

## Chapter one

### 1-1 Introduction:

“Dysphagia” is defined as “difficulty in swallowing.” Dysphagia is also a symptom, defined as the “subjective awareness of swallowing difficulty during passage of a liquid or solid bolus from the mouth to the stomach.” As a symptom, it is usually indicative of an abnormality in the function or structure of the organs involved in swallowing or those involved in swallowing, breathing, and speech interaction. Dysphagia can be caused by functional or structural abnormalities of the oral cavity, pharynx, esophagus, or even the gastric cardia. Many patients with Dysphagia can subjectively localize a sensation of blockage or discomfort to the throat or to the retrosternal region. (Rubesin, Stephen 1995).

Patients with pharyngeal Dysphagia typically complain of food sticking in the throat or of a globus sensation with a lump in the throat. It also is important to recognize that abnormalities of the mid or distal esophagus or even the gastric cardia may cause referred Dysphagia to the upper chest or pharynx, whereas abnormalities of the pharynx rarely cause referred Dysphagia to the lower chest. Therefore, the esophagus and cardia should be evaluated in patients with pharyngeal symptoms, particularly if no abnormalities are found in the pharynx to explain these symptoms. (Prasse JE, Kikano GE.. 2004).

Other patients may have retrosternal Dysphagia with a sensation of blockage or discomfort anywhere from the thoracic inlet to the xiphoid process. This symptom may be caused by esophageal motility disorders or by structural abnormalities of the esophagus or cardia such as esophagitis, rings, strictures, or tumors.

Dysphagia can cause significant morbidity and mortality, especially in the elderly and the pediatric population. Dysphagia is a common presenting

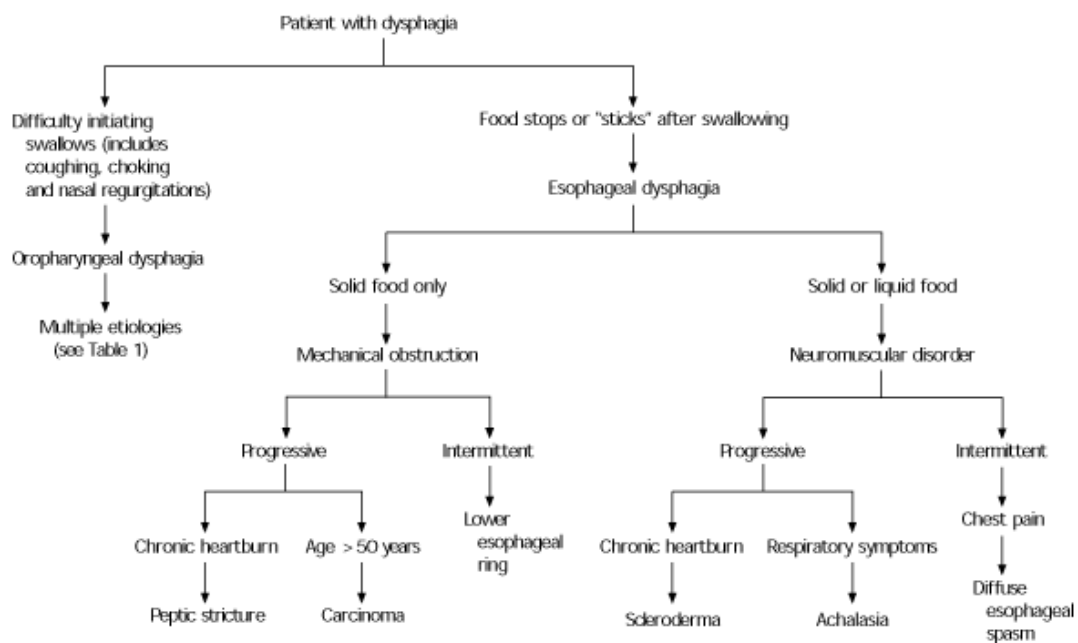
symptom. An otolaryngologist is in a better position to evaluate the causes of Dysphagia. Barium swallow or oesophagography has been advocated as the initial examination for Dysphagia because of its cost effectiveness, non invasiveness and easy availability (JA.Logemann1995).

Barium swallow is effective in detecting motility disorders<sup>5</sup> and anatomical anomalies like ring and strictures.

Optimal evaluation of patients with Dysphagia depends on the nature and location of the Dysphagia and the clinical setting. The following are considered separately:

1. Oropharyngeal Dysphagia with an attributable cause .
2. Unexplained Oropharyngeal Dysphagia.
3. Substernal Dysphagia .

**Differential Diagnosis of Dysphagia:**



Information from Castell DO. Approach to the patient with dysphagia. In: Yamada T, ed. Textbook of gastroenterology. 2d ed. Philadelphia: Lippincott Williams & Wilkins, 1995.

## **1-2 Study Problem:**

The radiographic finding of Ba. Swallow among varied individual whose suspected with Dysphagia.

## **1-3 Hypothesis:**

Radiographic finding of Ba. Swallow varies among the individual according to the age, sex, location and duration of Dysphagia.

## **1-4 Objectives:**

### **1-4-1 General objective:**

The general objective of the study is to determine the common radiographic finding in Ba Swallow for patient clinically suspected with dysphagia.

### **1-4-2 Specific objectives:**

- To rule out the cause of Dysphagia.
- To discuss differential diagnoses related to type of Dysphagia .
- To specify the causative disorder according to location of Dysphagia.
- To estimate the relation between age and degree of radiographic finding.

## **1-5 significance of the study:**

This study will profiled an index of causes of Dysphagia according to hypothesis in Sudanese people.

## **1- 6 overview of the study:**

This study will falls into five chapters:

**Chapter one** : an introduction, problem of the study ,hypothesis, objectives, significance and overview of the study.

**Chapter two:** literature review, include anatomy and patho - physiology of the esophagus and previous studies.

**Chapter three:** will deals with methodology which include material and methods used to collect the data.

**Chapter four:** will illustrate results using figures and tables

**Chapter five:** will presented discussion, conclusion and recommendations of the study.

## **Chapter two**

### **Literature review**

#### **2-1Anatomy:**

Deglutition is the act of swallowing, which allows a food or liquid bolus to be transported from the mouth to the pharynx and esophagus, through which it enters the stomach. Normal deglutition is a smooth, coordinated process that involves a complex series of voluntary and involuntary neuromuscular contractions and typically is divided into distinct phases: oral, pharyngeal, and esophageal. Each stage facilitates a specific function; if the stages are impaired by a pathologic condition, specific symptoms may result.( Kuo B, Urma D.)

The process of swallowing is organized with sensory input from receptors in the base of the tongue, as well as in the soft palate, faucal arches, tonsils, and posterior pharyngeal wall; this input is transmitted to the swallowing center, located within the pontine reticular system, through the facial (VII), glossopharyngeal (IX), and vagus (X) cranial nerves.

Information from the swallowing center then is conveyed back to the muscles that help in swallowing through trigeminal (V), facial (VII), glossopharyngeal (IX), vagus (X), and hypoglossal (XII) cranial nerves, with the trigeminal, hypoglossal, and nucleus ambiguus constituting the efferent levels.

The act of swallowing usually interrupts the expiratory phase of ventilation, while the completion of expiration occurs when swallowing ends. In situations in which the swallowing is initiated during the inspiratory phase of ventilation, a brief expiration ensues after the completion of swallowing.( Paula Leslie, Aet al: 2003).

## 2-1-2 Oral phase

The oral phase of swallowing is divided into the following parts:

- Oral preparatory phase: The processing of the bolus to render it swallowable
- Oral propulsive (or transit) phase: The propelling of food from the oral cavity into the oropharynx

With single swallows of liquid, the entire sequence lasts about 1 second. For swallows of solid foods, a delay of 5-10 seconds may elapse while the bolus accumulates in the oropharynx.

### 2-1-2-1 Oral preparatory phase

The process begins with contractions of the tongue and striated muscles of mastication. The muscles work in a coordinated fashion to mix the food bolus with saliva, with the taste, temperature, touch, and proprioception senses required to form a bolus of the right size and consistency. (See image below.)

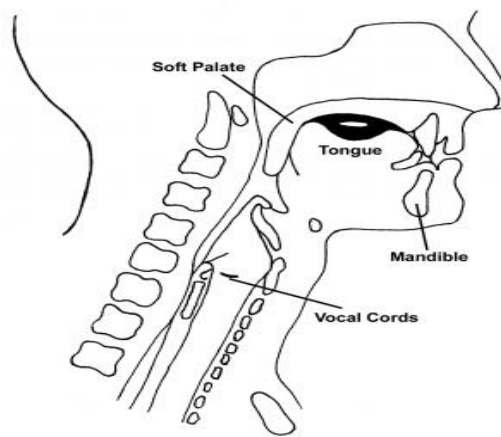


Figure 2- 1: Oral preparatory phase of normal swallowing.

### **2-1-2-2 Oral propulsive phase**

This segment of the swallowing process involves manipulation of the bolus formed in the preparatory stage in the central portion of the tongue. The bolus is then pushed toward the pharynx posteriorly with a sequential anterior-to-posterior tongue elevation in order to trigger the swallowing reflex as the bolus enters the pharyngeal phase.

This process requires that a labial seal be maintained to prevent food from leaking from the mouth and that there be buccal musculature tension to prevent food from getting into the recess between the mandible and cheek. (See the image below.)

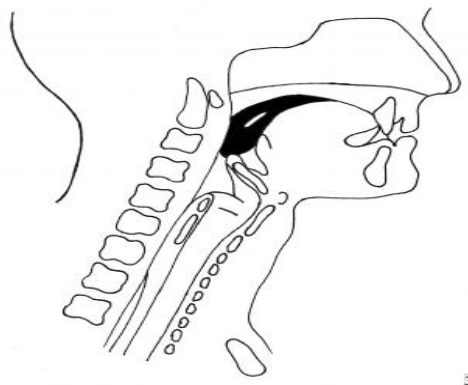


Figure 2- 2: Oral propulsive phase of normal swallowing.

### **2-1-3 Pharyngeal phase**

The pharyngeal phase is of particular importance, because without intact laryngeal protective mechanisms, aspiration (the passage of food or liquid through the vocal folds) is most likely to occur during this phase. This phase involves a rapid sequence of overlapping events. The soft palate rises, the hyoid bone and larynx move upward and forward, the vocal folds move to the midline, the epiglottis folds backward to protect the airway, and the tongue pushes backward and downward into the pharynx to propel the bolus downward. The

tongue is assisted by the pharyngeal walls, which move inward with a progressive wave of contraction from top to bottom.

The upper esophageal sphincter relaxes during the pharyngeal phase of swallowing and is pulled open by the forward movement of the hyoid bone and larynx. This sphincter closes after passage of the food, and the pharyngeal structures then return to the reference position. (See the image below.)

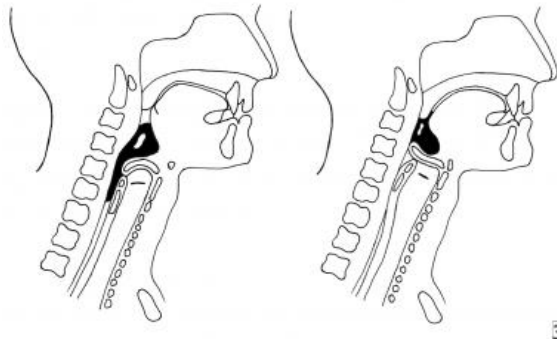


Figure2- 3: Pharyngeal phase of normal swallowing.

The pharyngeal phase of swallowing is involuntary and totally reflexive, so no pharyngeal activity occurs until the swallowing reflex is triggered. This swallowing reflex lasts approximately 1 second and involves the motor and sensory tracts from cranial nerves IX (glossopharyngeal) and X (vagus).

#### **2-1-4 Esophageal phase**

In the esophageal phase, the bolus is propelled downward by a peristaltic movement. The lower esophageal sphincter relaxes at initiation of the swallow, and this relaxation persists until the food bolus has been propelled into the stomach. Unlike the upper esophageal sphincter, the lower sphincter is not pulled open by extrinsic musculature. Rather, it closes after the bolus enters the stomach, thereby preventing gastroesophageal reflux. (See the image below.)



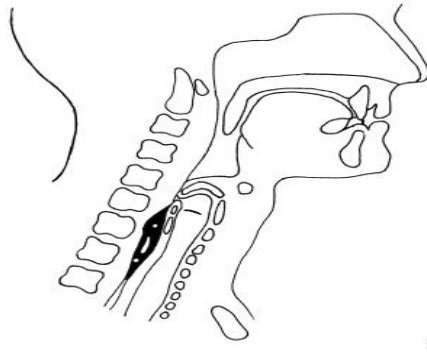


Figure 2-4: Esophageal phase of normal swallowing.

The medulla controls this involuntary swallowing reflex, although voluntary swallowing may be initiated by the cerebral cortex

### **2-1-5 Pathology of Swallowing:**

The mechanism of swallowing disorders may be either structural or motor. Structural disorders include luminal stenosis and diverticula. Motor disorders include paresis (muscle weakness), sphincteric dysfunction, and spastic disorders.( Schechter, Gary 1998) .

#### **2-1-5-1 Structural Disorders:**

Luminal stenosis occurs as a result of mechanical narrowing of the esophageal lumen in patients with esophageal strictures. Symptoms arise when the swallowed food is too large to pass. The typical symptom in a patient with an esophageal stricture is dysphagia for solid food, often followed by regurgitation of undigested material.

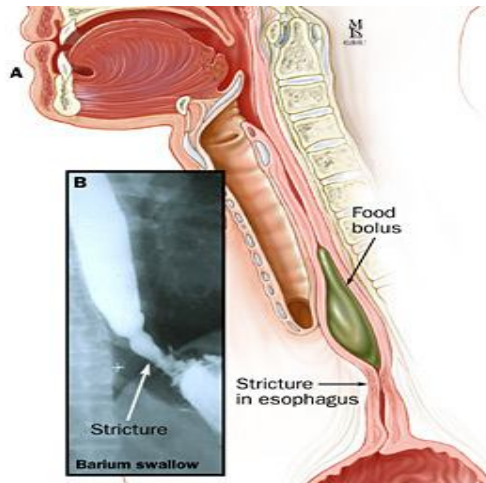


Figure 2 - 5: A, Esophageal stricture showing obstruction of food bolus; B, barium swallow.

### 2-1-5-2 Diverticulum:

A diverticulum is a pouch extending out from the normal wall of the swallowing channel. Diverticula (the plural of diverticulum) can develop in either the pharynx or esophagus. Although small diverticula may not cause symptoms, larger diverticula can cause Dysphagia for liquids and solids. Regurgitation of undigested food, often hours after ingestion is a characteristic symptom of patients with diverticula.

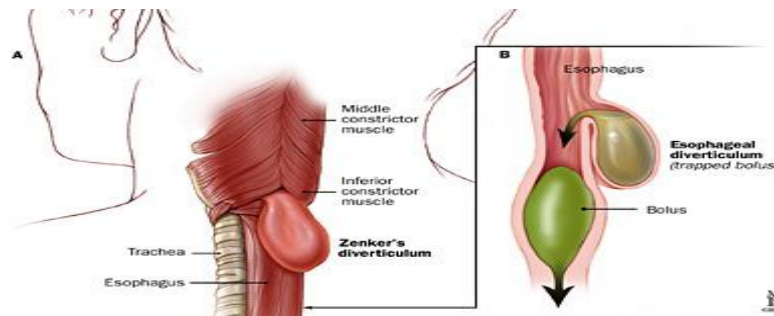


Figure 2- 6: Diverticulum

### 2-1-5-3 Achalasia:

- Caused by failure of the lower esophageal sphincter to relax which leads to tonic sphincter contraction.

- Symptoms are caused by food becoming trapped in the esophagus and unable to pass into the stomach.
- Esophagus resembles „bird“s beak“ radiographically.



Figure 2-7: Achalasia

#### **2-1-5-4 Diffuse Esophageal Spasm:**

- Uncoordinated contractions of the esophageal body due to neuromuscular abnormalities resulting in spasm
- Symptoms: Intermittent difficulty with both solids and liquids.



Figure 2-8:Esophageal Spasm Cork Screw Esophagus

### **2-1-5-5 Zenker's Diverticulum:**

Symptoms:

Initially vague and include general complaint of difficulty swallowing.

As the pouch enlarges, patients often develop:

- A cough
- Bad Breath
- Regurgitation of undigested food
- Pharyngeal gurgling.
- May see a bulge in the throat
- May have repeated Pneumonia.



Figure 2-9: Zenker's Diverticulum

### **2-1-5-6 Webs:**

•Symptoms: Difficulty swallowing solid foods

Etiology

- Congenital
- Acquired: Plummer-Vinson
- Radiation-induced

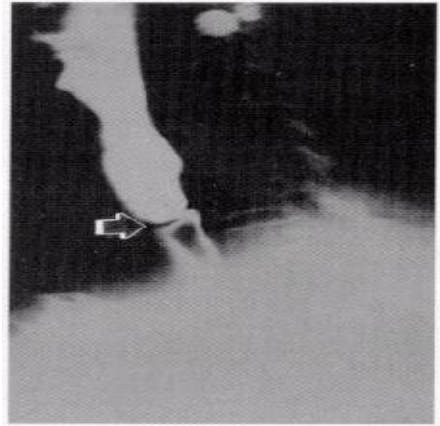


Figure 2-10: esophageal web

#### **2-1-5-7 Schatzki Ring:**

- Dysphagia with swallowing solid foods occurs when the diameter of the ring is  $<1.3\text{ cm}/<13\text{mm}$ .
- The diagnosis is established either by a barium swallow or by endoscopy.

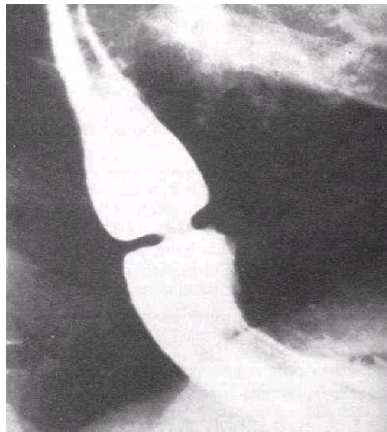


Figure 2-11: Schatzki Ring

#### **2-1-5-8 Malignant Tumors of the Esophagus :**

- Squamous cell carcinoma is the most common esophageal neoplasm, ( $>90\%$ )
- Esophageal CA is one of the most fatal forms of gastrointestinal cancer.

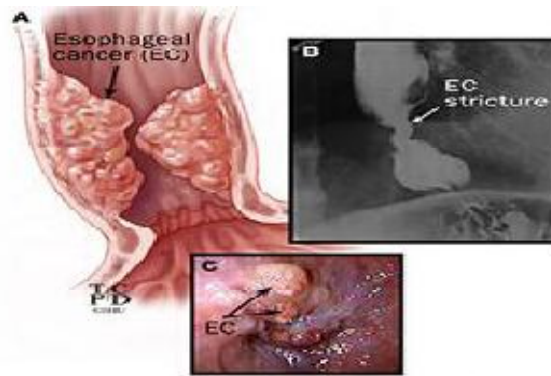


Figure 21. Esophageal cancer (A) with corresponding barium swallow x-ray (B) and endoscopic view (C).

Figure 2-12 esophageal cancer

### 2-1-5-9 Hiatus Hernia:

- A portion of the upper stomach protrudes through a small hole in the diaphragm where the esophagus and the stomach join.

- Etiology:

- Most with unknown etiology

- small % congenital

- aging

- acid-reflux

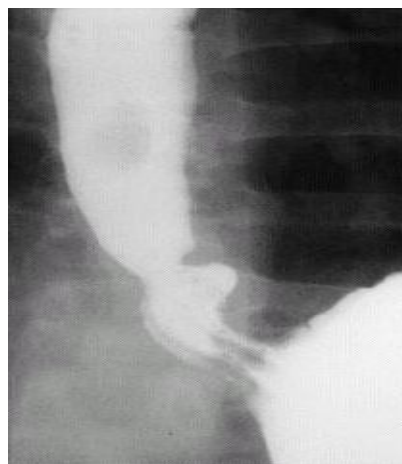


Figure 2-13: Hiatus hernia

### **2-1-5-10 Esophageal Infections :**

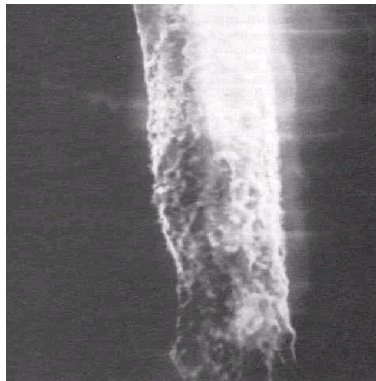
Symptom: Odynophagia , non-cardiac chest pain

Etiology:

Involves damage to the esophageal tissue.

Can result from frequent and persistent presence of stomach acid in the esophagus. Fungal (Candida), Bacteria, Parasitic, Viral Infections

(Cytomegalovirus, HIV, Herpes Simplex Virus, Varicella Zoster (a DNA virus that causes chickenpox and herpes zoster), Epstein-Barr Virus Human Papilloma virus)



**Figure 2-14 :Candida Esophagitis**

### **2-1-5-11 Neurogenic Dysphagia:**

Neurogenic Dysphagia is a general term used to describe any neurological or muscular condition that affects oral or pharyngeal motor function. Common causes of neurogenic dysphagia include stroke (cerebral vascular accidents), amyotrophic lateral sclerosis (ALS), brain injury due to trauma or previous surgery, and local soft tissue and nerve damage due to head and neck surgery. However, many disorders of the nervous system and muscles can cause neurogenic dysphagia. In some patients, neurogenic-type radiographic abnormalities occur even when no diagnosable neurological or muscular

disorder is present. Symptoms of neurogenic dysphagia generally include dysphagia and swallow-induced coughing. Nasal regurgitation, if present, strongly suggests a neurogenic process. Some patients fail to recognize the presence or severity of aspiration, possibly because of associated cognitive problems or impaired sensation. Patients may experience recurrent bouts of pneumonia due to swallowed saliva, liquid, and food entering the airway. The prognosis depends on the severity of the swallowing impairment and the treatability of the underlying condition. Among the more treatable causes of neurogenic dysphagia are myasthenia gravis, polymyositis, and both hyper- and hypothyroidism.( Dray, Todd, et. al. 1998).

#### **2-1-5-12 Cervical Spine Disease:**

Large osteoarthritic spurs may develop on the cervical spines of patients with longstanding osteoarthritis. These spurs are a common finding in patients with diffuse idiopathic hyperostosis. The spurs are usually asymptomatic, but they may affect swallowing. Surgical resection of the spurs has been shown to help in some patients.

Anterior surgical approaches to the spine that require dissection and retraction of the larynx and pharynx can cause temporary or prolonged dysphagia secondary to interruption of the motor or sensory innervations.( Fogel, G. R., and McDonnell, M. F 2005).

#### **2-1-6 Swallowing Disorders: Diagnosis**

##### **2-1-6-1 Barium Radiography:**

Except when re-evaluating a patient with an established diagnosis, barium x-ray studies are usually the first step in the evaluation of swallowing disorders. These studies permit evaluation of the entire swallowing channel (mouth, pharynx, and esophagus). Even when the location of the abnormality is suggested by the



clinical history, barium radiography allows assessment of both the structure and function of the swallowing mechanism. When symptoms suggest an esophageal condition, a standard barium swallow (often performed as part of an upper GI [UGI] series) is generally adequate. However, the flow of barium through the pharynx is too rapid for the radiologist to record important details of swallowing. Therefore, when a pharyngeal condition is suspected, a video-barium study (videopharyngoesophagram, during which the flow of barium through the pharynx and esophagus is recorded on a videotape recorder) is essential.( A et al: 2008).

### **2-1-6-2 Modified Barium Swallow:**

A modified barium swallow is a variant of the video-barium study in which the effect of various maneuvers on the efficiency of swallowing is evaluated. Maneuvers may include modifications in the type of swallowed bolus, in head or body position, and in the timing of swallowing in relationship to respiration. Primarily designed to evaluate the effect of therapeutic maneuvers on patients with established neurological or post surgical disorders of oral and pharyngeal function, the modified barium swallow is sometimes used as the first test in patients in whom these disorders are strongly suspected. However, those who specialize in this procedure (most often speech language pathologists with special training in the field of swallowing) may have limited familiarity with structural disorders of the pharynx and even less with radiological abnormalities of the esophagus. In general, the modified barium swallow should be used only after a detailed diagnostic video-barium study has been performed under the supervision of an experienced radiologist, or as a combined study in which the swallowing therapist and radiologist collaborate.( A et al: 1990).

## **2-2 Previous studies:**

**Sanjay P. Kishve A et al: (2009)** The study was undertaken to determine the clinico-pathological profile of the patients diagnosed with esophageal dysphagia. This cross sectional, descriptive study Patients attending the ENT Out Patient Department during 2009 and later diagnosed as cases of esophageal dysphagia formed the statistical sample. Results: Out of 61 patients, 37 were male and 24 female. Majority of the patients belonged to age group 41-50 years (24.6%), were farmer by occupation (31.1%) and belonged to middle socioeconomic status (34.4%). Pain (throat, retrosternal or epigastric) was the most common (70.5%) presenting complaint. For 39.3% study subjects, the presenting complaint was 3 to 6 months old. Barium swallow study revealed a positive finding in 74.1% (n=40/54) patients, with carcinoma of oesophagus (27.8%) as the most common aetiology, followed by motility disorders and benign strictures. Oesophagoscopy detected lesions in 49 (90.74%) cases and like barium swallow, it also detected carcinoma oesophagus as the most common cause of oesophageal dysphagia. Reflux oesophagitis was the most common form of the oesophagitis and the microbiological examination and culture of samples of 14 patients diagnosed with any form of oesophagitis showed *Candida albicans* in 21.4%.

**Smith-Hammond A et al: 2004** performed a 3-year prospective study to evaluate incidence of dysphagia on anterior cervical patients. Notably, this study used patients who underwent posterior cervical or posterior lumbar procedures during the same time period as a control group. Swallowing was assessed pre-and post-operatively by subjective questions as well as videofluoroscopic swallow evaluation (VSE) or fiberoptic endoscopic evaluation of swallowing (FEES). Post-operative evaluations were performed 2.0+/-1.5 days after the index surgery. A total of 83 patients were evaluated. The incidence of dysphagia in the anterior cervical surgery group was nearly

50% (18/38). The majority (71%) of these patients with dysphagia returned to regular diet within 2- months. Age (>60 years) was found to be a statistically significant risk factor, whereas other co- morbidities including hypertension, diabetes mellitus, smoking, gastroesophageal reflux disease, chronic obstructive pulmonary disease, alcohol abuse, substance abuse, coronary artery disease, cancer, and myelopathy were not significant. Since the study was based at a Veteran's Affairs Medical Center, a majority of the patients were male, and gender could not be analyzed as a risk factor. None of the surgical variables, including the use of instrumentation, duration of surgery, operated spinal levels, and number of spinal levels were significant risk factors. Interestingly, 20% (4/19) patients who had posterior cervical surgery had post-operative dysphagia, but the authors did not feel that endotracheal intubation itself was a risk factor in their cohort.

The results of these prospective studies indicate that surgeons should expect approximately 50% of patients to have some degree of swallowing dysfunction peri-operatively. By 6-months, a majority of the patients should improve, with about 10% of patients experiencing dysphagia at 12- months. Female gender, age, pre-existing swallowing dysfunction, and multiple- level surgery may be risk factors for post-operative dysphagia.

**Nasir M Jaffer** A et al: ( Fluoroscopic Evaluation of Oropharyngeal Dysphagia: Anatomic, Technical, and Common Etiologic Factors).

Dysphagia in the oropharyngeal or cervical esophageal stages of swallowing is common in the elderly and will become an increasing problem with the expected demographic increase in the geriatric population. This review article has demonstrated many important causes and presentations of oropharyngeal dysphagia, which are sometimes overlooked during the conventional Upper GI study. Videofluoroscopic evaluation for assessment of both structural

abnormalities and motility disorders of the oropharynx using various compositions of barium contrast is currently the standard of practice. Utilizing best practice radiographic techniques and having knowledge of swallowing mechanisms and various diseases are important for assessment of dysphagia. Dynamic fluoroscopic imaging remains an essential and important tool for assessing functional disorders of swallowing. Early recognition of dysphagia risk will lead to better patient management. Detailed videofluoroscopic assessment can guide treatment decisions with the goal of decreasing the secondary complications of dysphagia, such as aspiration pneumonia, dehydration, malnutrition, and depression, and thereby contributing to improved outcomes both in health and quality of life.

**Ekberg and M J Feinberg** (1991) Altered swallowing function in elderly patients without dysphagia: radiologic findings in 56 cases. Swallowing disorder is an increasing problem in our aging population. A majority of these patients have a functional abnormality of the oral, pharyngeal, and/or esophageal stage of swallowing. However, what constitutes normalcy is not well understood, and baseline swallowing in elderly persons without dysphagia has not been adequately described. We therefore evaluated 56 persons with a mean age of 83 years who had no symptoms of dysphagia or eating difficulty. Videofluoroscopy and radiographs with the subject erect and recumbent were obtained. Normal deglutition, as defined in young persons, was present in only 16%. Oral abnormalities (difficulty ingesting, controlling, and delivering bolus relative to swallowing initiation) were seen in 63%. Pharyngeal dysfunction (bolus retention and lingual propulsion or pharyngeal constrictor paresis) was seen in 25%. Pharyngoesophageal segment abnormalities were observed in 39% (mostly cricopharyngeal muscle dysfunction). Esophageal abnormalities (mostly motor in nature) were observed in 36%. What has been described as swallowing dysfunction in young persons may not be abnormal in very elderly persons. It is

difficult to distinguish the effect of normal aging from the effects of specific diseases or gradual degenerative changes.

**Edith Eisenhuber A et al:** (Videofluoroscopic Assessment of Patients with Dysphagia Pharyngeal Retention Is a Predictive Factor for Aspiration Pharyngeal retention was caused by pharyngeal weakness or paresis in 103 (95%) of 108 patients. In 70 patients (65%) with pharyngeal retention, postdeglutitive overflow aspiration was found. Aspiration was more often found in patients who had additional functional abnormalities such as incomplete laryngeal closure or impaired epiglottic tilting ( $p < 0.05$ ). Postdeglutitive aspiration was diagnosed in 25% patients with mild, in 29% with moderate, and in 89% with severe pharyngeal retention ( $p < 0.05$ ).

(Department of Radiology and Ludwig Boltzmann-Institute for Clinical and Experimental Radiologic Research, University of Vienna, Waehringer Guertel 18-20, A-1090 Vienna, Austria).

## **Chapter Three**

### **Materials and Methods**

#### **3.1 Material:**

##### **3 –1-1 study design and area:**

This a cross-sectional based descriptive study ,this study was took place in Fedail Hospital in Khartoum , the study was conducted during the period from September 2015 up to November 2015 .

##### **3 -1-2 Machine used:**

Flexavision – Shimadzu based system with digital fluoroscopy and a Spot Film Device for DR based radiography. An integrated Digital Imaging System provides digital series and spot imaging with DICOM and RIS connectivity available.

##### **3- 1-3 study population:**

50 Sudanese adult patients male and female age range between 20 – 80 years suspected with Dysphagia underwent Ba. Studied.

##### **3 –1- 4 study variables:**

- Assessment radiographic finding of Ba. Studies in patients with dysphagia.
- Determine the variant of radiographic finding according to the sex and age.
- Correlation of of radiographic finding with type, location and duration of dysphagia.
- Comparison of Sudanese finding with other similar studies.

### **3 -2 Method of data collection:**

Data were collected with special data collection sheet encompass patients demographic data and radiographic findings.

#### **3-2-1-1Ba. study examination:**

From the barium Swallow exam I reported the radiographic finding in different views.

#### **3-2-1-2 Interviewing patient:**

Concerned with revision of their referral notes, and ask patient about age.

#### **3-2-2 technique used:**

##### **3-2-2-1 Ba. Swallow exam:**

Except when re-evaluating a patient with an established diagnosis, barium x-ray studies are usually the first step in the evaluation of swallowing disorders. These studies permit evaluation of the entire swallowing channel (mouth, pharynx, and esophagus). Even when the location of the abnormality is suggested by the clinical history, barium radiography allows assessment of both the structure and function of the swallowing mechanism. When symptoms suggest an esophageal condition, a standard barium swallow (often performed as part of an upper GI [UGI] series) is generally adequate. However, the flow of barium through the pharynx is too rapid for the radiologist to record important details of swallowing. Therefore, when a pharyngeal condition is suspected, a video-barium study (videopharyngoesophagram, during which the flow of barium through the pharynx and esophagus is recorded on a videotape recorder) is essential. (A e The examination of patients with a possible swallowing disorder consists of:

- Fluorographic study of the actual swallowing.
- Double-contrast images of the pharynx.
- Examination of the esophagus.

### **Double contrast images of the pharynx:**

For the lateral view, ask the patient to sing an aaa, as this will move the tongue in an anterior position and give a better view on the oro- and hypopharynx. For the AP-view the modified Valsalva maneuver is performed.

The patients have to blow air through the tightened lips as in trumpet-playing, while relaxing the neck region.

Always practice this maneuver prior to the examination, so the patient knows what to do. We start with one or two lateral swallows followed by a lateral double-contrast view of the pharynx (see later). Then an AP-swallow is recorded followed by an AP double-contrast view of the pharynx.

Next the passage through the esophagus is recorded, followed by double-contrast views of the gastro esophageal junction.

Before we start the examination, the procedure is explained to the patient and we practice certain maneuvers (i.e. modified Valsalva).( A et al:1985)

Always follow the passage of barium through the esophagus until it enters the stomach. Disorders of the gastroesophageal junction are often experienced as a problem within the throat. The rationale for this is that in patients with a distal obstruction, gastroesophageal reflux or a motility disorder, the crico-pharyngeal muscle has to work very hard to prevent foods pillage back into the pharynx - along with its risk of aspiration. This increased muscle tone gives the patient the sensation that there is a problem in the throat.( A et al 1996).

### **3-2-2-2 Patient preparation:**

The patient instructed to fast overnight before having the examination. The patient should avoid smoking or chewing gum, as these activities may stimulate salivary and/or gastric secretions and impair mucosal coating.( Levine MS & Rubesin SE 1990).



### **3-2-3 Data analysis:**

The data was collected on a master sheet design for that purpose. Different tables were used to tabulate the findings which were they statistically analyzed, using excel and SPSS.

# CHAPTER FOUR

## RESULTS

### Statistics

Age

N	Valid	50
	Missing	0
Mean		49.96
Median		50.00
Std. Deviation		17.943
Minimum		20
Maximum		85

Table 1 : statistics

### Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	24	48.0	48.0
	male	26	52.0	100.0
Total	50	100.0	100.0	

Table 2: distribution of 50 patients gender

### Gender



Figure4.1:gender of patients.

**Sign & symptoms**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	for solid& liquid	41	82.0	82.0
	for solid	5	10.0	92.0
	for liquid	4	8.0	100.0
	Total	50	100.0	100.0

Table 3; distribution of sign & symptoms of 50 patients .

**Sinampsump**

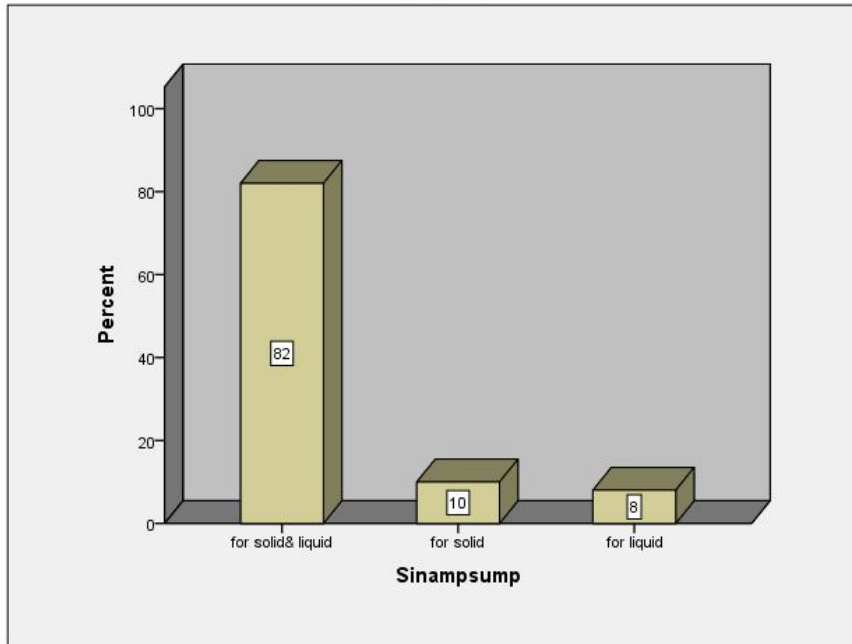


Figure 4.2: distribution of sign & symptoms of 50 patients

Duration				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	severe	42	84.0	84.0
	mild	8	16.0	100.0
	Total	50	100.0	100.0

Table4: duration of dysphagia.

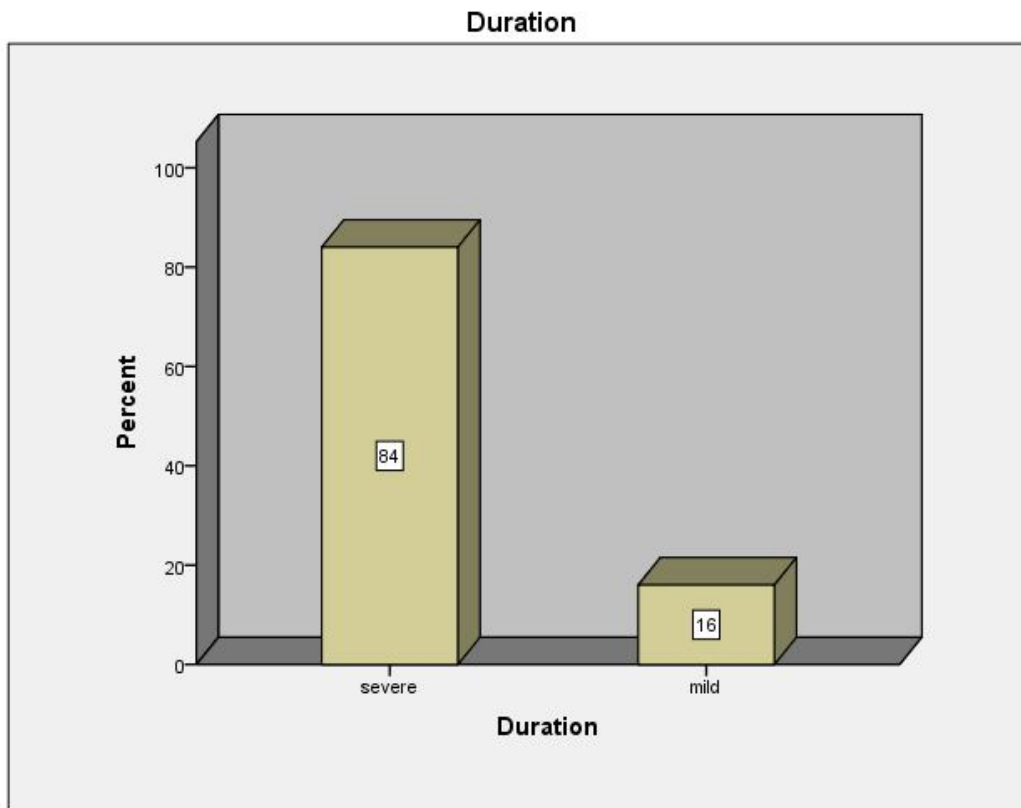


Figure4.3: duration of dysphagia in 50 patients.

Type of Dysphagia				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	oesophageal	24	48.0	48.0
	oropharyngeal	26	52.0	100.0
	Total	50	100.0	100.0

Table 5: type of dysphagia of 50 patients.

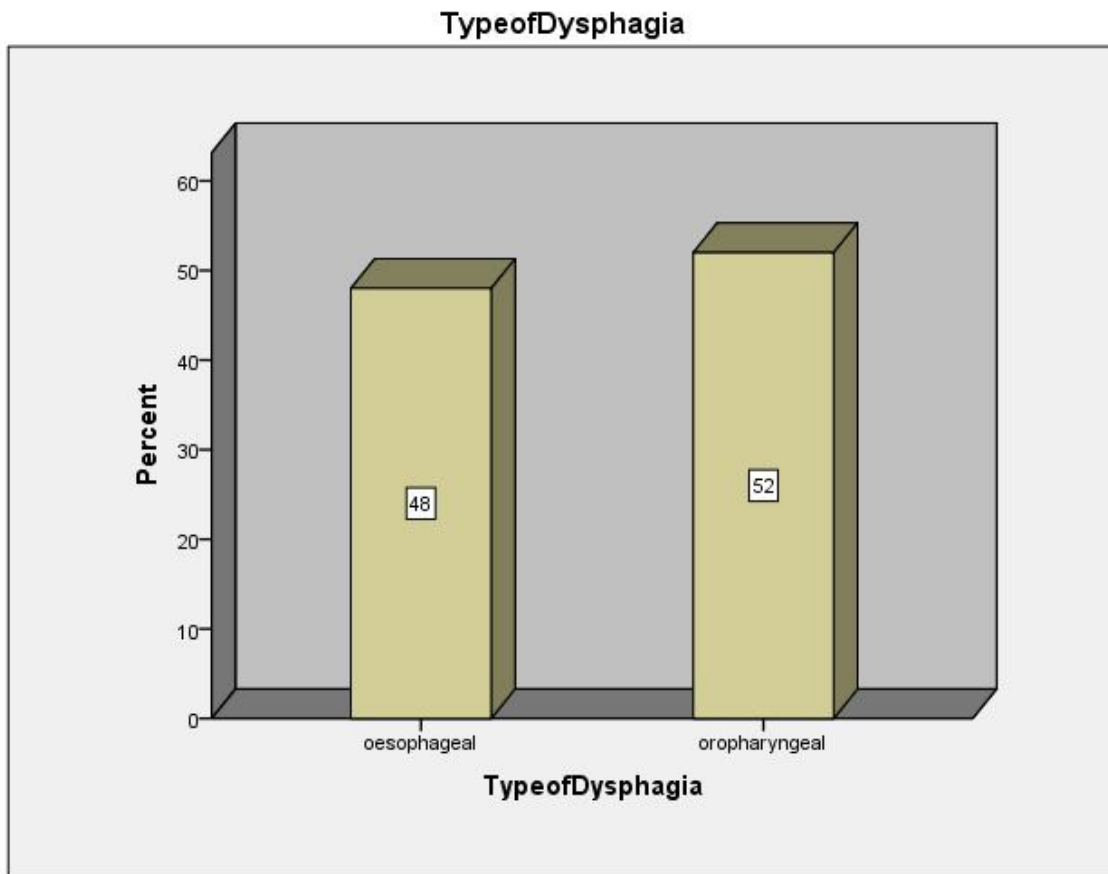


Figure4.4: type of dysphagia of 50 patients.

Radiographic findings					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	esophageal strictur	10	20.0	20.0	20.0
	pharaneal web	12	24.0	24.0	44.0
	tumor	9	18.0	18.0	62.0
	diverticulum	6	12.0	12.0	74.0
	hiatus hernia	5	10.0	10.0	84.0
	normal	6	12.0	12.0	96.0
	cork-screw esopheal fistula	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Table 6: distribution of radiological findings of 50 patient with dysphagia

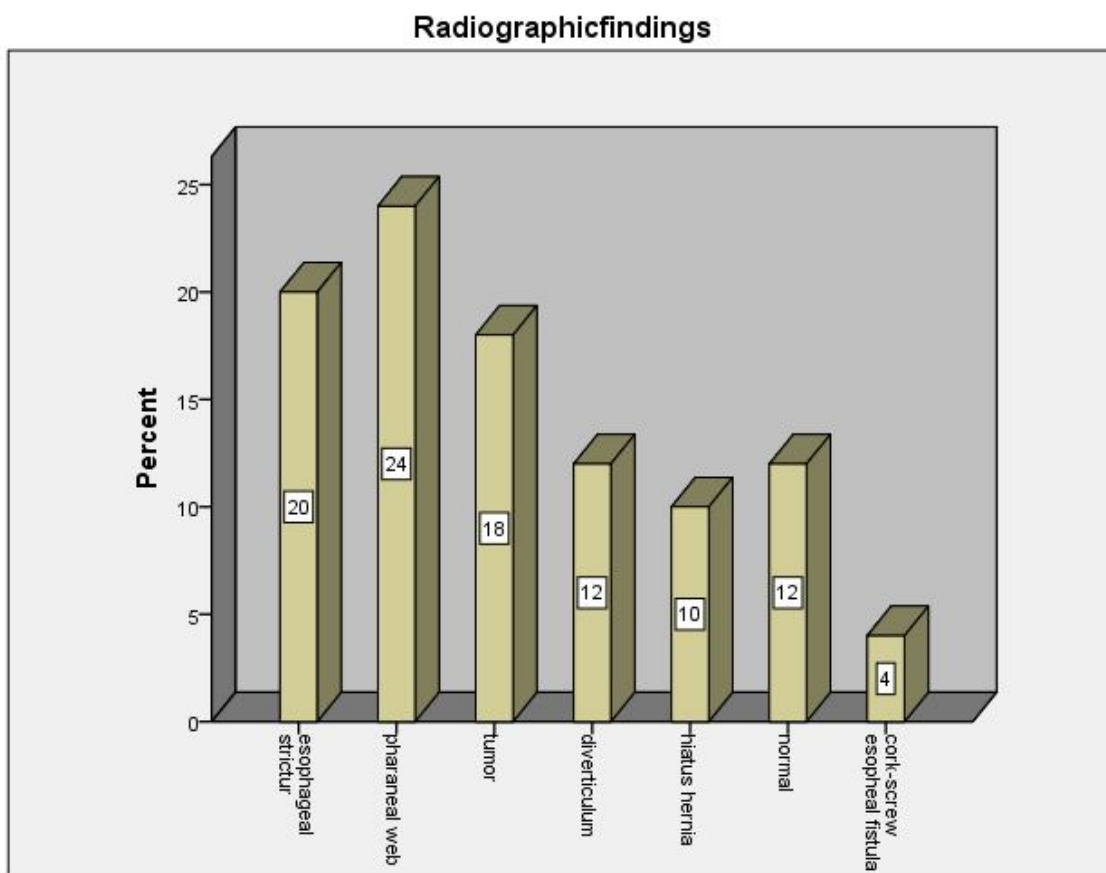


Figure 4.5: distribution of radiological findings of 50 patient with dysphagia

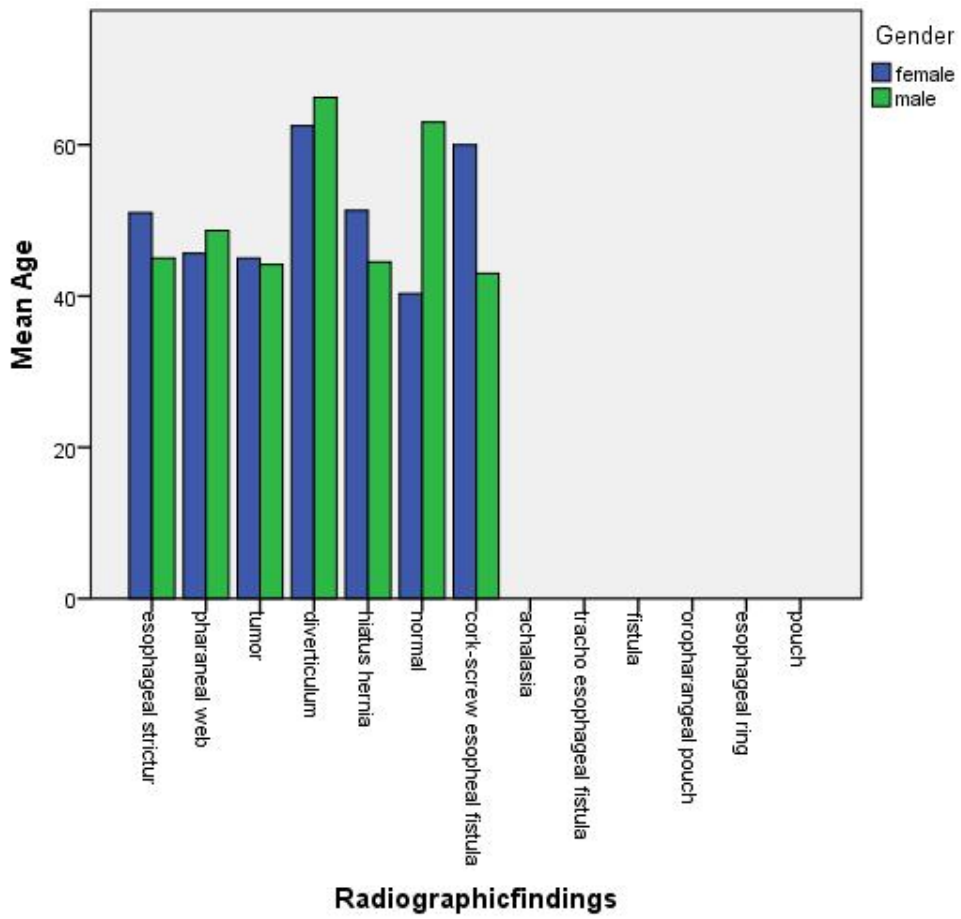


Figure 4.6: radiographic findings in male & female.

## CHAPTER FIVE

### DISCUSSION ,CONCLUSION AND RECOMMENDATION

#### 5.1 Discussion

This study designed to study the radiographic findings of the barium studies for patients who are suspected with dysphagia for estimation of age, sex, type and duration of dysphagia.

Out of the 50 patients included in the study, 24(48%) were female and 26(52%) were male the age ranged from 20 to 80 years old (table 4.1, figure4.1)

According to the sign & symptoms of dysphagia the radiographic finding were, 41(82%) for patients with dysphagia for both solids & liquids, 5(10%) for patients with dysphagia for solids and 4(8%) for patients with dysphagia for only liquids.(table4.2,figure4.2)

Also there is relation between the duration of dysphagia and radiographic findings, 42 (84%) for patients with severe dysphagia and 8(16%) for patients with mild dysphagia. (table4.3, figre4.3)

According to the site of dysphagia the radiographic findings, 24(48%) of patients with esophageal dysphagia and 26(52%) with oro-pharyngeal dysphagia (table4. 4,figure4.4)

The radiographic findings overall 50 patients were vary according the hypothesis of the study, 10(20%) of patients have esophageal strictures, 12(24%) of patients with esophageal web, 8(16%) with malignant tumors, 6(12%) with esophageal diverticulum, 5(10%) of patients with hiatus hernia, 3(6%) with Achalasia and 6(12%) of patients have normal appearance of barium studies.(table4.5, figure 4.5).

The study found that the radiographic findings in patients with dysphagia in contrast study are increased in male than female and also increased in patients with dysphagia for both solids & liquids also the degree of severity of dysphagia on other hands the type of dysphagia are played a rule of verities of radiographic findings.



These radiographic findings of this study are consistent with previous findings reported for the same article.

The results of this study could be used as a practical and comprehensive guide to indicate the causes of esophageal and Oropharyngeal dysphagia according to age, sex, degree of severity, type and duration of dysphagia.

## **5.2 Conclusion :**

The radiographic findings of contrast studies in patient who suspected with dysphagia can attribute to gender ,age, sign & symptoms, duration and type of dysphagia.

The study has demonstrate many important causes and presentation of dysphagia, evaluation for assessment of both structural abnormalities and motility disorders of the oropharynx by using barium contrast is currently the standard of practice.

The variation of radiographic findings in the study underlies the variables of the study.

This dataset may prove useful in future research to identify the causes of dysphagia by influencing factors.

### **5.3 Recommendation:**

The study recommended that:

- Utilizing best practice radiographic techniques and having knowledge of swallowing mechanisms and various diseases are important for assessment of dysphagia.
- Assessment of dysphagia by physical examination is relatively recommended.
- For elder patients, contrast study is helpful and easiest .
- Dynamic fluoroscopic imaging remains an essential and important tool for assessing functional disorders of swallowing.

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