

An Observational Study of Barium Swallow and Endoscopy as a Diagnostic Approach in Patients of Dysphagia

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Abstract: ***Introduction:** Dysphagia is defined as having difficulty in swallowing which may affect any part of the swallowing pathway from the mouth to the stomach. An accurate diagnosis of the cause is based on a detailed history, clinical examination, which includes indirect laryngoscopy and/ or flexible nasolaryngoscopy, and special investigations. **Aim:** To study the findings of barium swallow and diagnostic endoscopy in patients of dysphagia. **Material and Methods:** Data for the study will be collected from the patients attending the ENT OPD and undergoing Diagnostic evaluation (Barium Swallow and Endoscopy) at Dhiraj Hospital. **Sample size:** 50 patients. **Study Design:** Cross sectional observational Study. **Results:** 50 patients of dysphagia were selected. Barium swallow and Endoscopy has been done as a diagnostic evaluation. Both this approach used to evaluate dysphagia. Both tools used to diagnosed were quite good enough to diagnose. Most common diagnosis was Squamous cell carcinoma of oesophagus. Highly correlation has been seen between Barium swallow findings and esophagoscope findings. **Conclusion:** Esophageal carcinoma effectively diagnosed by both Barium swallow and Endoscopy. Highly correlation is seen between findings of Barium swallow and Endoscopy.*

Keywords: Dysphagia, Barium swallow, Oesophagoscopy, Carcinoma

1. Introduction

All invertebrates and vertebrates take in nutrition in one or other ways such as diffusion, absorption, and eating depending on their evolutionary level for their fittest survival in this earth. All vertebrates eat and then swallow their food without any exception. As a well evolved family among the vertebrates we humans face with difficulties in swallowing, termed as a “dysphagia”, derived from greek word “dys” meaning “with difficulty” and “phagia” meaning “to eat”.

A healthy adult swallows between 800 and 2400 times a day. Investigations into the physiology of swallowing were ventured very well before the invention of the modern investigations and the muscles and nerves responsible for the act of swallowing were defined. Magendie was the first physiologist who studied the phases of swallowing and the anatomic regions traversed by the “bolus” to be swallowed.^[1]

“Dysphagia is defined as having difficulty in swallowing which may affect any part of the swallowing pathway from the mouth to the stomach”^[2]. An accurate diagnosis of the cause is based on a detailed history, clinical examination, which includes indirect laryngoscopy or flexible nasolaryngoscopy, and special investigations.

Barium Swallow:

The process of getting x-ray pictures of the esophagus or the upper gastrointestinal (GI) tract. The x-ray pictures are taken after the patient drinks a liquid that contains barium sulfate (a form of the silver-white metallic element barium). The barium sulfate coats and outlines the inner wall of the esophagus and the upper GI tract so that they can be seen on the x-ray pictures.

Endoscopy:

Oesophagoscopy is the procedure of inserting an endoscope via mouth and guiding it into the oesophagus. An endoscope is a broad and rigid tube. This procedure is used for visualising the whole length of the oesophagus. The tissue bits can taken to diagnose medical conditions that affect the oesophagus. Endoscopy can be used as both diagnostic and therapeutic value.

This Review focuses on the diagnostic evaluation of dysphagia, with emphasis on the importance of taking a good history, and describes how to interpret findings from the two most useful investigative modalities—radiography and endoscopy. There tends to be an over-reliance on the diagnostic supremacy of endoscopy, with a corresponding neglect of the utility of radiology. At sometimes two modalities can also fail to yield a diagnosis.

2. Aims of the Study

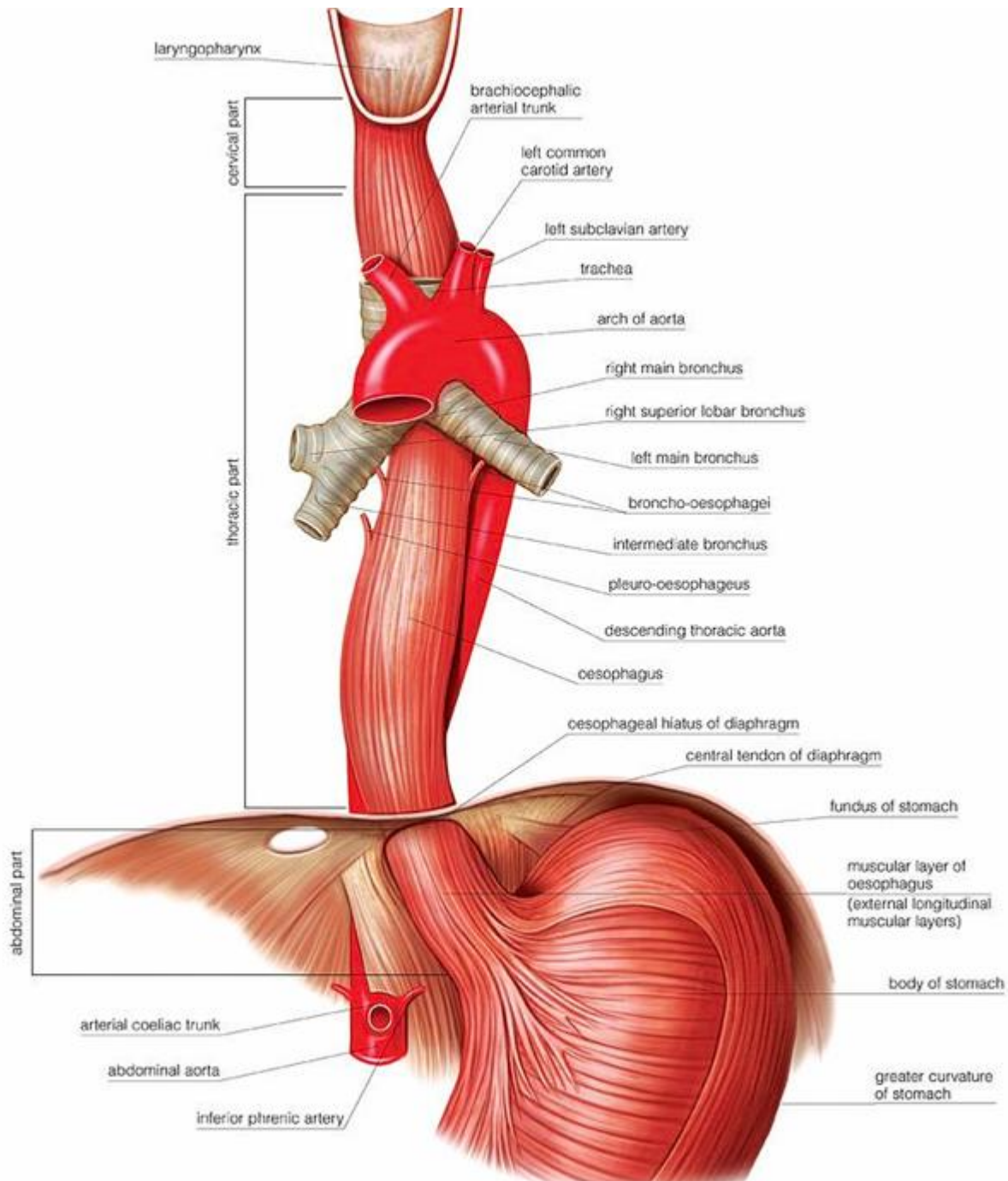
To study the findings of barium swallow and diagnostic endoscopy in patients of dysphagia

3. Objectives of the Study

- To evaluate findings of Barium swallow in patients of dysphagia.
- To evaluate findings of diagnostic Endoscopy in patients of dysphagia.
- Correlation of Barium swallow and Endoscopic Findings.

4. Review of Literature

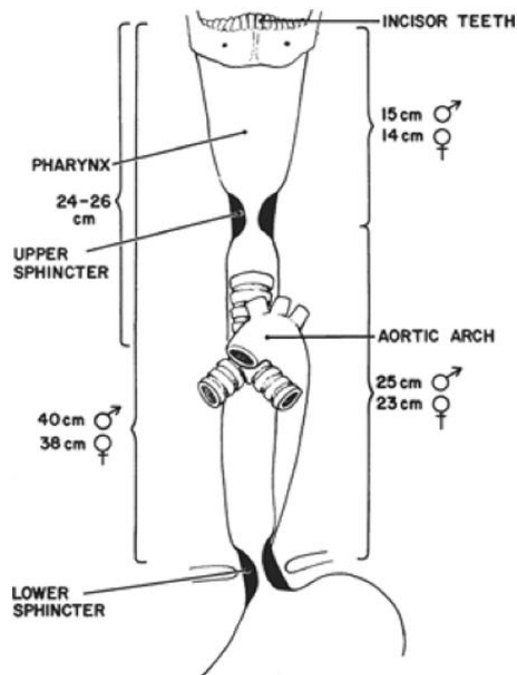
Endoscopic anatomy of esophagus:



The oesophagus is a 25cm long muscular tube lined by a non-keratinized stratified squamous epithelium that traverses the neck, superior and posterior mediastinum. In the neck it is located immediately behind the trachea and anterior to prevertebral fascia, and the 6th - 8th cervical vertebrae; laterally are the contents of the carotid sheaths and the thyroid lobes. In the superior mediastinum it turns slightly to the left before returning to the midline. It passes behind the aortic arch and to the right of the descending aorta until it reaches the inferior mediastinum where it passes anterior and slightly to the left of the aorta before traversing the diaphragm. Anteriorly it abuts trachea, right pulmonary artery, left main bronchus, pericardium, left atrium, and diaphragm. Posteriorly it is related to the vertebrae, the thoracic part of the aorta, and diaphragm. Three points of external compression are visible at oesophagoscopy are aortic arch, left main bronchus and diaphragm. The left main

bronchus crosses the oesophagus anteriorly and indents it below the aortic arch.

Pathology seen at rigid oesophagoscopy is recorded as its distance from the upper incisors. The distance markings are noted onto the outside of the scopes.^[3]

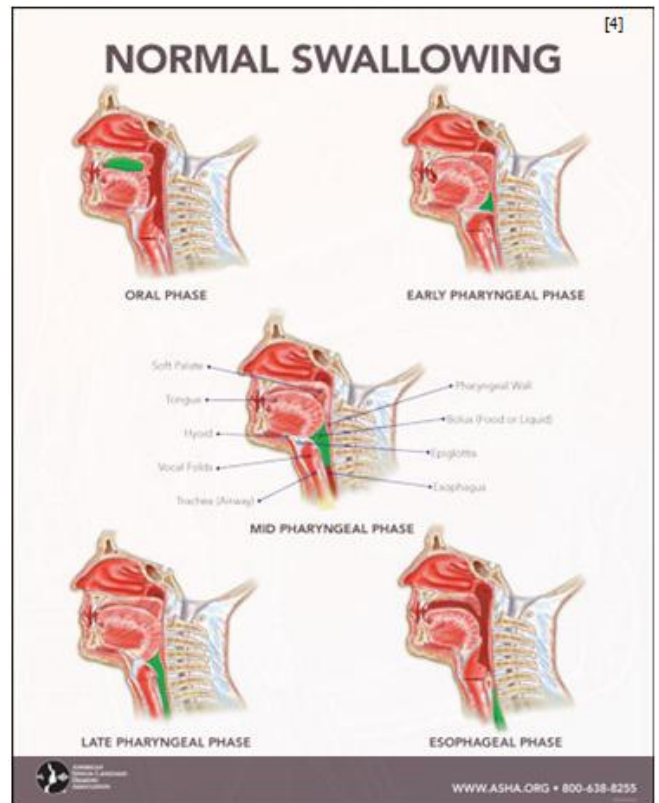


Swallowing Phases

The oral phase starts with formation of the oral bolus with the tongue, including mastication and lubrication of the bolus. The second event in the oral phase is transport of the bolus to the pharynx. This concludes the voluntary portion of the swallow, and the swallow reflex starts.

The first event in the pharyngeal phase of swallowing is elevation of the soft palate, which in combination with superior pharyngeal muscle constriction, occludes the nasopharynx to prevent nasopharyngeal reflux. Next, the hyoid bone elevates, raising the larynx along with it. This causes the epiglottis to retroflex and cover the vestibule of the larynx. At the same time, the vocal folds occlude. The next step in the pharyngeal phase is contraction of the pharyngeal constrictors in a peristaltic wave that forces the bolus through the pharynx, across the pyriform sinuses, and into the esophageal verge.

The esophageal phase of deglutition starts with relaxation of the cricopharyngeus muscle to allow passage of the food bolus. The peristaltic wave then progresses through the cervical and thoracic esophagus.



Dysphagia

The classification of dysphagia maybe subdivided into the local and general causes of obstruction of any tube in the body with causes in the lumen, in the wall and external compression of the wall as first popularized by Ellis and Calnein their Lecture Notes on General Surgery series. The author uses the equally popular 'surgicalseive' of congenital and acquired causes of dysphagia.^[5]

Congenital:

- Choanal atresia
- Cleft lip and palate
- Laryngomalacia
- Unilateral vocal cord paralysis
- Laryngeal cleft
- Tracheoesophageal fistula
- Esophageal atresia
- Vascular rings

Acquired:

1) Traumatic

- Accidental and iatrogenic;
- Blunt trauma, penetrating injuries and
- Compression effects;
- Direct injury and cranial nerve damage;
- Head injury

2) Infections

- Acute pharyngitis, tonsillitis, quinsy;
- Glandular fever;
- Acute supra glottitis;
- Herpetic, fungal, cytomegalovirus mucosal lesions;
- Candidiasis;
- Tuberculosis;
- Submandibular, parapharyngeal and retropharyngeal abscesses.

3) Inflammatory

- Gastroesophageal reflux disease stricture formation;
- Patterson Brown–Kelly or Plummer–Vincent syndrom
- Systemic autoimmune disorders:
- Scleroderma and ‘CREST’ syndrome;
- Dermatomyositis; mixed connective tissue disease; benign pemphigoid and epidermolysis bullosa; primary and secondary Sjogren’s diseases; rheumatoid arthritis; Crohn’s disease; sarcoid.

4) Oesophageal motility disorders

- Achalasia
- Diffuse oesophageal spasm;
- Nutcracker’ oesophagus.

5) Neoplastic

- Benign tumours of the oral cavity, pharynx and oesophagus;
- Malignant tumours of the oral cavity, pharynx and oesophagus;
- Nasopharyngeal carcinoma;
- Skull base tumours;

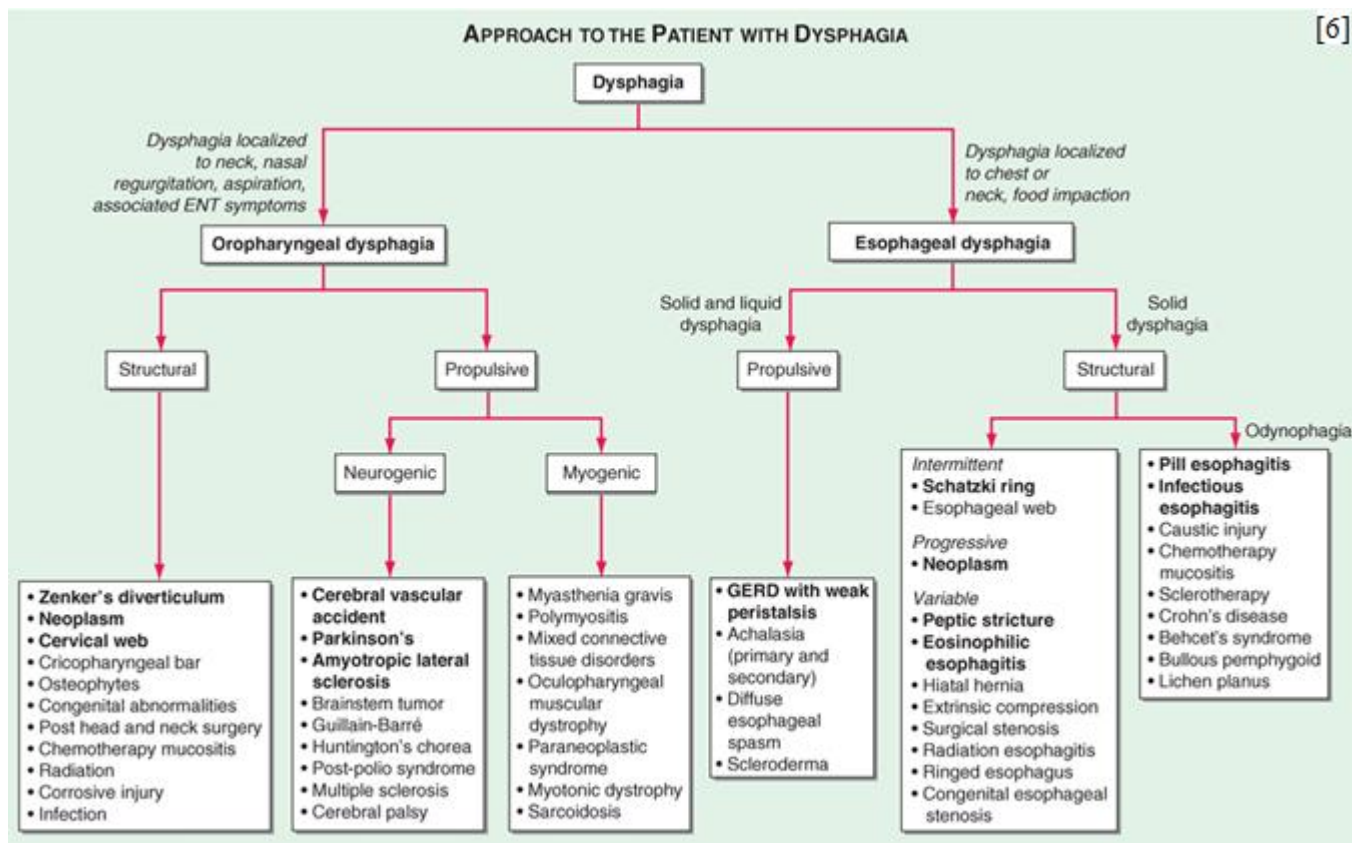
- Leukaemias and lymphomas
- Enlarged mediastinal lymph nodes.

6) Neurological

- Cerebrovascular accidents (stroke);
- Isolated recurrent laryngeal nerve palsy;
- Parkinson’s disease;
- Multiple sclerosis;
- Myasthenia gravis;
- Motor neurone disease.

7) Drug-induced**8) Ageing: Presbydysphagia****9) Miscellaneous**

- Foreign bodies in the pharynx and oesophagus;
- Caustic stricture;
- Pharyngeal pouch;
- Globus pharyngeus;
- Patients with tracheostomy
- Thyroid disease.

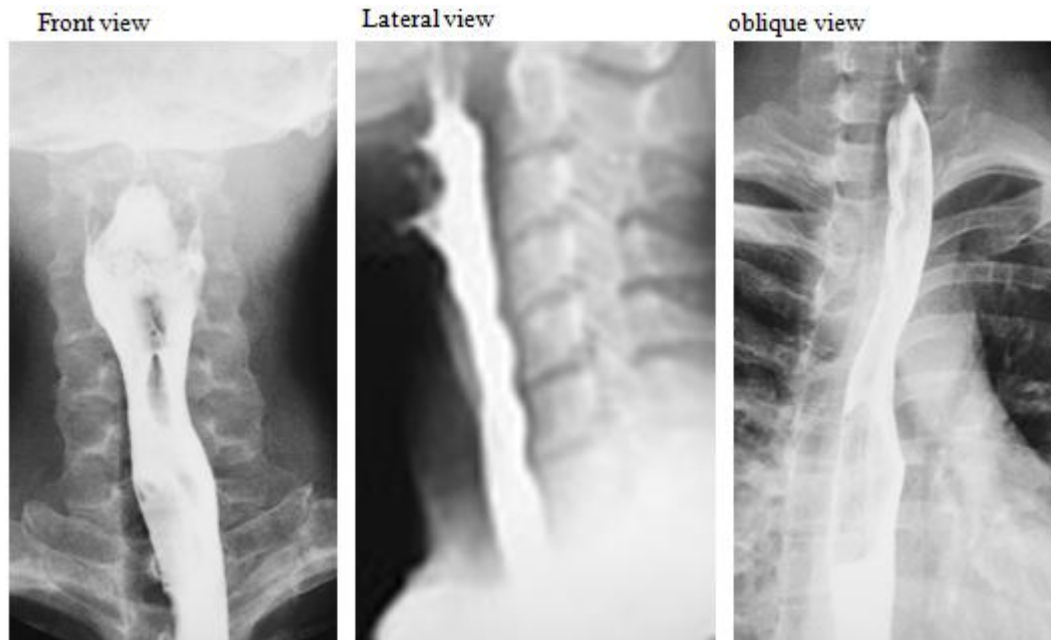


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Barium Swallow

If the reason is not obvious after an ENT examination all patients with dysphagia should have a barium swallow. The patient is given a cup of liquid barium to swallow and the bolus is followed fluoroscopically to the stomach. Documentation is on film only, dynamic features and anomalies are described in the report.^[7]

Good views of the pharynx and post-cricoid space can be obtained if dedicated views are specifically requested. Barium swallow may confirm reflux, but it is not a very sensitive investigation as it fails to pick up 40 percent of cases^[7]



At the beginning of the procedure the patient will be asked to swallow liquid barium and a combination of granules and citric acid. The granules and citric acid together form carbon dioxide which distends the barium coated esophagus and stomach. It is important that the gas produced by the fizzes stay within the stomach so maintaining maximum distension. It is therefore necessary for the patient not to burp even if they feel they need to do. The radiologist uses a X-ray machine to visualize the esophagus and stomach. The patient is asked to stand or lie in different positions in order to produce the best images. Each time an X-ray is taken the patient is asked to hold their breath for a brief moment. After completion of the examination the patient waits in order to make sure that the images are entirely satisfactory before being discharged.

The barium tablet is used to detect esophageal strictures. The tablet of known diameter (1/2 inch or 12.7 mm) provides a gauge for determining the true size of the lumen at the site of an esophageal ring or stricture. A tablet diameter of 1/2 inch was selected for two reasons:

- 1) Schatzki demonstrated that patients with esophageal rings of less than 13 mm diameter invariably had dysphagia, and
- 2) It corresponds to the diameter of the standard adult endoscope (13 mm).

Indications:

- Dysphagia
- pain on swallowing
- Abdominal pain,
- Blood stained vomitus
- Unexplained weight loss

Contraindications:

- Esophageal perforation as risk of leakage of barium in mediastinum may cause inflammatory changes
- Patient is unable to swallow liquids and is at a risk for aspiration
- Recent gastric or esophageal surgery

Advantages of Barium Swallow:

- 1) Anesthesia is not required
- 2) Can be done in OPD cases
- 3) Easy to do and not time consuming
- 4) Diagnosis is done by typical Barium pattern seen in film

A study was conducted by Ekberg and Michel J. feenberg on 56 patients of age between 72 to 93 yrs who were having no complaints of impaired swallowing using barium swallow. They observed that the swallowing function was normal in only 16%. In 20% of peoples there was misdirected swallowing into sub-epiglottic segment of laryngeal vestibule. In 45% of patients a misdirected swallowing into the supraglottic segment of laryngeal vestibule was observed,. In 16% of patients there was sensory motor inco-ordination of oral fluids. Pharyngeal retention was observed in 20%. Defective opening of upper esophageal sphincter was found in 23% of patients. Structural abnormalities like web were picked up only in 5% of patients. 36% of the asymptomatic elderly patients were having esophageal dysfunction. These observations lead them to conclude that non dysphagic patients of old age have altered swallowing functions. We can get two important points from this study, one is we can diagnose even a minor pathology of upper digestive tract by using Barium swallow. Other thing is that it is difficult in elderly patients with dysphagia to differentiate whether it is due to aging or due to disease. This needs clinical correlation^[8].

Endoscopies

Endoscopy is indicated for virtually every dysphagic patient. A normal endoscopy, however, does not rule out the presence of a structural abnormality. An esophageal mucosal ring is not always apparent unless adequate distension of the esophagus has been achieved by insufflation.

1) Direct Pharyngoscopy and Rigid Endoscopy

This is performed to see and biopsy the pharynx and upper oesophagus in patients who complain of food sticking during swallowing, even if the barium swallow is normal, as this symptom may be an early sign of cancer in an area not easily visualized by barium

examination. It is also carried out to obtain a biopsy and stage tumours of the pharynx and upper oesophagus that have been evident on clinical or radiological examination. It is the most reliable way of examining the postcricoid area.

2) Flexible Upper GI Oesophagoscopy

This is performed by either a gastroenterologist or by an oesophageal surgeon, to visualize, assess, stage and biopsy the oesophagus in patients with oesophagitis, Barrett's oesophagus and tumours. It is poor at detecting disease of the hypopharynx partly because gastroenterologists focus on the alimentary tract distal to cricopharyngeus, partly because this zone is passed through very rapidly, but perhaps more importantly because the flexible endoscopes cannot examine the piriform sinuses adequately.

3) Fiberoptic Endoscopic Evaluation of Swallowing

In a fiberoptic endoscopic evaluation of swallowing (FEES) a fiberoptic nasoendoscope is passed through the nose to observe the larynx and pharynx at rest and during the pharyngeal phase of swallowing. With it, pooling of saliva in the hypopharynx, reduced or absent endolaryngeal sensation and aspiration before and after swallowing can be detected. It is useful in neurological, frail and post-surgical patients and can be performed at the bedside. The test can be extended usefully by using coloured fluids, solids. Unfortunately, all the phases of swallowing cannot be assessed directly and the cricopharyngeus and the oesophagus cannot be visualized.

4) Complications of Oesophagoscopy

Mucosal tears and lacerations

Minor tears and lacerations can be ignored; if in doubt about the clinical significance, institute antibiotics and nasogastric tube feeding and monitor the patient carefully.

Oesophageal perforation

This is a surgical emergency and has significant morbidity and mortality, especially if not promptly recognised and managed. Leakage of oesophageal and gastric content into the mediastinum rapidly leads to mediastinitis, sepsis and multiorgan failure. Clinical pointers include pain in the chest, back and neck, odynophagia, dysphagia, tachycardia, tachypnoea, pyrexia, Surgical emphysema and signs of sepsis.

Management Include:

- Nil per mouth
- Broad spectrum antibiotics
- Haemodynamic stabilisation and intensive monitoring
- Confirm the diagnosis
 - (i) Chest X-ray
 - (ii) Gastrograffin swallow
- Decision-making about the need for surgical intervention

5. Material & Methods

The present study is cross sectional observational study.

The patients attending the ENT OPD for dysphagia between August 2017 to July 2018 who underwent Diagnostic

evaluation (Barium Swallow and Endoscopy) at Dhiraj Hospital and those fitted in the study criteria were selected for the study.

Patients who fulfilled the following criteria were included in the study.

Inclusion Criteria

All patients attending the ENT outpatient department of Dhiraj Hospital with complaints of Difficulty in swallowing with or without associated complaints of pain / regurgitation of food / Hoarseness / Coughing / frequent chest infections will be included in the study

Exclusion Criteria

- Age less than 12 years
- Contraindications to undergo investigation

For Barium swallow:

- 1) Esophageal perforation as risk of leakage of barium in mediastinum may cause inflammatory changes
- 2) Patient is unable to swallow liquids and is at a risk for aspiration
- 3) Recent gastric or esophageal surgery

For Esophagoscopy:

- 1) Hemodynamically unstable patient
- 2) Head and neck surgery
- 3) History of intolerance to procedure

5.1 Method

Detailed history and thorough clinical examination of Throat, Ear and Nose was carried out. Data was collected as regards to age, sex, dysphagia related history of present illness and past history and diagnostic findings. Patient of Dysphagia, after clinical examination, diagnosed either as a preoesophageal dysphagia or oesophageal dysphagia. For Patients of preoesophageal dysphagia Barium swallow was not required generally. Clinical Diagnosis might be done by routine clinical examination of larynx.

For patients of oesophageal dysphagia:

Barium swallow

The request form specifically indicated a request for a barium swallow for the patient was taken. Adequate clinical details and history was taken.

Patient Preparation has been done by

- Checking patient identification
- Checking for pregnancy, Stated if female
- Patient him by mouth for 6 hours with a minimum of 2 hours
- The procedure was explained to the patient prior to the barium
- Checking sensitivity to drugs used.

Examination preliminaries

- Medical history was taken
- Appropriate laboratory results and other examinations was reviewed

Examination Technique

A chest x-ray was taken initially prior to Barium Swallow procedure^[27]

Single Contrast Barium Swallow

In single contrast, only barium solution is used as radio opaque material. The picture must be exposed at the minimum of two dimensions for better evaluation (A.P and lateral views). The entire esophagus must be visualized in AP, Lateral and both. The Esophagus must be demonstrated to be barium filled. Mucosal relief films should also be taken. The gastro- esophageal junction should demonstrate its relaxation with flow of barium from the esophagus to the stomach. The esophagus is assessed for reflux and motility disorders.

Documentation

The report indicated if it was a single or double contrast study. The study of the esophagus indicated abnormalities in the mucosal outline, presence of mass lesions, gastro-esophageal reflux or any motility disturbances noted during the examination.

Endoscopic evaluation:

For endoscopy patient was admitted.
Nutritional status was checked for hydration. Hydration is maintained if required.
Oesophagoscopy done under general anesthesia.
Routine investigations has been done:
CBC
RBS
RFT
S. ELECTROLYTE
CHEST X-RAY PA VIEW
ECG
SEROLOGY
BT/CT AND PT/INR
Preanesthetic check up has been done.

Oesophagoscopy:**Rigid**

Basic rigid oesophoscope design dates back over a century. In its crudest form it is a hollow tube with a light on the end. Many variants are in common use attesting to their almost indestructible nature. More modern designs have smooth bevelled edges and prismatic wave guides to maximise the size of the working channels and good available area for biopsy. This is an advantage over flexible scopy. Because otolaryngologists generally deal with pathology in the cervical and upper/mid-thoracic oesophagus, a 25cm rigid scope is usually adequate.^[28]

Only use a longer scope for pathology located in the distal oesophagus. Use a scope with a bevelled, smooth, rounded end. Both adult and paediatric sized scopes are available; select a larger size if possible as it transmits more light, one can see better, and it is less likely to perforate the oesophageal wall.

Preoperative evaluation

A good history may alert a surgeon to the possibility of a pharyngeal pouch which is easily perforated as the oesophoscope naturally enters a pouch. Chest X-ray is done to exclude a deviated oesophagus and an aortic aneurysm. In patients with dysphagia, a Barium swallow serves as a roadmap for the endoscopist.

Oesophagoscopy technique

Perforating the oesophageal wall with a rigid oesophoscope is a life-threatening event. Hence rigid oesophagoscopy should be done with extreme caution and with a delicate hand; it also requires clinical judgement as to when to abandon the procedure or call for expert assistance.

- Place the patient in a supine position
- Ensure that the back of the head is well supported on the operation table (especially in old patients with limited spinal extension)

- The proximal oesophagus follows the lordosis of the cervical and thoracic spine; bring the cervical spine into a straight line with the thoracic spine by elevating the head. [Prominent osteophytes may impair advancement of the scope and make traumatising the mucosa more likely.]
- Sit down at the head of the table and adjust the table to a comfortable height
- Cover the upper teeth with dental guard (cotton swab if edentulous)
- Select the appropriate oesophagoscope (largest that is likely to be suitable)
- Apply aqueous gel to the oesophagoscope
- Insert the oesophagoscope, protecting the lips from injury with the fingers of the non-dominant hand.
- Use the thumb of the non-dominant hand as a fulcrum for the oesophagoscope to protect the teeth.
- Keeping in the midline, advance the oesophagoscope and identify the posterior pharyngeal wall; advance the scope along the posterior pharyngeal wall while remaining in the midline



Alternatively, with the neck extended, pass the scope via the right corner of the mouth and floor of mouth, and follow the lateral wall of the right pyriform fossa to its full depth. Readjusting the scope to the midline engages the larynx and elevating it anteriorly usually exposes the cricopharyngeus.

- 1) The most difficult step for an inexperienced endoscopist is to advance the scope through the upper oesophageal sphincter (cricopharyngeus)
 - The hypopharynx tapers down to the oesophagus like a funnel with the larynx suspended anteriorly
 - The scope comes to a dead-stop and the pharyngeal lumen disappears as one reaches the cricopharyngeal sphincter
 - Ensure that the bevel of the scope is pointing upwards
 - Elevate the tip of the scope against the posterior surface of the cricoid with the non-dominant thumb
 - Look for the oesophageal lumen to appear while applying steady, firm pressure against the contracted cricopharyngeus
 - Slowly advance the tip of the scope while always keeping the lumen in view

- 2) Always consider the possibility of a pharyngeal pouch (Zenker's diverticulum) which is easily perforated
 - A pharyngeal pouch is located immediately behind the upper oesophageal sphincter
 - Finding the oesophageal lumen may be very challenging
 - A scope will always automatically enter a pouch
- 3) Advance the scope down the cervical oesophagus, always keeping the lumen in view while advancing the scope
- 4) Use a long metal sucker to clear oesophageal contents
- 5) A tightly inflated endotracheal tube cuff may compress the oesophagus; deflating it may make passage of the oesophagoscope easier
- 6) Once the oesophagoscope has been passed all the way, carefully inspect the oesophagus for pathology and for mucosal trauma while slowly retracting the scope
- 7) Biopsy lesions with long biopsy forceps

Complications related to esophagoscopy recorded.

6. Results

In this study all the 50 patients during study period from August 2017 to July 2018 with dysphageal symptoms from Dhiraj hospital, pipariya were subjected to Barium swallow and Endoscopic examination. An attempt was made to evaluate findings of Barium swallow and Endoscopy in patients of dysphagia. The analysis of the study is as follows:

Age distribution

Age	Patients
13 to 25 years	1
26 to 50 years	22
51 to 75 years	25
>75 years	2
Total	50

- A large majority of the study population lies in the age groups of 51 to 75 years(50%).
- 44% of the study population lies in the age group of 26 to 50 years.

Sex distribution

Male	Female	Total
40	10	50

- Among the study population a large majority were males (80%).
- 20% of the study population were females.

Type of food

Type of Food	Frequency	Percentage
Solids	14	8
Solids and Liquids	33	66
Liquids	3	6

- Most common patients came with dysphagia to solids and liquids both (66%).
- 28% with solids and only 6% with liquids.

Onset of disease

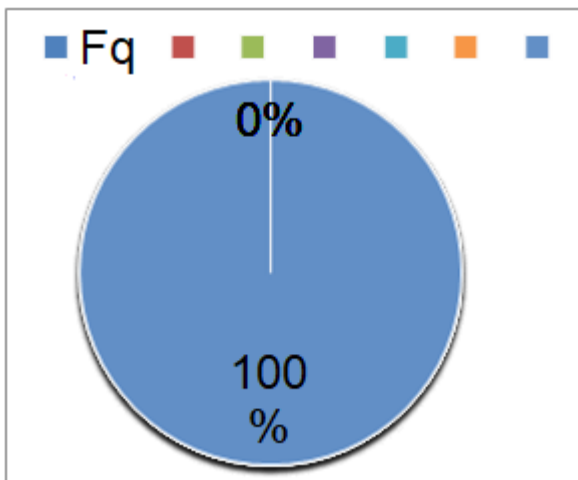
Onset	Frequency	Percentage
Prograssive	44	88
Intermittent	6	12

- 88% of patients came with progressive diseases.

Presenting symptoms of patients

- The above pie chart shows the symptomatology of the study subjects with Dysphagia.

Symptoms	Frequency	Percentage
Difficulty in swallowing	50	100
Weight loss	36	72
Substernal pain	32	64
Hoarseness voice	12	24
Cough	16	32
Vomiting	4	8
Regurgitation	7	14



- Most common symptom experienced was difficulty in swallowing (100%), followed by weight loss (72%).
- 64% of the study patients had substernal pain.

Result of Barium swallow findings

- 84% Patients show abnormal barium while 16% shows normal study.
- Normal study was seen in patients with Inflammations and premalignant diseases like dysplasia.

Abnormal Barium swallow findings

Barium Swallow Findings	Site	Frequency	Percentage
Filling Defect In Oesophagus	Upper 1/3	14	33.33
	Middle 1/3	21	50
	Lower 1/3	4	9.52
Rat Tail Appearance		3	7.14

- 50% Patients show filling defect in middle 1/3 region followed by 33.33% in upper 1/3.

Result of Endoscopic findings

Endoscopic Findings	Frequency	Percentage
Normal	0	0
Abnormal	50	100
Total	50	100

- 100% Patients show abnormal endoscopic findings.

Site of oesophagus lesion in Oesophagoscopy

Site	Frequency	Percentage
Cervical	5	10
Upper Thoracic	8	16
Mid Thoracic	22	44
Lower Thoracic	15	30

- 44% Patients show lesion in mid thoracic region followed by 30% in lower thoracic.

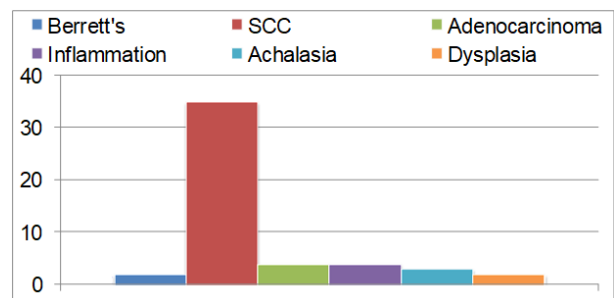
Complications related to endoscopy

Complications	Present	Percentage
Laceration	4	8
Tooth Trauma	3	6
Perforations	0	0

- Minor complications seen in endoscopy.
- 8% cases shows laceration and 6% shows tooth extraction
- Esophageal perforation not recorded

Frequency of Oesophageal diseases on basis of Microscopic findings

Diseases	Frequency	Percentage
Barrett's oesophagus	2	4
Squamous cell CA	35	70
Adenocarcinoma	4	8
Oesophagitis	4	8
Achalasia Cardia	3	6
Epithelial dysplasia	2	4



- The above bar graph shows the different diagnosis observed of the study subjects with dysphagia.
- Most common diagnosis was Squamous cell Carcinoma 70%.
- Adenocarcinoma and Inflammation were observed in 8% and 6% in Achalasia cardia.

Sensitivity of Barium swallow

	Abnormal in Endoscopy	Normal in Endoscopy
Abnormal barium swallow	42 (TP)	0 (FP)
Normal barium swallow	8 (FN)	0 (TN)

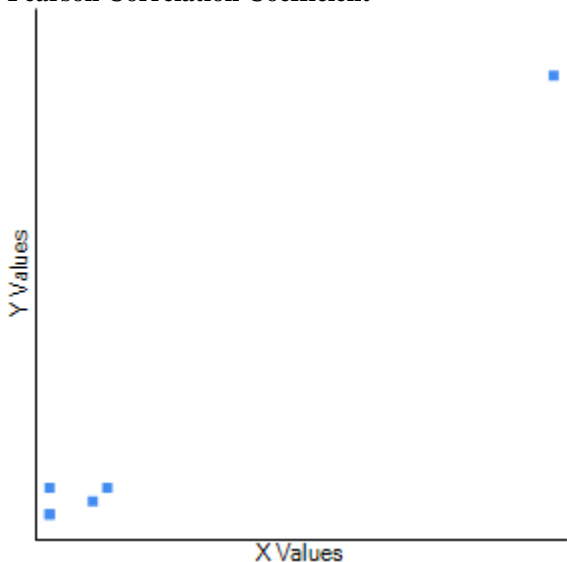
- Sensitivity : 84%

Correlation of Barium swallow and Endoscopy

	Barium	Oesophagoscopy
Barrett's oesophagus	0	2
Squamous cell CA	35	35
Adenocarcinoma	4	4
Oosphagitis	0	4
Achalasia Cardia	3	3
Epithelial dysplasia	0	2

Esophagoscopy is more efficient in detecting esophageal pathology.

Pearson Correlation Coefficient



The value of R is 0.9941. This is a strong positive correlation.

7. Discussion

Dysphagia is a common symptom with diverse etiology in otolaryngology. In the present study clinicopathological, radiological and endoscopic evaluation of patients was done.

- 1) Demographic details of the study population
- 2) Details of preoperative symptoms, intra operative findings

Demographic details of the study population

Age distribution

In the present study maximum study population were in the age group of more than 51 to 75 years, which contained 50% of study population followed by age group of 26 to 50, which contained 44% of study population. Age group of >75 and <25 contained 4% and 2% of study population respectively. According to epidemiological analysis in patients with dysphagia by Florian Froelich^[29] dysphagia are more common in elderly over the age group of 50 and rarely affect children and young people.

Gender distribution:

In present study out of 50 patients 40 patients were male (80%) and 10 patients were female (20%). According to the epidemiological analysis by Florian Froelich et al, men are more commonly affected with gender ratio of 77:62.

Clinical Profile of Study Patients

Incidence of preoperative symptoms:

Symptoms	William K. Hirota et al	David A Liberman et al	Present study
Difficulty in swallowing	17	18	100
Weight loss		-	72
Substernal pain	25	17.3	64
Hoarseness voice		-	24
Cough		-	32
Vomiting		25	8
Regurgitation		10.2	14

In present study it was found that the symptoms contributing for endoscopy for dysphagia associated was differ from western studies which was done by David A. Liberman et al^[30] and William K. Hirtola^[31]. Only incidence of Regurgitation closely related with David Liberman et al study.

In present study most common symptom experienced was difficulty in swallowing (100%), followed by weight loss (72%). 64% of the study patients had substernal pain.

Barium swallow findings

Barium findings		Kavita Sachdeva and Veenit Kaul study	Present study
Mucosal Irregularity in Laryngopharynx		3.77	-
Hold Up Of Barium At Laryngopharynx		1.88	-
Bronchogram		1.88	-
Filling Defect in Oesophagus	Site		
	Upper 1/3	7.54	33.33
	Middle 1/3	15	50
	Lower 1/3	13.2	9.52
Rat Tail Appearance		3.77	7.14
Diffuse Esophagitis		3.77	-
No Finding Seen		47.2	-

In barium swallow findings, filling defect is seen mostly (50%) in middle 1/3 of esophagus. And 33.33% in upper 1/3 esophagus. In correlation of Radiological and endoscopic findings in patients of dysphagia Kavita Sachdeva and Veenit Kaul^[32] was experienced above findings. Incidence of Rat tail appearance in barium swallow closely related in both study.

Intra operative findings

endoscopic Findings	William K. Hirtola et al	David A. Liberman et al	Present study
Oesophagitis	20	17	8
Berrett's oesophagus	-	4.2	4
Oesophageal Stricture	-	-	78
Achalasia Cardia	-	-	6

These results indicate that the incidence of oesophagitis related pathology is higher in previous study of William K Hirtola and David A Liberman. Incidence of Berrett's esophagus shows similar results in present study with previous studies.

Site of esophageal lesion

Perna Mandowara in study of Role of Rigid Esophagoscopy in diagnosis and treatment of Esophageal conditions noted 44.4% lesion in cervical esophagus followed by 25.9% in upper thoracic region. 22.9% in mid thoracic and 7.4 % in lower thoracic region^[33]

44% Patients show lesion in mid thoracic region followed by 30% in lower thoracic in present study.

Complications related to rigid esophagoscopy

Complication	Gabriel J. Tsao MD, Edward J. Damrose, MD	Present study
Laceration	-	8
Tooth trauma	-	6
Esophageal perforation	2.6	-

Gabriel J. Tsao MD, Edward J. Damrose, MD recorded the 2.6 percent esophageal perforation rate in Complications of esophagoscopy in an academic training program study for rigid esophagoscopy.^[34]

Esophageal perforation not recorded in present study.

Minor complications seen in this study .8% cases shows laceration and 6% shows tooth extraction .

Sensitivity of Barium swallow

In correlation of Radiological and endoscopic findings in patients of dysphagia Kavita Sachdeva and Veenit Kaul reported 49.05% sensitivity of Barium swallow. In present study 84% Barium swallow sensitivity seen,

Correlation of Barium swallow and endoscopic findings

The correlation between endoscopic and radiographic diagnosis of benign peptic esophageal stricture was studied retrospectively in 52 patients in The roles of esophagoscopy vs. radiography in diagnosing benign peptic esophageal strictures by Gerald A. Hiatt^[35], found to have significant strictures at esophagoscopy. Radiographs read as positive for stricture ranged from 40% to 34.1% when taken 1 to 8 months before endoscopy. None of 10 patients who had a barium swallow after the endoscopic diagnosis was reported as having a stricture. These data indicate that radiography cannot be totally relied upon to diagnose benign peptic esophageal strictures and that esophagoscopy should be routinely employed when dysphagia is a symptom.

In present study the value of R(Pearson correlation ratio) is 0.9941. This is a strong positive correlation. So Barium swallow findings is highly correlate with endoscopic findings. 100% patients of Esophageal carcinoma detected in Barium swallow as well as in endoscopy.

8. Summary

50 patients of dysphagia were selected on the basis of inclusion and exclusion criteria. Randomly selected patients go through diagnostic approach in dysphagia , findings of Barium swallow and endoscopy was recorded.

1) In the study there were more male patients (80%) than female patients (20%).

- 2) Most patients were in age group of more than 50 years.
- 3) Most of patients came with dysphagia to solids and liquids both (66%).
- 4) 88% of patients came with progressive diseases.
- 5) Most common symptom experienced by patients was difficulty in swallowing(100%) followed by weight loss (72%)
- 6) 84% Patients show abnormal barium while 16% shows normal study.
- 7) 50% Patients show filling defect in middle 1/3 region in Barium swallow.
- 8) 100% Patients show abnormal endoscopic findings.
- 9) 44% Patients show lesion in mid thoracic region in Endoscopy.
- 10) Esophageal perforations was recorded in none of the patients.
- 11) Most common diagnosis was Squamous cell Carcinoma 70%. Adenocarcinoma and Inflammation were observed in 8% and 6% in Achalasia cardia.
- 12) Sensitivity of Barium swallow findings 84%.
- 13) Highly correlation is seen between Barium swallow findings and Endoscopic findings.(r= 0.9941)

9. Conclusion

In patients of dysphagia, for diagnostic evaluation widely used two tools Barium swallow and endoscopy can detect variety of disease related to esophagus dysphagia.

Esophageal carcinoma effectively diagnosed by both Barium swallow and Endoscopy.

Endoscopy can detect most of cases with benefits of histopathology report (Biopsy).

Highly correlation is seen between findings of Barium swallow and Endoscopy.