

Effectiveness of oesophagogastroduodenoscopy in dysphagia and early detection of oesophageal cancer

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Abstract

Background: Dysphagia is difficulty in swallowing with subjective delay in the sensation of transit of a liquid or solid bolus during swallowing. This can be quite varied from the various other, measurements of dysphagia specifically the sensory component of the patient. ¹Dysphagia is difficulty in swallowing with the reduced lumen of the oesophagus and is seen very commonly in the general population. It is very common to encounter the strictures of the oesophagus due to very commonly prevalent reflux diseases, which is reduced by the recent medications. Anatomic causes of dysphagia are usually those that compromise the oesophageal lumen. These processes may be benign or malignant, oropharyngeal or distal oesophageal, mucosal, intramural, or extrinsic to the oesophagus. Common mechanical causes of dysphagia may include reflux-induced oesophageal strictures, head and neck or oesophageal cancer, and extrinsic compression from mediastinal lymph nodes or lung cancer. Any growth or web or lesion or stricture can lead to dysphagia which might turn out to be a carcinomatous growth. Depending upon the symptoms and severity, dysphagia is classified into various grades. Incidence of various oesophageal malignancies is on the rise, entire strata of population especially of the lower socioeconomic class. ESCC and EAC share very limited similarities regarding the etiology or the factors with high risk for both the carcinoma variants. This study is intended to diagnose cases of dysphagia at an early stage which will be of great value for clinicians for further therapy and prognosis. This study is done to identify the patients suffering with dysphagia. Also to know the effectiveness of oesophagogastroduodenoscopy in early detection of oesophageal pathology. This study is done to perform biopsy and evaluate oesophageal mass if present which could be cancerous or non-cancerous.

Keywords—dysphagia, oesophagus, gastro-intestinal.

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Received Date: 06/01/2022 Revised Date: 23/02/2022 Accepted Date: 18/03/2022

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Access this article online

Quick Response Code:	Website: www.medpulse.in
	DOI: https://doi.org/10.26611/1062222

INTRODUCTION

Dysphagia is the reduced lumen of the oesophagus which causes difficulty in swallowing. It is very common to

encounter the strictures of the oesophagus due to very commonly prevalent reflux diseases, which is reduced by the recent medications. ¹⁰The oesophagus is a tube-like organ with muscles, approximately 25 cm in mainly occupying in the posterior mediastinum and extending from cricoid cartilage (C6 vertebra) to oesophagogastric junction (T11 vertebrae). Anatomic causes of dysphagia are usually those that compromise the oesophageal lumen. These processes may be benign or malignant, oropharyngeal or distal oesophageal, mucosal, intramural, or extrinsic to the oesophagus. Common mechanical causes of dysphagia may include reflux-induced oesophageal strictures, head and neck or oesophageal cancer, and extrinsic compression from mediastinal lymph nodes or lung cancer. Any growth or web or lesion or

stricture in the oesophagus can lead to dysphagia which might turn out to be a carcinomatous growth.¹¹ Carcinoma oesophagus is the 8th most common type with it being the 6th most common type leading to death in the world

Table 1

Classification	Ability to swallow
0	Unable to swallow
1	Swallows liquids with difficulty and cannot swallow solids
2	Swallows liquids with no difficulty but cannot swallow solids
3	Occasional difficulty in swallowing solids
4	Rarely has difficulty in swallowing, only with solids
5	Swallows normally

Classification as defined by Saeed *et al.*²

³Dysphagia, seen very commonly in the general population. Fibre optic oesophagoscopy is to identify the etiological factors leading to dysphagia and detection of pathology with unusual oesophageal mass. Oesophagogastroduodenoscopy is the tool to investigate the oesophageal anatomy with accuracy. It allows for more precise mucosal inspection with tissue biopsy.⁴Oesophageal symptom is a red flag alarm which requires oesophagoscopy. ⁵Endoscopy also serves as a potential therapeutic tool as it can be used in the same sitting to dilate the stricture or web causing the symptom. ⁶Oesophageal strictures may present to the clinic with very mild symptoms or can be very severe symptoms which can be investigated, identified as a mild web or stricture causing minor narrowing of the lower oesophagogastric (O.G) junction. Lower oesophageal strictures or any strictures are dilated mechanically and control the reflux even causing them. As in location, the severity of luminal narrowing because patients commonly adapt with avoiding few food varieties, chewing carefully, and using fluids copiously with solid meals.⁷Oesophageal Cancer is the deadliest cancer worldwide. It is deadly and leading cause for the mortality among the cancers in the western as well as the world population. ¹²The histological types which are most common are ESCC and EAC but the rest of the malignancies account for the rest of 1 to 2%. ¹³ESCC is the most common type of cancer worldwide. Peak incidence in the 7th decade of life. ESCC occurs equally quite often in the distal oesophagus. Preponderance of the black three times in than the white population.⁶ Western society, with increasing incidence of EAC than the ESCC, due to central obesity, reflux diseases of the oesophagus, dietary changes and decreased H. pylori infection, more levels of gastric acid secretion. ¹⁵Major risk factors being smoking and alcohol, which is the primary, smoking along with alcohol gives synergistic effect. ¹⁶The synergistic effect of the

alcohol was explained likewise where alcohol is a fat soluble solvent, which damages the DNA by decreasing the activity in the cell which in turn will be unable to reduce the toxicity of the cell while the oxidation being promoted. This lead the tobacco to enter into the cell easily which might enhance the entry of other carcinogens like amines, aldehydes and phenols. The premalignant condition of Adenocarcinoma, Barrett's oesophagus, symptoms may be slowly progressive in nature, start intermittently with hard solids, then progressing to liquids and even to saliva. Mild symptoms can occur because of, very minimal to marked luminal narrowing which can be advanced lesions. The major alarming symptoms are sudden decrease of weight, cachexia and hematemesis along with dysphagia.⁵Majority of the oesophageal cancers are symptomatic by diagnosis. Dysphagia, red flag sign and alarming symptom at the time of presentation, with 74% of the patient's report have struggled to swallow. Patients having, adenocarcinoma present with features of heart burn and regurgitation. Early-stage tumours are often asymptomatic. Incidence of various gastro-intestinal malignancies is on the rise, entire strata of population especially of the lower socioeconomic class. ESCC and EAC share very limited similarities regarding the etiology or the factors with high risk for both the carcinoma variants. They vary with their prevalence rate or even the incidence rate.⁸Screening used to identify BE as a precursor to EAC, and squamous cell dysplasia with the help of oesophagogastroduodenoscopy. ESCC and EAC account for about 95% of oesophageal cancers. Alcohol consumption, pickled vegetables, hot food, and beverages can lead to ESCC but not EAC, whereas reflux disease, can lead to EAC only.

METHODS

The study was conducted at Dr. D.Y. Patil hospital and research centre, Kolhapur.

After the clinical approval of ethical committee and informed consent for the same, patients attending the OPD for the department of General Surgery and ENT, at hospital will be evaluated for dysphagia. The study is done for the period from August 2019 to November 2021. Patients will be evaluated and educated about the merits and de-merits in study. Informed consent was taken along with written and valid consent from the patients for the procedure of Oesophagogastroduodenoscopy and biopsy consent. Patients selected will be based on the inclusion criteria. Also children more than eight years were included for the study. Total number of patients included for the study were 65 from the past two years (August 2019 to November 2021). Patients having the complaint of dysphagia were included in the study. Also kids more than eight years were included. Those who had no symptoms of dysphagia, those

who were unfit for OGD scopy, and patients with oral and oesophageal pathology where the scope was unable to pass through the oesophagus were excluded. Children below eight years were not included. The procedure was performed by oesophagogastroduodenoscopy. Also other tools used were video processing unit, video monitor along with cables, Scopydoc software, biopsy forceps used in oesophagogastroduodenoscopy, Monitor, saturation probe and equipment to monitor vitals of the patient, Mouth gag/Mouthpiece and other accessories. True positive, false positive, true negative, false negative, sensitivity and specificity and accuracy will be analysed statistically. Master chart and data analysis will be using MS EXCEL 2021 for advance purposes SPSS-23 will be used. All quantitative variables will be compared using the appropriate data.

DISCUSSION

Prospective observational study was conducted with informed consent for the same. Patient aged more than eight years old are evaluated with oesophagogastroduodenoscopy. Duration of study was from August 2019 till November 2021. Patients were educated and evaluated about the merits and de-merits regarding the study. Informed consent was taken prior to the study. Patients were chosen on the basis of inclusion criteria. Among the 290 cases that were evaluated for Oesophagogastroduodenoscopy study, in a span of 27 months, sixty-five patients underwent the Oesophagogastroduodenoscopy for dysphagia. This study was undertaken to find the incidence of dysphagia and effectiveness of Oesophagogastroduodenoscopy in early detection of oesophageal cancer. According to¹Ala' A Abdel Jalil MD *et al.*, oesophageal lesions causing narrowed lumen are common entities that can cause dysphagia. This study given the possible etiology can be evaluated only after oesophagogastro-duodenoscopy.⁴According to Johnston BT *et al.*, dysphagia is a red flag alarming symptom which requires oesophagogastroduodenoscopy.⁵According to Jianju Yang *et al.* while evaluating for dysphagia oesophagogastroduodenoscopy one might foresee the necessity for therapeutic procedure, as it can be done during the diagnostic procedure as well. One of the most significant cause of dysphagia is carcinoma oesophagus which can be detected after oesophagogastroduodenoscopy with biopsy.¹Ala' A Abdel Jalil MD *et al.* and⁴Johnston BT *et al.* gave information regarding the necessity to perform the oesophagogastroduodenoscopy in dysphagia to evaluate the patient for any pathology. This study gives the incidence of dysphagia and the incidence of early carcinomas detected by evaluating every patient with dysphagia. The progression from the BE to oesophageal

carcinoma is 50 to 100 times high. The risk of BE progressing into the oesophageal carcinoma is 0.12% where the incidence of BE is less than 5%. The signet ring cells in oesophageal adenocarcinomas variant lead to poor prognosis. In the recent years it has been found that the incidence of EAC has increased which is evident from the study. This study has shown the incidence of BE is 1.54% with incidence of the major carcinomas, EAC and the ESCC is 16.92%.

Prevention and Screening:

⁹ Some studies show that the factors reducing the risk of oesophageal cancer are PPI's, statins, anti-reflux surgeries, anti-oxidants and mineral supplements. But no recommendations exist to have sole purpose of cancer prevention. Barrett's oesophagus has surveillance guidelines but for the oesophageal cancer there are no such guidelines. The need for the surveillance of the patient once detected with any inflammatory disease is significant to avoid any sort of dysplasia or carcinoma. The patient is to be in follow up every three months for the first year, six monthly for the second year and then yearly for the next five years. The accuracy of oesophagogastroduodenoscopy to detect the pathology in a patient with complaints of dysphagia is approximately 89 % with many early detections of dysplasia which are approximately 10.77%. Screening of the patients suffering with dysphagia is immediately taken into consideration as per this study and evaluated with oesophagogastroduodenoscopy in emergency basis to diagnose the pathology and evaluate with no delay. After the histopathological report is obtained patient is immediately worked up for the carcinoma and planned for the further treatment.

RESULTS

Total number of patients that underwent oesophagogastroduodenoscopy were 290. Out of which 65 were suffering with complaints of dysphagia that were taken under the study. The incidence of Dysphagia is 22.41% The true positive rate of dysphagia with early detection is 27.69% with an accuracy of 87.69%.

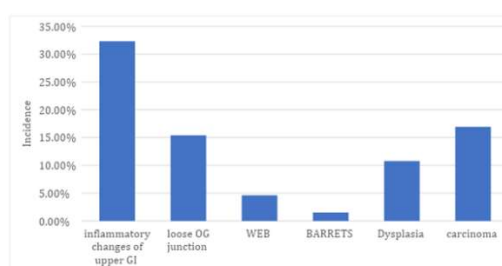


Figure 1: Distribution of incidence of different etiologies of dysphagia after oesophagogastroduodenoscopy.

The various etiologies specific to the anatomy of the oesophagus were identified by oesophagogastroduodenoscopy, which was charted and enumerated. The incidence of the inflammatory changes of upper Gastrointestinal tract is 32.31%, among which oesophagitis is 71.43%, gastritis is 33.33% and duodenitis is 19.05%.

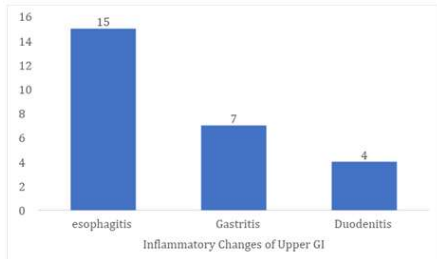


Figure 2

Dysphagia studied in the upper Gastrointestinal tract in the study population. Among the 65 patients who are suffering with the dysphagia there were remaining multiple etiologies apart of upper gastrointestinal etiologies. Incidence of loose gastro-oesophageal junction is 5.38%. Incidence of oesophageal Web is 4.61% . Incidence of Barrett’s oesophagus is 1.54% Incidence of dysplasia is 10.77%. Incidence of carcinoma in oesophagus is 16.92%

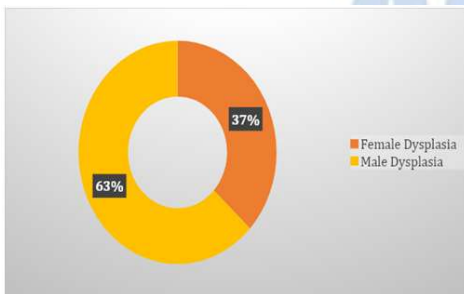


Figure 3: distribution of incidence of dysphagia gender wise

Among the carcinomas of oesophagus, incidence of adenocarcinoma is 18.81%. Incidence of Squamous Cell Carcinoma is 81.82%

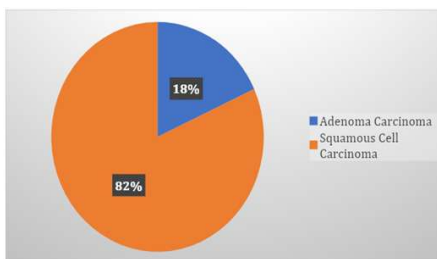


Figure 4: Distribution of the incidence of Carcinoma

Oesophageal Carcinoma incidence among the female and male gender is calculated. Incidence of oesophageal

Carcinoma in female is 4.17%. Incidence of oesophageal Carcinoma in male is 43.90%

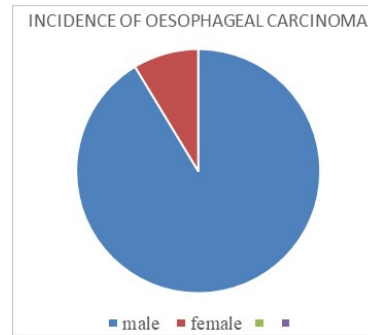


Figure 5

The accuracy of a patient with dysphagia having oesophageal pathology diagnosed as carcinoma after a complete evaluation by oesophagogastroduodenoscopy is approximately 87.6% with +/- 2 standard deviation.

CONCLUSION

Patients were evaluated for dysphagia and early detection of the oesophageal cancer by performing upper gastrointestinal endoscopy for a total of 65 patients out of whom Carcinoma of the oesophagus is seen in 11 patients. Dysplasia is diagnosed in a total of seven patients with moderate and mild variants. Patients who were with dysplasia and carcinoma were referred to higher centre for further management. Incidence of dysphagia with early detection of oesophageal carcinoma by oesophagogastroduodenoscopy was a challenging as well as accurate procedure. Loose oesophagogastric junction with reflux oesophagitis was considered with as a high-risk factor for BE as well as the EAC. Surveillance is advised in those patients with inflammatory conditions. Screening and surveillance if can be done in frequent intervals as per the guidelines would be great approach. There was no strong protocol to follow to approach the inflammatory lesion which can turn out to be dysplastic or carcinomatous. The major limitation of the study was OGD scope could not be passed beyond the growth / lesion / stricture in the upper oesophagus to detect the T stage with EUS. A guide wire could only be passed in such conditions. A special scope with size of a guide wire which can be used as a probe would be great help if produced to do EUS and for further detection the T stage. So the oesophagogastroduodenoscopy was found to be effective in early detection of dysplasia and oesophageal cancer which presented as dysphagia. This would help in early-stage diagnosis as well as treatment for the same.

REFERENCES

1. Ala' A Abdel Jalil MD, David A. Katzka MD, Donald O. Castell MD, Approach to the patient with Dysphagia 2015, May 22, *AJM online review*, Volume 128, Issue 10, P1138.E17-1138.E23
2. Saeed ZA, Winchester CB, Ferro PS, Michaletz PA, Schwartz JT, Graham DY. Prospective randomised comparison of polyvinyl bougies and thorough-the-scope balloons for dilation of peptic strictures of the oesophagus. *Gastrointest Endosc.* 1995; 41:189-95
3. YuJH, SeoKJ, Cho YS Unusual Oesophageal Mass as a cause of dysphagia, *Journal of Gastroenterology*, 2016Apr; 150(4) e1 - 2
4. Johnston BT- Oesophageal dysphagia: A step wise approach to diagnosis and management *Lancet Gastroenterol Hepatol.* 2017 Aug; 2(8): 604-609
5. Jianjun Yang, Xiguang Liu, Sai Cao, Xiaoying Dong, Shuan Rao and Kaican Cai, Understanding Oesophageal Cancer: The Challenges and Opportunities for the Next Decade, 2020, September 10
6. Yuwei Zhag, Epidemiology of oesophageal cancer *World J Gastroenterol* 2013 Sep 14;19(34): 5598-606
7. Daly JM, Fry WA, Little AG, *et al.*: oesophageal Cancer: Results of an American college of surgeons Patient care Evaluation study, *J Am Coll Surg.* 190:562-572
8. Short MW, Burgers KG, Fry VT Oesophageal cancer, *Am Fam Physician*, 2017 Jan 1;95(1)22-28
9. Matthew W. Short *et al.*, Esophageal cancer, *American Family Physician*, January1, 2017, Volume 95, Number 1, pg:23-27.
10. Murat Ferhat Ferhatoglu, Taner Kivılcım, Anatomy of Oesophagus, Oesophageal Abnormalities, Jianyuan Chai, *IntechOpen*, December 6th, 2017
11. Dustin J. Uhlenhopp, Eric Then, Tagore Sunkara, Vinaya Gaduputi, Epidemiology of oesophageal cancer: update in global trends, aetiology and risk factors, 2020, September 23rd *Clinical Journal of Gastroenterology*: volume 13, 1010–1021 (2020).
12. Kyle J Napier, Mary Scheerer and Subhasis Misra, Esophageal cancer: A Review of epidemiology, pathogenesis, staging workup and treatment modalities, *World J Gastrointest Oncol.* 2014 May 15; 6(5): 112–120
13. Young JL, Percy CL, Asire AJ, Berg JW, Cusano MM, Gloeckler LA, Horm JW, Lourie WI, Pollack ES, Shambaugh EM. Cancer incidence and mortality in the United States, 1973-77. *Natl Cancer Inst Monogr.* 1981;(57):1–187 (10)
14. Daly JM, Fry WA, Little AG, Winchester DP, McKee RF, Stewart AK, Fremgen AM. Esophageal cancer: Results of an American College of Surgeons Patient Care Evaluation Study. *J Am Coll Surg.* 2000; 190:562–572; discussion 572-573
15. Brown LM, Hoover RN, Greenberg RS, Schoenberg JB, Schwartz AG, Swanson GM, Liff JM, Silverman DT, Hayes RB, Pottern LM. Are racial differences in squamous cell esophageal cancer explained by alcohol and tobacco use? *J Natl Cancer Inst.* 1994; 86:1340–1345.

Source of Support: None Declared
Conflict of Interest: None Declared