

## Rigid Esophagoscopy - Indications and Complications at Tertiary Care Hospitals of Urban Sindh

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**ABSTRACT:** **OBJECTIVE:** Aim of the study was to tabulate the indications and identify the various complications of rigid esophagoscopy at tertiary care level hospitals of urban Sindh. **STUDY DESIGN:** Descriptive study. **SUBJECTS AND METHODS:** This study was conducted at the departments of E.N.T. & Head Neck surgery, Liaquat University Hospital Hyderabad, and Abbasi Shaheed Hospital Karachi for a period of one year from July 2012 to June 2013. Out of 234 patients requiring esophagoscopy, rigid esophagoscopy was done in 221 patients of both genders and all age groups either in emergency situation or as an elective procedure, both for diagnostic and therapeutic purposes. All the patients were registered with a definitive protocol filling a pre-designed performa. **RESULTS:** Out of 234 patients, 221 patients were selected for the study. Males were 124(56.1%) and 97 (43.9%) were females. The age range was 2-70 years. Most of the patients 103(46.6%) were in the age group 1-10 years. Maximum 149(67.4%) patients were admitted through emergency. The commonest indication was foreign body in 147 (66.5%) patients, followed by esophageal carcinoma in 38(17.2%) patients. The overall complications were 9(4.1%) including one mortality, one perforation in cervical esophagus and seven minor lacerations of esophageal mucosa. **CONCLUSION:** Suffice is to say that 'Rigid Esophagoscopy' is a time-tested procedure which is utilized safely and effectively both for diagnostic as well as therapeutic purposes. Globally, the documented indications are not exactly the same due to different ecological and cultural norms. The complication rates usually correlate with the conduciveness of the environment during the procedure and experience of the surgeon.

**Key Words :** Rigid esophagoscopy, Foreign bodies oesophogus, Indications, Complications.

**INTRODUCTION :** Esophagoscopy is the procedure to visualize the interior of esophagus under illumination. The instinct of the primitive man to visualize the inside of esophagus has grown with the awareness of the problems related to the food passage. Perhaps the initial idea for esophagoscopy was developed in the ancient age some 300 B.C. years ago from the sword swallows of Greece<sup>1</sup>. The first really practical esophagoscopy by passing a lighted straight tube down the esophagus was done by Professor Kussmaul of Freisberg in 1868<sup>2</sup>. Nevertheless, it was not until the early 1900s that Chevalier Jackson invented an end-illuminated instrument similar to what is known today as rigid esophagoscope. This has yet remained the primary instrument used by otolaryngologists for diagnostic and therapeutic esophagoscopy<sup>3</sup>. In 1957, Basil Hirschowitz provided an alternative to the standard rigid esophagoscopy by the introduction of flexible fiber optic endoscope<sup>4</sup>. Currently, both the rigid as well as flexible varieties are being used widely by the otolaryngologists with their own indications and efficiencies for similar or different esophageal conditions<sup>5</sup>. Although the flexible esophagoscopy is well utilized for diagnostic purposes, the rigid system fulfils both diagnostic & therapeutic purposes equally & effectively. Therefore rigid esophagoscopy is the preferred procedure in our setting. The aim of the current prospective study was to highlight various indications with which patients presented to us

for rigid esophagoscopy and also focus on different complications encountered during the procedure in our departments.

**SUBJECTS & METHODS:** This descriptive study was conducted at the departments of E.N.T. & Head & Neck surgery, Liaquat University Hospital, Hyderabad, Sindh and Abbasi Shaheed Hospital, Karachi from July 2012 to June 2013. Out of 234 consecutive patients, rigid esophagoscopy was done in 221 patients of both genders and all age groups either in emergency situation or within an elective environment, both for diagnostic or therapeutic purposes. All the patients who either had history of dysphagia or had a suspected or clear cut history of foreign body ingestion were included in this study. The exclusion criteria in this study was determined on the basis of the status of patients who either had multiple systemic comorbidities making them unfit for the induction of general anesthesia or those patients having local cervical or thoracic vertebral abnormalities precluding the insertion of rigid esophagoscope. The patients were admitted through outpatient and emergency departments or through referral from other departments or hospitals. All the patients were registered with a definitive protocol with a pre designed performa which included demographic data (like age & gender etc.), presenting features, relevant investigations, details of the performed procedure and any problems or complications encountered during the procedure. Any

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post-operative problems were also noted. Finally all the data was fed into SPSS Version-16 to have the statistical assistance and to create different tables and graphs. **RESULTS :** This prospective study conducted over one year from July 2012 to June 2013. Out of 234 patients requiring esophagoscopy for different indications, 13 patients were excluded from the study following the pre-established exclusion criteria. 221 patients who were included in this study underwent rigid esophagoscopy. 124 (56.1%) patients were males & 97 (43.9%) were females. The age range was 2-70 years. Most of the patients fell into the age group 1-10 years and they accounted 103 (46.6%) (Table-1). The maximum patients i.e. 149 (67.4%) were admitted through emergency department; 57 (25.8%) through outpatient department and 15 (6.8%) were referred from other departments or hospitals. The patients usually presented with dysphagia which was either due to suspected foreign body ingestion 147 (66.5%) or due to suspected esophageal pathology 74 (33.5%). The commonest foreign body recovered in this study was coin in 79 (35.7%) patients. 10 (6.8%) foreign bodies descended spontaneously. Coin ingestion was found exclusively in children aged 1-10 years. The commonest foreign body in adults was food bolus which captured 14 (6.3%) patients. The commonest pathology in esophagus was proved to be the esophageal carcinoma and it was seen in 38 (17.2%) patients. In 12 (5.4%) patients no definitive pathology was detected on rigid esophagoscopy (Table-1). The overall complications in this study comprised 9 (4.1%) patients with one (0.5%) mortality and 8 (3.6%) morbidities (Table-2). Among the 8 morbidities one was esophageal perforation in cervical portion while 7 (2.7%) morbidities were minor lacerations of esophageal mucosa.

**DISCUSSION :** Rigid esophagoscopy is an integral part of not only the scheduled but emergency operation list of most of the tertiary care hospitals of urban Sindh. The patients usually present with dysphagia which is either due to suspected foreign body ingestion or due to suspected esophageal pathology. The spectrum of foreign bodies ingested usually differs with ecological pattern of different geographical entities worldwide. Hence the accidental ingestion of coins is common on the front of easy & frequent availability of coins to the hands of children. The animal and fish bone impaction is common in areas of their excessive consumption. Reviewing the literature reveals that different foreign bodies are more prevalent in different parts of the world owing to favorable circumstances & environment being prevalent there. Hence it was interesting to note that the commonest foreign bodies retrieved from esophagus were mutton bones (29.5%) in Oman<sup>6</sup>, fish bones (27%) in Saudi Arabia<sup>7</sup> and coins (55.5%) in Jordan<sup>8</sup>. The commonest foreign body retrieved in our study was coin in 79 (35.7%) patients. Coin ingestion is usually found to be the domain of young children worldwide. Younger children are more prone to accidental ingestion of foreign bodies because their dentition is not yet complete, their neuromuscular coordination mechanisms related to swallowing and upper airway protection are

Indications	No. of Patients	%
Coin	79	35.7%
Food bolus	14	6.3%
Denture	12	5.4%
Bone piece	11	5.0%
Spontaneous descent of F.B.	10	4.5%
Fish thorn	07	3.2%
Ornament	06	2.7%
Disc battery	04	1.8%
Glass ball	02	0.9%
Metallic washer	01	0.5%
Wood piece	01	0.5%
Benign stricture and web	09	4.1%
Benign tumors	15	6.8%
Malignant tumors	38	17.2%
No Esophageal pathology found	12	5.4%

Table-1 : Indications of rigid esophagoscopy n=(221).

Complications	No. Of Patients	%
Mortality	01	0.5%
Esophageal Perforation	01	0.5%
Minor Lacerations	07	3.1%
Total	09	4.1%

Table-2 : Complications of rigid esophagoscopy.

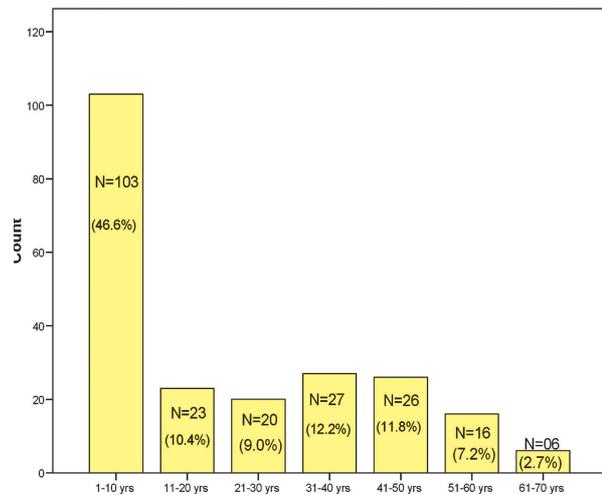


Figure-1 : Age distribution of the patients underwent rigid esophagoscopy..

not yet fully developed and their tendency to explore the world around them through their mouth<sup>9</sup>. Hence the highest incidence of coin ingestion has been found Trans globally in young children in various studies in the frequencies ranging from 41.3% to 88%<sup>8,10-4</sup>. However the spectrum of most frequently retrieved foreign bodies in adults has been diverse and it includes food bolus, dentures and various animal & fish bones etc. In frequencies ranging from 14% to 91%<sup>11-2,15-6</sup>. The most frequently retrieved foreign body in adults was food bolus in our study which accounted 14(6.3%) patients. In literature we found the frequency of food bolus impaction to vary from 4.9% to 20.7%<sup>10,11,17</sup>.

The phenomenon of spontaneous descent of foreign bodies is a common occurrence. It may be observed when the foreign body is not removed immediately and observed after a period of time. It may occur with administration of smooth muscle relaxants. Also it may happen when the anesthetist delivers inhalational gases forcefully with anesthesia bag. We encountered spontaneous descent of foreign bodies in 10 (6.8%) cases during this study which is comparable with another national study on the subject<sup>11</sup>. Besides the foreign bodies, the most common pathology of esophagus detected during rigid esophagoscopy, is also diverse in different studies. In our study, the most common pathology in esophagus was detected to be the esophageal carcinoma in 38 (33.5%) patients. It is comparable with another national study which found esophageal carcinoma in 115 (57.5%) patients in their study<sup>5</sup>. In another national study on the similar subject, esophageal webs were found to be the commonest pathology detected on rigid esophagoscopy, accounting 9(4.24%) patients<sup>11</sup>. Occurrence of complications is a part of any surgical procedure and rigid esophagoscopy is no exception. However the frequency & severity of these complications depends on various factors like skill & experience of surgeon, patient's anatomical & physiological factors and the specific approach to the procedure<sup>18</sup>. Similarly, emergency situation at the time of the procedure with regards to the deteriorating status of the patient and the non-conductive operative environment, especially the issue of the availability of the proper instruments also casts its shadow on the outcome. In case of rigid esophagoscopy, the specific factors of duration of the impaction of the foreign body and the size, shape and sharpness of the foreign body have important bearing on the frequency & gravity of the complications, especially the perforation of the esophagus. In our study, the frequency of esophageal perforation is 0.5% as compared to Gabriel and Edward<sup>19</sup> who encountered 2.6% esophageal perforation in their study. They associated this high rate with the level of surgeon's experience. The complications rate in our study is acceptable on the front of other studies in literature on the subject<sup>5,8,15,16</sup>. The overall complications in our study comprised 9 (4.1%) with one mortality (0.5%) and 8 (3.6%) morbidities. The only mortality in our study was an old diabetic and hypertensive patient with a badly impacted denture who became victim of a silent myocardial infarction during the procedure. Among the 8 morbidities one was esophageal perforation in cervical esophagus with 7 other morbidities being minor lacerations of esophageal mucosa. All the morbidities were managed successfully by conservative measures including suspension of oral feeding with commencement of nasogastric tube feeding along with parenteral broad spectrum antibiotics and analgesics.

**CONCLUSION :** Suffice is to say that rigid esophagoscopy is a time-tested procedure which is utilized safely and effectively both for diagnostic as well as

therapeutic purposes. Globally, the documented indications are not exactly the same due to different ecological and cultural norms. The complication rates usually correlate with the conduciveness of the environment during the procedure and experience of the surgeon. The authors conclude that rigid esophagoscopy is a highly effective and safe tool for diagnostic as well as various therapeutic procedures.

#### REFERENCES:

- Huizinga E. On esophagoscopy and sword swallowing. *Ann Otol Rhinol Laryngol.* 1969; 78:32-9.
- Brown HDK. Origin of esophagoscopy. *Proc Roy Soc.Med.* 1969; 62: 781-6.
- Soose RJ, Carrau RL. In: Eugene N Myers and David E Eibling (Eds). *Operative otolaryngology: Head and Neck surgery.* Philadelphia. Saunders Elsevier Inc.2008: vol.2. sec. 4. Chapter 52. Pp.1410.
- Gustafson, Mark L, Thomas A. Flexible versus rigid esophagoscopy: a practical comparison for otolaryngologists. *Current opinion in otolaryngology & Head & Neck Surgery.* 2000; 8(3):227-31.
- Nadeem A, Bilal A, Afridi K, Muqetullah. A three year audit of rigid esophagoscopy at Lady reading hospital Peshawar. *J Ayub Med Coll. Abbottabad.*2006; 18(1): 11-3.
- Murthy PSN, Ingle VS, Ramakrishna S, Shah FA, Philip V. Foreign bodies in the upper digestive tract. *SQU J Sci Res: Medical Science* 2002; 3: 117-20.
- Ashoor AA, Al- Momen A. Foreign bodies of the esophagus: A two - year prospective study. *Ann Saudi Med.* 2000; 20(2):173-5.
- Al Qudah A, Daradkeh S, Abu-Khalaf M. Esophageal foreign bodies. *Eur J Cardiothoracic Surg.*1998; 13: 494-9.
- T-Ping C, Nunes CA, Guimaraes GR, Viera JPM, Weckx LEM, Borges TJA. Accidental ingestion of coins by children: management of ENT department of Joao XXIII Hospital. *Rev Bras Otorhinolaringol.* 2006; 72(4):470-4.
- Nemat MH, Hussein AM, Juma UH. Management of esophageal foreign bodies, retrospective study. *J Fac Med Baghdad.* 2011; 53(1):35-8.
- Hussain G, Iqbal M, Ihsanullah, Hussain M, Ali S. Esophageal Foreign bodies: An experience with Rigid Esophagoscope. *Gomal J Med Sci.* 2010; 8(2):218-20.
- Koirala K, Rai S, Chhetri S, Shah R. Foreign body in the esophagus- Comparison between Adult and Pediatric population. *NJMS* 2012; 1(1):42-4.
- Little DC, Shah SR, St. Petr SD, Calkins CM, Morrow SE, Murphy JP, Sharp RJ, Andrews WS, Holcomb GW, Ostlie DJ, Synder CL. *J Ped Surg* 2006;41(5):914-8.
- Iqbal K, Khan MI, Muhammad. Esophageal foreign bodies: experience with rigid esophagoscopy at D.I. Khan. *Gomal J Med Sci.* 2012;10:197-7.
- Onotai LO, Etawo US. The Challenges of Rigid Esophagoscopy in the management of esophageal foreign bodies in Port Harcourt. *Int J Med Med Sci.* 2012; 2(5):108-13.
- Revadi G, Philip R, Gurdeep S. Removal of foreign bodies under general anesthesia. A review of rigid esophagoscopy for foreign bodies of hypopharynx and esophagus. *Med J Malaysia* 2010 Jun; 65(2):143-5.
- Al Mahbashi MY, Raja?a YA. Esophageal foreign bodies in Yemen. *Saudi Med J.* 2005; 26(10):1654-5.
- Durbin CG. Early complications of tracheostomy. *Resp Care.*2005; 50(4): 511-5.
- Gabriel Tsao GJ, Damrose EJ. Complications of esophagoscopy in an academic training program. *Otolaryngology- Head & Neck Surgery.* 2010; 142(4): 500-4.