



FLEXIBLE VERSUS RIGID ESOPHAGOSCOPY IN THE MANAGEMENT OF ESOPHAGEAL FOREIGN BODY IMPACTION

Dr. L. N. Srivalli

Junior Resident, KIMS & RF, Amalapuram.

Dr. M. Ravi Kumar Raju

Prof and HOD, ENT DEPT, KIMS&RF, Amalapuram.

Dr. K. Krishna Sumanth

Asso Prof, ENT DEPT, KIMS& RF, Amalapuram.

ABSTRACT

Background: Foreign body(FB) impaction accounts for 4% of emergency endoscopies in clinical practice. Flexible endoscopy(FE) is a recommended therapeutic option because it can be performed under local anesthesia, it is cost effective and is well tolerated. Rigid endoscopy (RG) under general anesthesia is another option and is advantageous in some circumstances. The aim of the study is to compare efficacy and safety of flexible and rigid esophagoscopy in esophageal foreign body removal. **Methods:** It is a prospective study done in E.N.T department in KIMS MEDICAL COLLEGE, Amalapuram, which includes 50 patients with impacted foreign body esophagus. Parameters like type of foreign body, location of impacted foreign body are included. The study analyzes the type of procedure the patient have undergone, the intra operative and post operative complications. **Results:** This prospective cohort study includes 50 patients who have undergone surgical procedure for removal of impacted foreign body. Flexible esophagoscopy is performed in 30 patients and rigid esophagoscopy is performed in 20 patients. The most frequent complications are mucosal erosion, mucosal edema, and ulceration. **Conclusion:** Flexible esophagoscopy and rigid esophagoscopy are equally safe and effective for removal of impacted esophageal foreign body.

KEYWORDS : foreign body(FB), flexible esophagoscopy, rigid esophagoscopy, esophageal perforation, impacted foreign body.

INTRODUCTION

Foreign body impaction accounts for 4% of all emergency endoscopies in clinical practice^[1,2], with 60% of adult patients being treated for impacted food bolus³. Foreign body ingestion is a common occurrence in the West, with more than 100,000 reported cases each year⁴, and it is estimated that 1500 people die annually⁵. Foreign body induced perforation represent 12% of all esophageal perforation and carry a 2.1% mortality⁶. Esophageal foreign body impaction in adults is commonly associated with underlying esophageal disease^[7-10] or Psychiatric disorders^[11-14].

In a retrospective study published in PUBMED, the location of impacted FB in cervical esophagus is in 57%cases, 27% cases in thoracic esophagus and 17% cases in esophago-gastric junction¹⁵. Physiologically, the transition from striated skeletal muscle to smooth muscle explains why the upper esophagus is most common site of impaction. 50% cases of sharp objects tend to lodge in the upper esophagus and frequently cause perforation, especially after multiple attempts of endoscopic retrieval. Eventually, rigid endoscopy or surgery by cervical esophagotomy/thoracotomy may be required¹⁶.

Endoscopy is generally recommend as the first – line therapeutic option^[17,18] whereas surgery is considered as a suitable upfront treatment in patients presenting with overt perforation or rescue treatment in case of irretrievable FB^[19-22]. Flexible endoscopy can be performed under local anaesthesia and sedation. It is cost effective since it doesn't require hospitalization^[23-25]; however, it's effectiveness is limited in case of sharp FB impaction^[15,16].

Rigid esophagoscopy provides a wide operating lumen, which gives a great advantage in the manipulation of sharp FB impacted in the upper esophagus; in addition, it allows the extraction of FB with multiple instruments, and airways are protected because the procedure is performed under general anesthesia. Interestingly, the skills for performing rigid esophagoscopy are limited among non E.N.T specialists to the point that RE is not even mentioned in the most recent European guidelines^[18].

Aims And Objectives

1. To assess the efficacy of flexible vs rigid esophagoscopy.
2. To evaluate the complications of flexible vs rigid esophagoscopy.

MATERIALS AND METHODS

It is a prospective study done in E.N.T department of KIMS MEDICAL COLLEGE, Amalapuram. The study was done over a period of one year from June 2021 to may 2022. During this period, the patients who presented to ENT OPD and emergency department with foreign body esophagus were evaluated and 50 patients were included in the study after taking consent. Patients came to hospital with various types of impacted foreign body esophagus, like sharp or blunt objects, food particles or food bolus containing chicken bones or fish bones, metallic objects like coins, pins, denture wires, battery, plastic toys and miscellaneous wooden objects etc.

Inclusion criteria

1. All patients attending ENT OPD Department and emergency department with impacted foreign body esophagus.
2. Age between 5 to 75 years.
3. Both males and females.

Exclusion criteria

1. Age less than 5 years and more than 75 years.
2. Foreign body other than esophagus.
3. Patients not willing to participate in study.

Method Of Selection Of Procedure

Patients presented to ENT OPD & emergency department are evaluated by taking history from the patients like time of ingestion of FB, type of FB, last meal time, any attempt done to remove it out. clinical examination like throat examination is done and confirmed by radiological investigations. The choice of the procedure i.e flexible or rigid esophagoscopy is taken by surgeon. The choice of the procedure depends on factors related to patients (age, clinical condition, compliance, ASA American Society of Anesthesiology score), type and size of FB, anatomical site of impaction, timing of impaction and surgeons expertise.

RESULTS

Out of 50 patients selected for study 30 (60%) patients underwent flexible esophagoscopy and 20 (40%) patients underwent rigid esophagoscopy. A total of 45(90%) foreign bodies are taken out through esophagoscopy via flexible are 28(62.2%) and via rigid are 17(37.8%). 4(8%) foreign bodies are pushed into stomach and were to come out through anus via fecal matter and 1(2%) foreign body is removed by minimally invasive thoracoscopic procedure. Overall 10 (20%) patients had complications ; 5 patients who underwent flexible esophagoscopy and 5 patients who underwent rigid esophagoscopy. Complications like mucosal erosions, mucosal edema, hemorrhage, ulceration, perforation, infection are seen. 4 patients are having mucosal erosions, 2 patients having mucosal edema, 2 patients had ulcerations, 1 patient is had esophageal perforation, 1 patient had infection.

DISCUSSION

Out of 50 patients 30 underwent Flexible esophagoscopy of which 17 are male patients, 13 are female patients. 10 are children. 5 patients are having complications.

Table 1 patients who underwent flexible esophagoscopy.

| Age | No | Percentage | Males | Females |
|-------|----|------------|-------|---------|
| 5 -20 | 10 | 33.3% | 7 | 3 |
| 20-50 | 8 | 26.7% | 5 | 3 |
| 51-75 | 12 | 40% | 5 | 7 |
| Total | 30 | | 17 | 13 |

Table 2 flexible esophagoscopy complications in 5 patients are as follows

| Complications | No | Percentage |
|------------------|----|------------|
| Mucosal erosions | 3 | 60% |
| Mucosal edema | 1 | 20% |
| Hemorrhage | 0 | 0% |
| Ulceration | 1 | 20% |
| Perforation | 0 | 0% |
| Infection | 0 | 0% |

Out of 50 patients, 20 underwent rigid esophagoscopy

Table 3 rigid esophagoscopy

| Age | No | Percentage | Males | Females |
|--------|----|------------|-------|---------|
| 5 - 20 | 5 | 25% | 4 | 1 |
| 21-50 | 7 | 35% | 4 | 3 |
| 51-75 | 8 | 40% | 5 | 3 |
| Total | 20 | | 13 | 7 |

Table 4 rigid esophagoscopy complications in 5 patients are as follows

| Complications | No | Percentage |
|------------------|----|------------|
| Mucosal erosions | 1 | 20% |
| Mucosal edema | 1 | 20% |
| Hemorrhage | 0 | 0% |
| Ulceration | 1 | 20% |
| Perforation | 1 | 20% |
| Infection | 1 | 20% |

Rigid esophagoscopy plays an important therapeutic role in patients with upper esophageal FB impaction, especially in case of sharp – pointed objects or when general anesthesia is recommended (i.e children or in patients with concomitant respiratory symptoms). In case of large blunt foreign body impaction excellent exposure of upper esophagus is provided by rigid esophagoscopy which is needed for safe and successful extraction. FB impaction lasting longer than 24 hrs leads to a higher risk of perforation ^[1,3], a multidisciplinary approach is needed ; where both flexible esophagoscopy & rigid esophagoscopy are available, to represent the safety strategy of these patients.

Surgery should be considered as an upfront treatment in patients with overt esophageal perforation or as a rescue

treatment in endoscopically irretrievable esophageal FB . More recently, advances in minimally invasive surgery have allowed a thoracoscopic approach in selected patients ¹⁸ .

CONCLUSION

Both flexible esophagoscopy and rigid esophagoscopy were equally effective and safe for the removal of esophageal FB and overall complications rates were similar. The two methods may be complimentary; therefore patients should be managed in center's where expertise in Rigid esophagoscopy are available to allow a tailored or cross over approach, with aim to reduce the need for surgery and related morbidity. Formal training in rigid esophagoscopy is needed.

REFERENCES

1. Dray X, Cattan P. Foreign bodies and caustic lesions .Best pract res Clin Gastroenterol Elsevier Ltd. 2013; 27:679-89.
2. Mosca S, Manes G, Martino R, Amitrano L, Bottino V, Bove A, et al. endoscopic management of foreign bodies in upper gastrointestinal tract : report on a series of 414 adult patients. Endoscopy. 2001; 33:692-6 [cited 2018 Jun 11]
3. Sugawa C. Endoscopic management of foreign bodies in the upper gastrointestinal tract : a review. World J Gastrointest Endosc. 2014; 6 :475
4. Wylie R. foreign bodies in the gastrointestinal tract. Curr Opin Pediatr. 2006; 18 :563-4 Oct
5. Webb WA . management of foreign bodies of upper gastrointestinal tract. Gastroenterology. 1988; 94 :204-16. [cited 2018 Jun 25];
6. Biancari F, D' Andrea V, Patone R, Di Macro C, Savino G, koivukangas V, et al. Current treatment and outcome of esophageal perforations in adults: systemic review and meta-analysis of 75 studies .World J Surg. 2013; 37:1051-9 [cited 2018 jun 21].
7. Kerlin P, Jones D, Remedios M, Campbell C. Prevalence of eosinophilic esophagitis in adults with food bolus obstruction of the esophagus. J Clin gastroenterol. 2007; 41:356-61.
8. Haas J, Leo J, Vakil N. Glucagon is a safe and inexpensive initial strategy in esophageal food bolus impaction. Dig Dis Sci Springer US. 2016; 61:841-5.
9. Thimmapuram J, Oosterveen S, Grim R. Use of glucagon in relieving esophageal food bolus impaction in the era of eosinophilic esophageal infiltration. Dysphagia. 2013; 28:212-6.
10. Kirchner GI, Zuber-Jerger I, Endlicher E, Gelbmann C, Ott C, Ruumelle P, et al. Causes of bolus impaction in the esophagus. Surg Endosc Other Interv Tech. 2011; 25:3170-4.
11. Conway WC, Sugawa C, Ono H, Lucas CE. Upper GI foreign body: an adult urban emergency hospital experience. Surg Endosc Other Interv Tech. 2007; 21:455-60.
12. Palta R, Sahota A, Bemarki A, Salama P, Simpson N, Laine L. Foreign-body ingestion: characteristics and outcomes in a lower socioeconomic population with predominantly intentional ingestion. Gastrointest Endosc. 2009; 69:426-33.
13. Geraci G, Sciume' C, Di Carlo G, Piccirro A, Modica G. Retrospective analysis of management of ingested foreign bodies and food impactions in Emergency endoscopic setting in adults. BMC Emerg med. 2016; 16:3-7.
14. Prasad GA, Reddy JG, Boyd-Enders FT, Schmol JA, Lewis JT, Wongkeesong LM. Predictors of recurrent esophageal food impaction: a case-control study. J Clin Gastroenterol. 2008; 42:771-5.
15. Athanassiadi K, Gerazounis M, Metaxas E, Kalantzi N. Management of esophageal foreign bodies: a retrospective review of 400 cases. Eur J Cardiothorac Surg. 2002; 21:653-6 Available from: .Gov/pubmed/11932163.
16. Ma J, Kang DK, Bae JJ, Park KJ, Sun JS. Value of MDCT in diagnosis and management of esophageal sharp or pointed foreign bodies according to level of esophagus. Am J Roentgenol. 2013; 201:707-11.
17. Ikenberry SO, Jue TL, Anderson MA, Appalaneni V, Banerjee S, BenMenachem T, et al. Management of ingested foreign bodies and food impactions. Gastrointest Endosc. 2011; 73:1085-91.
18. Birk M, Bauerfeind P, Deprez P, Häfner M, Hartmann D, Hassan C, et al. Removal of foreign bodies in the upper gastrointestinal tract in adults: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline. Endoscopy. 2016; 48:489-96 [cited 2018 May 24] Available from: .Ncbi.nlm.nih.gov/pubmed/26862844.
19. Zmary KR, Davis JW, Ament EE, Dirks RC, Garry JE. This too shall pass. J Trauma Acute Care Surg. 2017; 82:150-5 [cited 2018 Jun 2]; Available from: .
20. Seng Loh K, Siang Tan LK, Smith JD, Hian Yeh K, Dong F. Complications of foreign bodies in the esophagus. Otolaryngol Neck Surg. 2000; 123:613-6.
21. Goh BKP, Chow PKH, Quah HM, Ong HS, Eu KW, Ooi LLPJ, et al. Perforation of the gastrointestinal tract secondary to ingestion of foreign bodies. World J Surg. 2006; 30:372-7.
22. Sng KK, Koh AJH, Tan NC, Tan SM, Tay KH. An eastern perspective on oesophageal perforation: a high incidence of ingested bones. ANZ J Surg. 2008; 78:573-8.
23. Little DC, Shah SR, St Peter SD, Calkins CM, Morrow SE, Murphy JP, et al. Esophageal foreign bodies in the pediatric population: our first 500 cases. J Pediatr Surg. 2006; 41:914-8.
24. Glaws WR, Zulfiqar H, Eitzkorn KP, Wiley TE, Wenig BL, Watkins JL. Comparison of rigid and flexible esophagoscopy in the diagnosis of esophageal disease: diagnostic accuracy, complications, and cost. Ann Otol Rhinol Laryngol. 1996; 105:262-6.
25. Gmeiner D, BHA VR, Mecco C, Hutter J, Oberascher G, Stein HJ. Flexible versus rigid endoscopy for treatment of foreign body impaction in the esophagus. Surg Endosc Other Interv Tech. 2007; 21:2026-9.