

Original Contributions

RISK FACTORS FOR COMPLICATIONS AFTER A FOREIGN BODY IS RETAINED IN THE ESOPHAGUS

Chih-Wei Hung, MD, Shih-Chiang Hung, MD, Chao Jui Lee, MD, Wen-Huei Lee, MD, and Kuan Han Wu, MD

Department of Emergency Medicine, Chang Gung Memorial Hospital at Kaohsiung, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Reprint Address: Chih-Wei Hung, MD, Department of Emergency Medicine, Chang Gung Memorial Hospital, 123 Dabi Road, Niasung Shiang, Kaohsiung 833, Taiwan

Abstract—Background: Foreign body (FB) ingestion is a common problem presenting to the emergency department (ED). The standard treatment, removal by endoscopy, is well established. However, some patients may refuse this invasive procedure due to their fear of an uncomfortable or painful experience. Obtaining hard evidence of potential complications of not having the FB removed by endoscopy would be helpful in convincing patients to have the procedure. **Objectives:** The aim of this study was to identify the risk factors for developing complications after FB ingestion. **Materials and Methods:** The study was conducted over a period of 1 year (April 1, 2006 through March 31, 2007) at a referral medical center. Potential risk factors for developing complications (e.g., age, gender, type of FB, positive finding on radiography) were retrospectively evaluated in patients presenting with esophageal FBs and analyzed using chi-squared or Fisher's exact test and logistic regression. **Results:** A total of 225 patients were included. Fish bones were found to be the most common FBs (73.4%). The most commonly affected site was the oropharynx (64.5%). The complication rate was 9.7%. Risk factors for complications after FB ingestion were: 1) time interval over 24 h between FB ingestion and presenting to the ED; 2) a positive radiographic finding; 3) age > 50 years. **Conclusion:** If a patient presents to the ED with at least one of the three risk factors identified, it is strongly suggested that the patient undergo endoscopy to remove the FB due to a higher risk for developing complications. © 2012 Elsevier Inc.

Keywords—emergency department; foreign body; endoscopy; complication; risk factors

INTRODUCTION

Foreign body (FB) ingestion is a common problem presenting to the emergency department (ED). In adults, fish bones, dentures, pork or chicken bones, and drug tablets are commonly encountered FBs. Symptoms after ingestion of an FB vary from no symptoms or sore throat to odynophagia and drooling.

Many studies have focused on guidelines for, or experiences with, FB removal. Some authors have discussed the decision for endoscopy, and others have examined the options of flexible vs. rigid endoscopy (1–10). The success rate of FB removal by either flexible or rigid endoscopy is high (range 96–100%) (2,11,12). The standard treatment for FB ingestion is well established. Generally, once the FB has been ingested and airway obstruction or compromise occurs, treatment must be prompt. This treatment usually entails either endoscopy or surgery. If a button battery has been ingested, immediate removal under general anesthesia is recommended. Otherwise, the procedure of FB removal can be delayed for 6 h to allow gastric emptying (2).

In our ED, an adult who presents with FB ingestion generally will be referred for lateral radiography of the neck. An otolaryngologist will then be consulted to remove the FB. Otolaryngeal examination usually involves either direct viewing or indirect laryngoscopy. If the

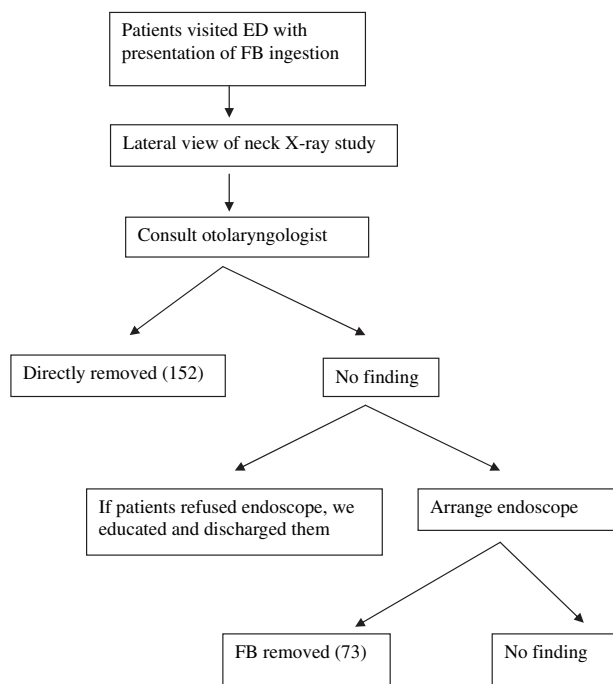


Figure 1. Emergency Department (ED) flow sheet of patient with presentation of foreign body (FB) ingestion.

otolaryngologist cannot find an FB, the patient will be informed of the risk of FB impaction. In addition, we ask the patients to decide whether they wish to undergo endoscopy or further observation.

Most patients refuse further procedures due to their fear of an uncomfortable or painful experience from endoscopy. Hence, we face a clinical problem: physicians should follow the treatment guidelines, but patients have the right to accept or reject the physician's recommendation.

We are interested in identifying the risk factors for complications that develop after FB ingestion. Armed with an understanding of the risk factors, we can strongly advise high-risk patients to undergo endoscopy in the ED.

The aim of this study was to investigate the risk factors for complications after FB ingestion.

MATERIALS AND METHODS

This study was approved by the research ethics board of the hospital. All patients admitted to the ED of a single medical center during 1 year, who had FB ingestion at presentation and whose FB was definitely removed, were studied retrospectively. The study site was a tertiary academic medical center that serves a population of approximately 2 million people. The annual ED census is 130,000 visits per year. We provide 24-h per day in-house coverage by otolaryngologists and gastroenterologists. The study period was 1 year: April 1, 2006 through March 31, 2007.

Table 1. Impaction Location of Foreign Body

Location	Numbers
Oropharynx	178
Tonsil	18
Epiglottic vallecula	11
Pyriform fossa	9
Cricopharyngeal	7
Not recorded	2

Patients with esophageal, head, and neck malignancies were excluded from the study. Patients who left the ED without removal of the FB were also excluded either because FB ingestion could not be confirmed or the FB passed successfully through the esophagus. Patient gender and age, type of FB, radiographic findings, otolaryngologists' consulting notes, procedures performed and their findings, and complications were retrospectively extracted from the medical charts of patients who presented during the study year.

Potential complications after FB ingestion were defined as perforation of the esophagus, abrasion, laceration, or erosion (4). The definition of positive radiographic findings was the confirmation of the presence of an FB by radiologists.

The data were analyzed with chi-squared or Fisher's exact test and logistic regression, and odds ratios were calculated.

RESULTS

There were 225 patients enrolled in the study. All of them received lateral neck X-ray studies and were examined by an otolaryngologist. Foreign bodies were successfully removed in 152 patients. There were 73 patients who underwent endoscopic examination, including rigid esophagoscopy (78.6%) and flexible panendoscopy (21.4%), due to negative findings on the first otolaryngologist consultation (Figure 1).

The most commonly affected sites for FBs were the oropharynx (64.5%), the tonsils (11.8%), and the epiglottic vallecula (7.2%) (Table 1). The most commonly impacted foreign bodies were fish bones (82.7%) (Table 2).

Complications were found in 22 of 225 patients (9.7%). The causes of the complications were erosion (9 patients, 41%); esophageal perforation (5 patients,

Table 2. Type of Foreign Body Impaction

Foreign Body Type	Number
Fish bone	186
Pork or chicken bone	14
Food mass	9
Drug	1
Not recorded	15

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