid-ul-Adha months compared to other months within the same year.

Year	Months	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Annual total number of patients
2012	Number of patients	7	8	9	8	4	6	1	8	5	15 (*)	3	5	79
	P (***)	0.063	0.111	0.181	0.111	0.013	0.032	0.001	0.111	0.015		0.005	0.015	
2013	Number of patients	4	9	3	2	6	1	4	2	3	17 (*)		1	52
	P (***)	0.003	0.066	0.001	0.001	0.007	0.001	0.003	0.001	0.001		0.001	0.001	
2014	Number of patients	1	5	4	5	3	3	1	1	4	13 (*)	2	5	47
	P (***)	0.001	0.032	0.030	0.032	0.012	0.012	0.001	0.001	0.030		0.004	0.032	
2015	Number of patients	5	6	2	4	7	3	5	4	10 (**)		4	6	56
	P (***)	0.162	0.278	0.162	0.151	0.428	0.074	0.162	0.151		0.001	0.151	0.278	
2016	Number of patients	3	6	3	5	2	3	6	4	11 (**)	4	3	5	55
	P (***)	0.042	0.184	0.042	0.101	0.015	0.042	0.184	0.093		0.093	0.042	0.101	

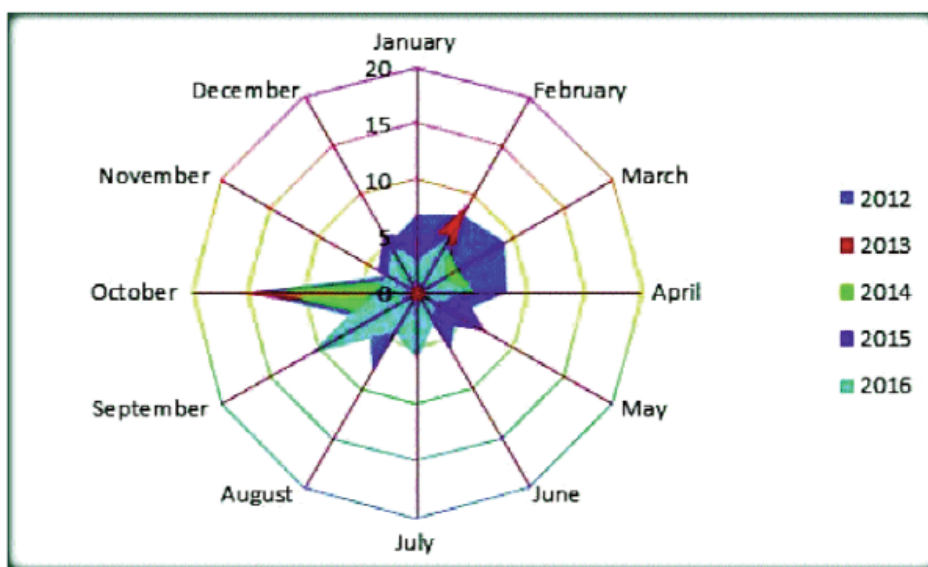
\* Number of patients during the month of Eid ul-Adha (October) in the years 2012-2014

\*\* Number of patients during the month of Eid ul-Adha (September) in the years 2015-2016

\*\*\* Statistical comparison of number of patients during Eid ul-Adha months versus other months.

**Table-2:** Eid-ul-Adha days compared to other days within the same month.

		Dates	Number of patients	p
2012 Eidul-Adhamonth (October)	Dates in October	1-24	1	0,038
	Dates of holiday in October	25-28	12	
	Dates in October	29-31	2	
2013 Eidul-Adhamonth (October)	Dates in October	1-14	1	0,001
	Dates of holiday in October	15-18	13	
	Dates in October	19-31	3	
2014 Eidul-Adhamonth (October)	Dates in October	1-3		0,032
	Dates of holiday in October	4-7	10	
	Dates in October	8-13	3	
2015 Eidul-Adhamonth (September)	Dates in September	1-23		0,007
	Dates of holiday in September	24-27	9	
	Dates in September	28-30	1	
2016 Eidul-Adhamonth (September)	Dates in September	1-11		0,003
	Dates of holiday in September	12-15	10	
	Dates in September	16-30	1	



**Figure:** Edi-ul-Adha versus the rest of the year.

oesophagoscopy under general anaesthesia. In 2(0.69%) cases, the pieces of meat located in the distal oesophagus were pushed toward the stomach, while in the other cases the foreign bodies were extracted. During the procedures, malignant obstruction of the oesophagus lumen was detected in 4(1.38%) cases, and hiatal hernia in 2(0.69%). Scleroderma was detected in 1(0.34%) patient in the post-treatment follow-ups. Surgical intervention was not necessary to remove the foreign bodies in any of the cases.

Atelectasis developed in 11(0.38%) case following the procedure. While the secretions were cleared by rigid

bronchoscopy in 3(27.27%) of these cases, in the other cases, atelectasis was treated conservatively (cold steam, breathing exercises). Following rigid oesophagoscopy, all cases were followed up clinically for at least 24 hours with regard to fever, chest pain, subcutaneous emphysema, and leucocytosis. Contrast-enhanced oesophagography was routinely performed when the foreign body was difficult to remove or appeared to be lodged in the oesophagus, or had a sharp edge.

Patients without complications within 24 hours of rigid oesophagoscopy and 24-48 hours of contrast-enhanced oesophagograms were discharged. In 2(0.69%) cases, perforation of the oesophagus by the swallowed bone fragment was detected. Both patients were treated conservatively because the perforation was at level of the entrances to the oesophagus. No complications developed in any patient as a result of rigid oesophagoscopy. There was no mortality in our cases.

The patient numbers increased significantly during Eid-ul-Adha (Figure).

The number of patients with oesophageal foreign bodies diagnosed during Eid-ul-Adha compared to those in the

other months showed a statistically significant difference, with the former being greater, for 06 months in 2012, 10 months in 2013, 11 months in 2014, 01 month in 2015, and 05 months in 2016 (Table-1).

The number of patients diagnosed with oesophageal foreign body during the days of Eid-ul-Adha was significantly greater than the number of patients with the same diagnosis on other days of the same month (Table-2).

## Discussion

Oesophageal foreign bodies comprise 28-68% of all gastrointestinal foreign bodies. Oesophageal foreign bodies are a serious condition that may encounter complications that are symptomatic and potentially fatal during removal.

Although seen mainly in children, incidence of oesophageal foreign body is increasing with age in cases of neuromuscular coordination disorder, which progresses with age, and poor chewing of food due to dentures. The mean age of the cases in our study was  $66.55 \pm 14.84$ , and 64.21% of the patients were over 60 years old. This percentage is due to the fact that this study only examined cases in which pieces of bone and/or meat were considered as the foreign bodies, and thus children, who usually swallow metal coins and plastic objects, were excluded from the study.

Although the complaints of patients vary in cases of oesophageal foreign bodies, the most common symptoms are dysphagia and vomiting,<sup>4</sup> the accumulation of saliva in the mouth, and retrosternal pain, occasionally associated with myocardial infarction, may also occur. Pressure on the trachea, the progression of oesophageal inflammatory processes to the larynx and trachea, perforation of the left main bronchus due to oesophageal ulceration, and end-stage pulmonary symptoms of asthma may also accompany oesophageal foreign bodies.<sup>4</sup> Our clinic, which has a high patient volume, treated a total of 615 oesophageal foreign bodies between the years 2012-2016. Besides, 289(47%) of these cases were treated for bone and/or meat lodged in the oesophagus. The most common symptoms 263(91%) in our cases were dysphagia and odynophagia, in accordance with the literature. Because they could not swallow their secretions, 165(57%) of the patients aspirated into the respiratory tract and developed respiratory distress.

Oesophageal foreign bodies may be composed of a variety of substances. In a number of series, the most

common oesophageal foreign body reported in children was metal coins.<sup>5,6</sup> In adults, organic foreign bodies (meat, bones, teeth) are more common.<sup>7</sup> Our study is based only on cases in which the patients swallowed bone and/or meat. The fact that the majority of the patients (64.21%) were over 60 years old suggests that pieces of bone and/or meat entering the oesophagus may be occurring because of the insensitivity of the patients' hard palate due to the use of prosthetic teeth, inadequate chewing, or neuromuscular dis-coordination.

Oesophageal foreign bodies are frequently detected at the first stenosis level.<sup>8</sup> The most common cause of localisation of the cervical oesophagus is the weakness of peristaltic movements immediately below the cricopharyngeus muscle.<sup>8</sup>

In our study, 62.99% of the foreign bodies were detected at the first stricture level, in accordance with the literature.

Bi-directional cervicography is used in the radiological examination of oesophageal foreign bodies, especially because the great majority of foreign bodies are attached to the pharyngo-oesophageal junction. For foreign bodies at a lower level, bi-directional lung imaging is used, or direct abdominal imaging, if it is suspected that the foreign body has passed to the stomach or lower gastrointestinal tract. In doubtful cases where a foreign body cannot be detected using bi-directional direct imaging, water-soluble contrast media can be used. Because of this, it is possible to determine the location of non-opaque foreign bodies, to confirm whether or not they are perforated, and to detect diseases such as stricture, diverticulum, congenital anomaly and malignancy.<sup>9</sup> In our study, bi-directional cervical and chest images were taken for all of the cases. Even where images had previously been taken at another hospital, the pre-intervention radiographs were repeated, due to the possibility of the foreign body being displaced. In 47(16.37%) suspected cases, cervical and thoracic CT were requested to confirm the diagnosis.

Oesophageal foreign bodies can be removed by flexible endoscopy in many medical centres.<sup>10</sup> The ability to perform a flexible endoscopy with the need for general anaesthesia and its low-cost are important advantages. However, rigid oesophagoscopy is necessary when there are severe problems in cases of sharp and penetrative objects.

Foreign body removal using flexible endoscopy is not

preferred at our clinic. The foreign bodies were removed using a rigid oesophagoscope in almost all four cases. Rigid oesophagoscopy has very low morbidity and mortality when performed by a specialist. Based on the literature, the morbidity due to treatment is less than 1%, risk of perforation is 0.34%, and the mortality is 0.05%.<sup>11</sup> The most important advantage is that it allows one to observe the damage done by the foreign body in the oesophagus. It is also useful in revealing additional pathologies. None of our cases experienced complications due to rigid oesophagoscopy. In addition, 7 (2.42%) cases had additional pathology in the oesophagus, in accordance with the literature.

In the literature, the rate of surgical removal of foreign bodies is 0.5%.<sup>1</sup> No surgical procedure was necessary to remove foreign bodies in any of our cases.

A complication rate of 1-5% may occur during the removal of oesophageal foreign bodies or while awaiting surgical intervention.<sup>1</sup> A foreign body itself, if its remaining in the oesophagus for along time, or its causing problems during oesophagoscopy, may lead to such major life-threatening complications as oesophageal perforation, secondary mediastinitis, sepsis, retropharyngeal abscess, oesophageal airway fistulas, oesophageal foreign body exudates, pseudo-oesophageal diverticula, and aorto-oesophageal fistula.<sup>12</sup>

In our study, it was determined that swallowed bone fragments perforated the oesophagus in two cases. Both patients were treated conservatively because the perforation was at the level of the entrances to the oesophagus. No complications developed due to rigid oesophagoscopy intervention.

Mortality in cases of oesophageal foreign bodies is quite low (< 1%). In addition to perforation, delay is associated with a high mortality rate.<sup>12</sup> When the literature is examined, conservative approaches yield a mortality of 25% in cases with mediastinitis and 18% in cases treated surgically. Mortality is also reported to be significantly lower in children than in adults.<sup>13</sup> No mortality occurred in our series.

This study was designed to investigate the relationship between cases of bone and/or meat in the oesophagus to the Eid-ul-Adha period. According to Muslims, the sacrifice is an act of worship that leads people closer to Allah, to win his appreciation. This is the meaning of "sacrifice". In performing the sacrifice, man demonstrates his commitment to Allah and His

commands, and that, like the Prophet Ibrahim, he will endure every sacrifice necessary in order to earn His favor.<sup>14</sup> The sacrificed animal is an example of social assistance and solidarity in Islam. Every day around the world countless animals are slaughtered to the benefit of mostly wealthy people, whereas during Eid-ul-Adha, the poor and charitable institutions benefit more from the sacrifices. The goal of the sacrifice is to benefit the poor, who are given sacrificial meat by financially secure Muslims to strengthen the feelings of love and brotherhood among Muslims.<sup>14</sup> Those who do not have enough economic resources to buy meat get the opportunity to consume the meat of the sacrifice animal presented to them during Eid-ul-Adha.

In this study a statistically significant difference was found between the number of patients seeking medical attention after ingestion of bone and/or meat during Eid-ul-Adha compared to other months during the years 2012-2016 (Table-1). In addition, the patients who were diagnosed with oesophageal foreign bodies during Eid-ul-Adha were evaluated separately and the differences in the number of patients during Eid ul-Adha compared with other days of the same month were statistically significant (Table-2).

The region where this study was conducted has limited industrialisation and work opportunities and is at a low socio-economic level. It is densely populated, and the population density has been further increased by the recent influx of a large number of refugees fleeing the Syrian civil war.

The nutritional options afforded by the people of the region are predominantly carbohydrates, as the consumption of animal products is low for economic reasons. People who cannot obtain an adequate supply of animal products can only acquire these foods during Eid-ul-Adha. This social reality has been taken into account in our study.

## **Conclusion**

There was an increase in cases of oesophageal foreign bodies, as pieces of bone and/or meat, during Eid-ul-Adha when consumption of animal products increased in areas where there are great numbers of Muslims. Thus, it is of critical importance that doctors who treat oesophageal foreign bodies keep this fact in mind.

**Disclaimer:** None.

**Conflict of Interest:** None.

**Source of Funding:** None.

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