



Communication and Swallowing Disorders I-II

Objectives:

- Understand physiology of communication.
 - Recall classifications of communication and swallowing disorders.
 - Differentiate between different causes of communication and swallowing disorders.
 - Understanding the assessment and management of these disorders.
- MOST IMPORTANT: VOICE, SWALLOWING, HYPERNASALITY.**

Resources: Team 435 , Doctors Slides .

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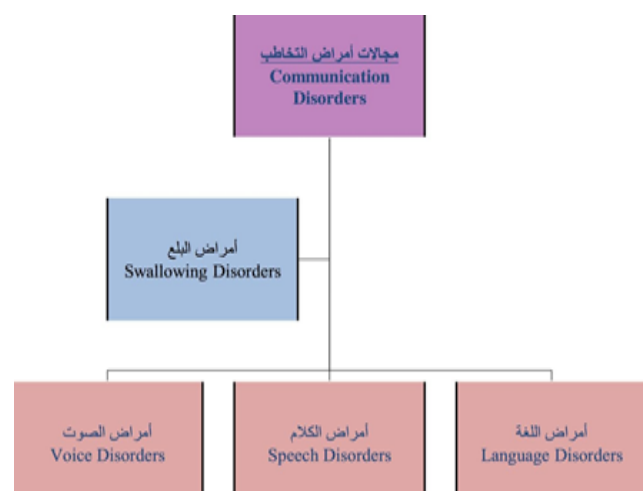
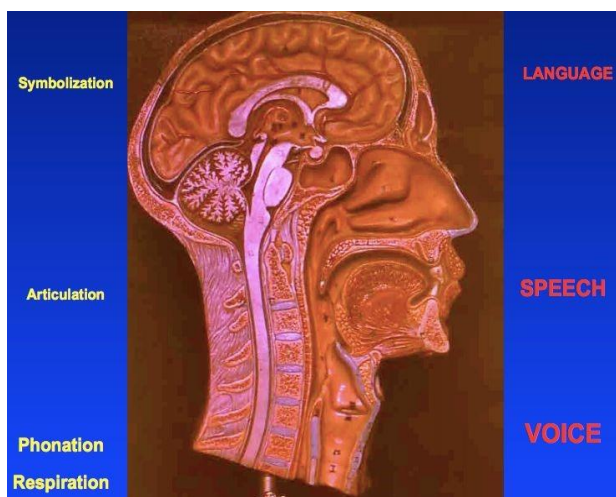
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DEFINITIONS :

COMMUNICATION	<ul style="list-style-type: none"> Exchange of thoughts, ideas, emotions between two parties Types: 1-Verbal. 2-Non-Verbal. Parts of communication: 1-Voice. 2-Speech. 3-Language. (try to mention them in this order)
VOICE	<ul style="list-style-type: none"> The result of vibration of the true vocal folds using the expired air.
SPEECH (ARTICULATORS)	<ul style="list-style-type: none"> A neuro-muscular process whereby language is uttered. It includes the coordination of respiration, phonation, articulation, resonance and prosody.
LANGUAGE	<ul style="list-style-type: none"> A symbolic arbitrary system relating sounds to meaning.
SWALLOWING	<ul style="list-style-type: none"> The process of successful passage of food and drinks from the mouth through pharynx and esophagus into the stomach.

HOW COMMUNICATION HAPPENS? **VERY IMPORTANT**

- Inspiration → expiration → air passes through sound box (larynx) (expiratory phonatory airflow) → vibration of vocal folds (not cords!) → voice (primary laryngeal sound) → supralaryngeal. compartments (pharynx, epiglottis, tongue, soft palate, teeth, sinuses) (articulators or resonators/speech) (they produce a person's recognizable voice) → symbolization by the brain (language)
- Function of supralaryngeal compartments: change of primary laryngeal sound (voice) into secondary sound (speech).
- Disorders of communication can occur in each of the following:
 - Language
 - Speech
 - Voice



WHO IS MANAGING COMMUNICATION AND SWALLOWING DISORDERS?

1. PHONIATRICIANS (MD'S):

- A. A medical speciality that deals with communication and swallowing disorders.
- B. It stems mainly from ORL (ENT), especially when dealing with voice disorders.

2. SPEECH-LANGUAGE PATHOLOGIST.

A. LANGUAGE DISORDERS:

❖ 1- Delayed Language Development (DLD):

→ **DEFINITION:** Delay or failure to acquire language **matched** with age. Ex. 4 yrs. old child who knows 4 words only! i.e. an 8-month-old baby can't talk, you won't diagnose with DLD because at this age it's normal.

CENTRAL LANGUAGE CONTROL:

- The left hemisphere is the processor of language functions in almost all people regardless handedness. It is the dominant hemisphere.
- Language areas are distributed along the rolandic fissure.
- Anterior language area mainly in the temporal region concerned with expressive aspect.
- Posterior language area mainly in the parietal region concerned with receptive aspect.

STRUCTURAL DOMAINS OF LANGUAGE:

- Semantics; meaning. - Phonology; articulation. -Syntax; grammar.

STAGES OF NORMAL LANGUAGE DEVELOPMENT:

- **2-4 MONTHS;** Babbling
- **6 MONTHS;** Vocal play
- **9 MO-1 YEAR;** 1st word
- **1-1/2 YEARS;** 20 words
- **2 YEARS;** 200 words, 2 word sentence.
- **3 YEARS;** 2000 words, 3 word sentence
- **4 YEARS;** 4 word sentence
- **5-7 YEARS;** Full maturation of all language modalities.

PRE-REQUISITES OF NORMAL LANGUAGE DEVELOPMENT:

- Intact brain functions (conceptual, motoric and cognitive abilities).
- Intact sensory channels; Auditory, Visual, Tactile, Kinesthetic.
- Intact psyche.
- Stimulating environment. **(very important)**

435 notes:

- Babies should say their first word at their 1st year (9 months – 1yr).
- At their 3 year he should be able to say more than one sentence **if not** they may have DLD (delayed language development).
- A parent with a baby who speaks no more than 2 word at age of 2 should seek advice.

→ETIOLOGY (opposite of pre-requisites):

1. **Brain damage.**
 - Diffuse subcortical lesion (M.R.).
 - Localized brain damage with motor handicap (BDMH).
 - Minimal brain damage (ADHD), medication then speech therapy.
2. **Sensory deprivation.**
 - HEARING IMPAIRMENT: conductive, sensory-neural, mixed, central auditory processing disorder.
 - VISUAL IMPAIRMENT [to a lesser extent](#).
3. **Psychiatric illness:** Autism, Autism Spectrum Disorder (ASD).
4. **Environmental deprivation:** Lonely child, [first child](#), [last child](#).
5. **Idiopathic-Specific Language Impairment-** (best prognosis).

→ASSESSMENT OF DLD:

1. **History taking.**
2. **Physical Examination** [of articulators](#).
3. **Investigations:**
 - a. Psychometry (IQ).
 - b. Audiometry.
 - c. Brian Imaging.
 - d. EEG.
 - e. Ophthalmological consultation.

→MANAGEMENT OF DLD:

- **EARLY DETECTION.** ([important to get good prognosis](#))
- **PROVIDING THE SUITABLE AID:** - Hearing (HA or CI). - Visual Aid. – Physiotherapy.
- **FAMILY COUNSELING.**
- **DIRECT LANGUAGE THERAPY** (INDIVIDUAL- GROUP).
- **MEDICATIONS** (AUTISM AND ADHD).

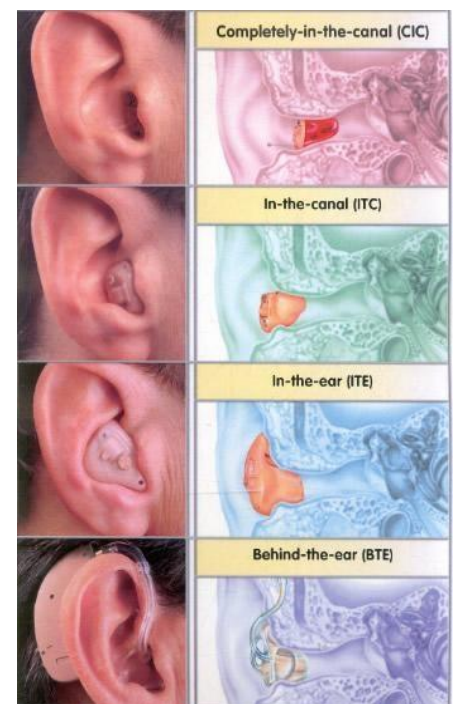
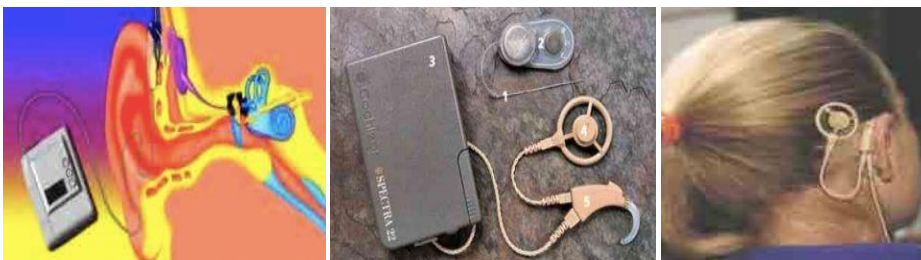
→OSCE Stop:

- What is this device called?

○ COCHLEAR IMPLANT

- What are the indications?

○ BILATERAL SEVERE SENSORINEURAL HEARING LOSS



❖ 2- DYSPHASIA:

→ **DEFINITION:** Language deterioration **after** its full development due to brain insult: infarction, hemorrhage, atrophy, etc.

→ Full development of speech:

- a. Females: 7.5 years (more stutter)
- b. Males: 8 years

→ **ETIOLOGY:**

1-CVA. 2-Neoplastic. 3- Traumatic. 4-Inflammatory. 5- Degenerative. 6- Metabolic.
7-POISONING.

→ **TYPES OF DYSPHASIA:**

1. Expressive: (e.g. Broca's aphasia) Understands but cannot speak, very traumatic psychologically. (better prognosis).
 2. Receptive: Can speak but he doesn't understand.
 3. Mixed predominantly expressive.
 4. Mixed Predominantly Receptive.
 5. Global. (most severe)
- Mixed types are more common.

❖ **Examples:**

1. **Expressive:** Dr: Where's your son?

Pt: Points to his son Dr: Ok, What's his name? Pt: (unable to answer to a direct Q).

2. **Receptive:** Dr: How R U today? Pt: oh, yes, I slept well yesterday...

→ **ASSESSMENT OF DYSPHASIA:**

1. HISTORY TAKING

2. PHYSICAL EXAMINATION: NEUROLOGICAL EXAM.

3. INVESTIGATIONS:

- a. CT / MRI brain.
- b. Dysphasia test.
- c. Psychometry (IQ).
- d. Audiometry.

→ **MANAGEMENT:**

- Treat the cause.
- Physical rehabilitation (Physiotherapy). **If it is neuromuscular problem**
- Family counseling.
- Language therapy.
- Alternative and augmentative communication: cards, sign boards.

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Broca's area
Formulates a speech response and stimulates motor cortex

Motor cortex
Stimulates muscles that produce speech

Wernicke's area
Processes incoming speech and comprehends it



B-SPEECH DISORDERS:

1- DYSLALIA (MISARTICULATION):

→ **DEFINITION:** Faulty articulation of one or more of speech sounds not appropriate for age.

→ **TYPES:** the first two are the most important

1. **SIGMATISM (/S/ DEFECT):** سبورة
 - a. Interdental stigmatism ثبورة
 - b. Lateral astigmatism شبورة
 - c. Pharyngeal sigmatism خبورة
2. **ROTACISM (/R/ DEFECT):** ريما: غيما=ويما=ليما=بيما
3. **BACK-TO-FRONT DYSLALIA:** كورة:
 - a. /k/ → /t/ تورة
 - b. /g/ → /d/
4. **VOICED-TO-NONVOICED DYSLALIA:** /g/ → /k/ /d/ → /t/ /z/ → /s/
5. **IMITATIONAL DYSLALIA:** parents have dyslalia → child never learned the correct sound

→ ASSESSMENT OF DYSLALIA:

- a. **HISTORY TAKING**
- b. **PHYSICAL EXAMINATION TONGUE**
- c. **INVESTIGATIONS:**
 - Audio recording.
 - Psychometry (IQ).
 - Articulation test.
 - Audiometry.

→ MANAGEMENT:

A. TREATMENT OF THE CAUSE:

- Tongue tie¹ (prevents elevation of the tongue (can't say La).
- Dental anomalies (open bite).
- Hearing.
- Dyslalia sheet.

B. SPEECH THERAPY WITH ASSISTANCE AND COUNSELING. (really helpful)

2- STUTTERING: تأتأة

→ **DEFINITION:** The **intra phonemic disruptions** resulting in sound **آآآآآآ** (first sound is prolonged), and syllable **repetitions** آآآآآآ, sound prolongations (whole word is prolonged), and blocks. **Worst prognosis (MCQ!)**

→ TYPES:

- a. Prolongation
- b. Repetitions
- c. Blocking

→ NORMAL DISFLUENCY:

-3-6 years. -Only repetitions. -No associated muscular activity. -Not aware.

→ **INCIDENCE OF STUTTERING:** 1%.

→ **ONSET:** - Earliest = 18 months. -Latest = 13 years.

¹ Tongue-tie (or ankyloglossia) is a 'congenital condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum'

→ EPIDEMIOLOGY:

- More in families with history of stuttering.
- Can occur in mentally retarded.
- Very rare in the hearing impaired.
- Gender ratio: 4: 1 (male: female) worse in females. (more shy)

→THEORIES OF STUTTERING: The exact cause is unknown.

- ✓ Organic theory (doctor goes with organic more).
- ✓ Learning theory.
- ✓ Neurosis theory.

→ASSESSMENT OF STUTTERING:

1. HISTORY TAKING.

2. PHYSICAL EXAMINATION

3. INVESTIGATIONS:

- | | |
|-------------------------------------|--|
| a. Audio & video recording. | d. Articulation test. |
| b. Stuttering severity index (SSI). | e. Auditory Perceptual Analysis (APA). |
| c. Psychometry (IQ) | |

→AUDITORY PERCEPTUAL ANALYSIS (APA)

1. CORE BEHAVIORS:

- | | |
|------------------------------|-------------------|
| a. Intraphonemic disruption. | c. Prolongations. |
| b. Repetitions. | d. Blocks. |

2. SECONDARY REACTIONS

- | | |
|---|-----------------|
| a. Muscular activity and struggle (tremors) | b. Interjection |
| c. Word substitutions and circumlocution | |

3. CONCOMITANT REACTIONS:

- | | |
|---|-----------------------|
| a. Fear. | b. Eye contact (poor) |
| c. Skin pallor/flushing | |
| d. Breathing (antagonism, interruption, prolongation, cessation, ...) | |

→MANAGEMENT:

1. Family and patient counseling.
2. Speech therapy:
 - a. Indirect therapy: if not aware. on the family side (slowing their talk).
 - b. Direct therapy: if aware

3- CLUTTERING: Not mentioned

Is a fluency disorder characterized by a rapid and/or irregular speaking rate, excessive disfluencies.

4- HYPERNASALITY: IMP

→DEFINITION:

- Faulty contamination of the speech signal by the addition of nasal noise. It results from velopharyngeal dysfunction (VPD) or insufficiency (VPI).
- Is a disorder that causes abnormal resonance in a human's voice due to increased airflow through the nose during speech.

- Nasal tone (soft palate is open) is used in the letter M (M nasal = B oral) and N
- Hyponasality → soft palate closed e.g. common cold, polyp, deviated septum, adenoid, chronic sinusitis. (M becomes B) (مع الزكمة)
- Hypernasality → soft palate open → velopharyngeal dysfunction (VPD).

Normal Velopharyngeal Function

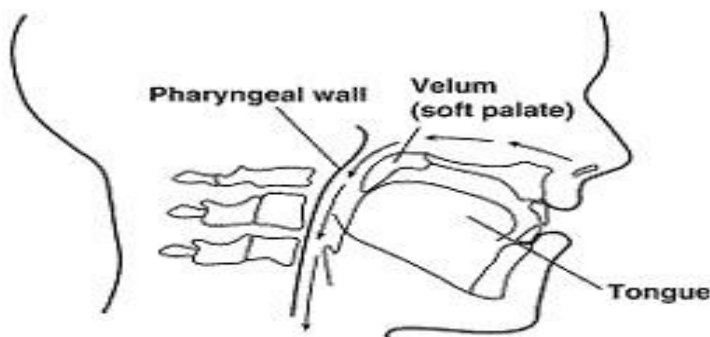


Fig. 1 Velum at rest.

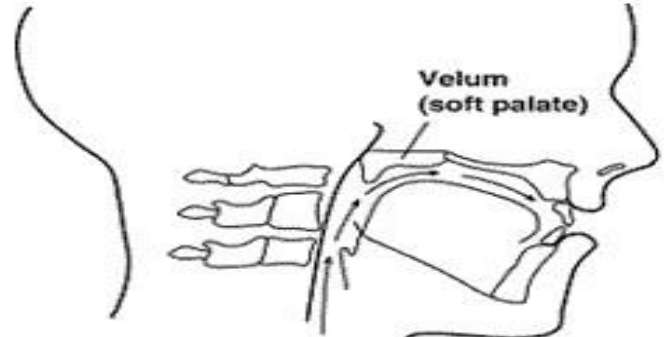


Fig. 2 Velum during speech.

→ ETIOLOGY:

Organic	Non-organic
<p>1. Structural</p> <p>a. Congenital:</p> <ul style="list-style-type: none"> • <u>Overt cleft palate.</u> • <u>Submucous cleft palate.</u> • Non-cleft causes: <ul style="list-style-type: none"> ○ Congenital short palate. ○ Congenital deep pharynx. <p>b. Acquired:</p> <ul style="list-style-type: none"> ○ Palatal trauma ○ Tumors of the palate and pharynx ○ Adenotonsillectomy <p>2-4 weeks => temporary (pain=> decrease movement=> more inx are needed if it exceeds 4 weeks> surgical error)</p> <p>Neurogenic: (VP Incompetence) Palatal U motor neuron lesion/ Palatal L motor neuron lesion.</p>	<ul style="list-style-type: none"> • Faulty speech habits. • Mental retardation. • Neurosis or hysteria. • Hearing impairment. • post-tonsillectomy pain. (transient)

→ EFFECTS OF VPD:

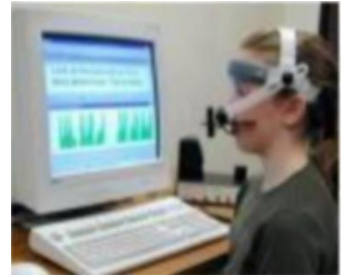
- Feeding problems: nasal regurgitation.
- Psychosocial problems.
- Communicative problems:
 - Speech: hypernasality.
 - Language: DLD.
 - Voice: hyper or hypofunction.

→ ASSESSMENT OF HYPERNASALITY (VPD):

- ✓ PARENT INTERVIEW.
- ✓ PERCEPTUAL.

- Simple tests:

Gutzman's (a/i) test: ask patient to say a,i,a,i tone will change. (nasal emission).



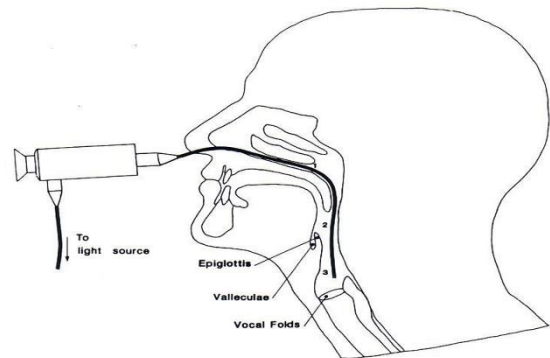
Czermak's (cold mirror) test: there will be condensation on the mirror (nasal emission)

- Nasal air emission.
- Voice.
- ✓ INTRA-ORAL EVALUATION.
- ✓ INSTRUMENTAL:
 - Nasopharyngoscopy.
 - Nasometry = How much nasality u have?
 - Fiberoptic nasopharyngolaryngoscopy.
- Resonance
- Articulation

-Position 1 (high): soft palate

-Position 2 (Mid): swallowing

-Position 3 (Low): Voice



→ MANAGEMENT:

- Multidisciplinary team.
- Management of feeding problem.
- Surgical intervention.
- Phoniatric intervention (language, speech, voice).
- Family counseling
- Management of otological and audiological problems.
- Orthodontic intervention.

→ TREATMENT DECISION:

Velopharyngeal insufficiency: surgery (speech therapy post-op).

Velopharyngeal incompetence: surgery (speech therapy post-op) / prosthetic devices / speech therapy.

Velopharyngeal mislearning: speech therapy.

→ SURGERY:

- Pharyngeal flap / sphincter- palatoplasty / post-pharyngeal wall augmentation.

→ PROSTHETIC DEVICE: (for elderly)

- Palatal lift: to raise the velum when there is poor velar movement (i.e. dysarthria).
- Palatal obturator: to occlude an open cleft or fistula.
- Speech bulb: to occlude nasopharynx.

SUBMUCOUS CLEFT: (important)

Difficult to diagnose >triad:

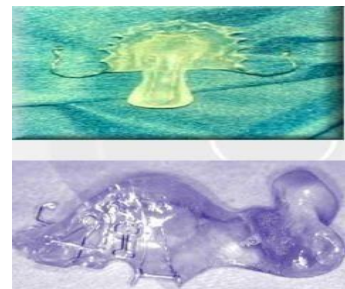
■Contraindicated to adenoidectomy

>Hypernasality.

■Post nasal notch (instead of spine).

■Bluish central line in soft palate.

■Bifid uvula.



5- DYSARTHRIA:

→ DEFINITION:

Any combination of disorders of respiration, phonation, articulation, resonance, and prosody (**intonations**), that may result from a **neuromuscular disorder**. **Brain and language are normal**

→ TYPES OF DYSARTHRIA: only know the types

Type	1- FLACCID	2- SPASTIC	3- ATAXIA	4-DYSKINETIC	5-MIXED
lesion	Lower motor neuron level	Upper motor neuron level	Cerebellum level	Basal ganglia level	May the most common
Communication	Breathy phonation hypernasality.	Strained strangled. phonation. labored breathing.	Increased equal stresses. Irregular articulatory. breakdown.	A. Hypokinetic type (Parkinsonism): breathy phonation <u>rapid rate</u> . B. Hyperkinetic type: i. Quick hyperkinetic (Chorea): variable rate and loudness. ii. Slow hyperkinetic (Athetosis): <u>slow rate</u>	- Examples: 1.Motor neuron disease. 2.Flaccid+Spastic Multiple. sclerosis: Ataxic. Spastic. 3. Wilson's disease: Ataxic + Spastic + Hypokinetic

→ ASSESSMENT OF DYSARTHRIA:

- **HISTORY TAKING.**
- **PHYSICAL EXAMINATION:** mouth, palate, neurological exam.
- **INVESTIGATIONS:**
 - Audio recording.
 - MDVP.
 - CT/MRI brain.
 - Dysphasia test. Dysarthria can come with dysphasia
 - Psychometry (IQ).
 - Audiometry.
 - Nasometry.
 - Fiberoptic nasopharyngolaryngoscopy.
 - Aerodynamics (Aerophone II).

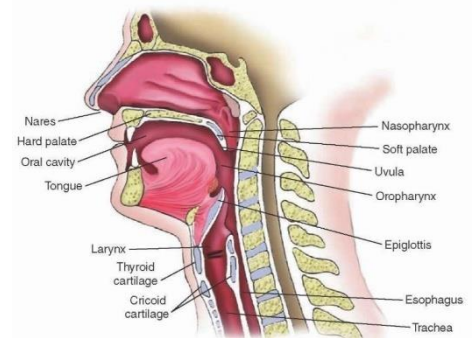
→ MANAGEMENT OF DYSARTHRIA:

❖ INDIVIDUALIZED:

- 1 -Management of the cause.
- 2-Patient counseling.
- 3-Communicative therapy:
 - Articulation.
 - Phonation.
 - Resonance.
 - Respiration.
 - Prosody.
- 4-ALTERNATIVE AND AUGMENTATIVE COMMUNICATION.

C. VOICE DISORDERS:

- 10% of communications disorders.
- Prerequisites of “normal” voice production:
- Normal range of movement of vocal folds.
- Normal mobility of mucosa on deep layers.
- Optimal coaptation of vocal folds’ edges.
- Optimal motor force.
- Optimal pulmonary support.
- Optimal timing between vocal fold closure and pulmonary exhalation.
- Optimal tuning of vocal fold musculature (int. & ext.).



→ USUALLY THE PRESENTING SYMPTOMS IN VOICE DISORDERS ARE:

-Dysphonia:

1. Difficulty in phonation
2. Change patient’s voice from his/her habitual
3. Hoarseness: roughness & harshness of voice. **Objective term. Dysphonia is broader (includes high pitched)**

-**Aphonia:** Loss of the patient’s voice (functional or organic).

-**Phonasthenia:** voice fatigue.

-**Phonasthenia:** a subjective complaint of dryness, tightness, globus feeling and voice fatigue, while the patient’s voice and larynx is normal.

-**Dysodia:** Change of the singing voice while the speaking voice is normal.

→ ANATOMICAL LANDMARKS OF THE LARYNX: IMP understand the picture so you can locate the lesion.

- Anteriorly: Anterior commissure and epiglottis
- Posteriorly: Arytenoid cartilage and hypopharynx

Pictures: As seen in the second picture the false vocal cords are on top of the true vocal folds and not next to them as it might appear in the first picture. FF=False folds V=Ventricle TF=True folds

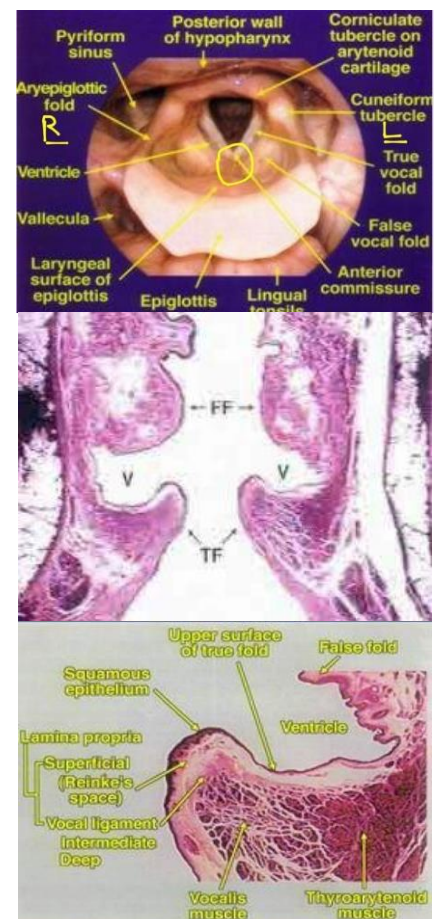
→ CROSS SECTION OF THE VOCAL CORDS WHICH CONTAINS:

◆ Mucosa:

- i. Squamous epithelium
- ii. lamina propria which contains:
 - o superficial layer.
 - othe intermediate and deep layers (vocal ligament).

→ ETIOLOGY:

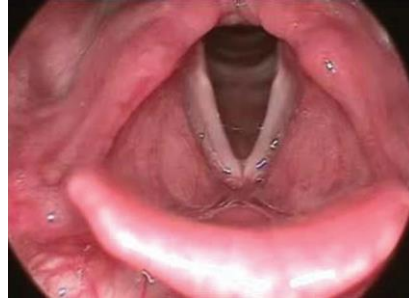
1. **Organic:** problem with the vocal cords
2. **Non-organic (normal Phx)**
3. **Benign focal cord lesion:** Started as non-organic then progressed to organic
4. **Accompaniment of Neuro-psychiatric Ailments**



→ 1- ORGANIC VOICE DISORDERS:

- Congenital - Inflammatory - Traumatic - Neurological - Neoplastic - Hormonal - Status post-laryngectomy.

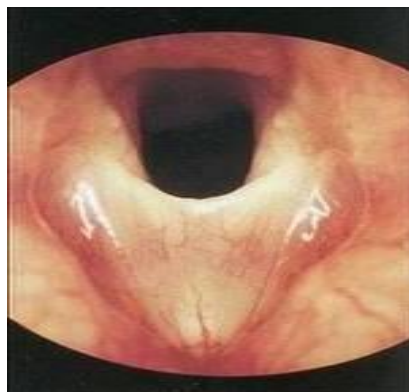
1- Normal



2- Laryngomalacia



3- Congenital vocal folds web

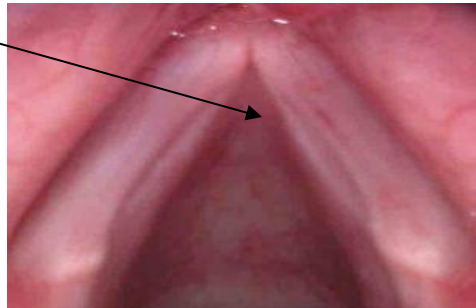


4- Laryngeal cleft



5- Sulcus vocalis (bilateral groove)

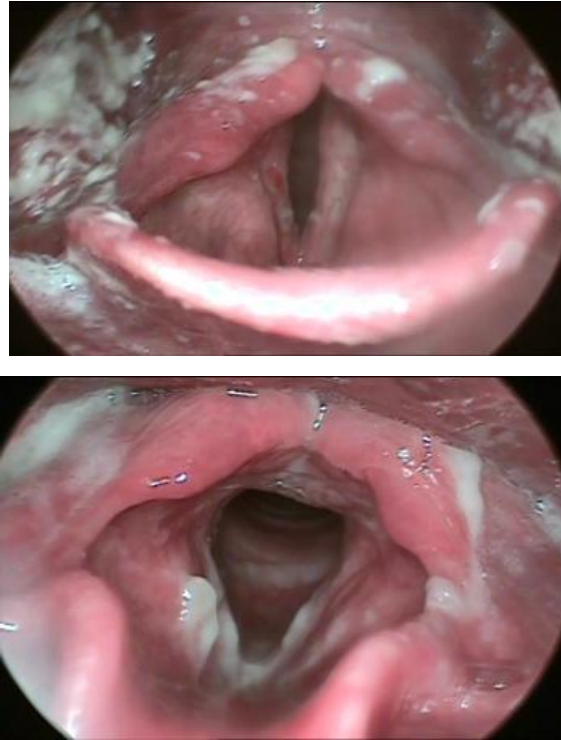
- Congenital lesion
- (On the free edge of the true vocal fold)
- treated by: vocal folds injection (filler)



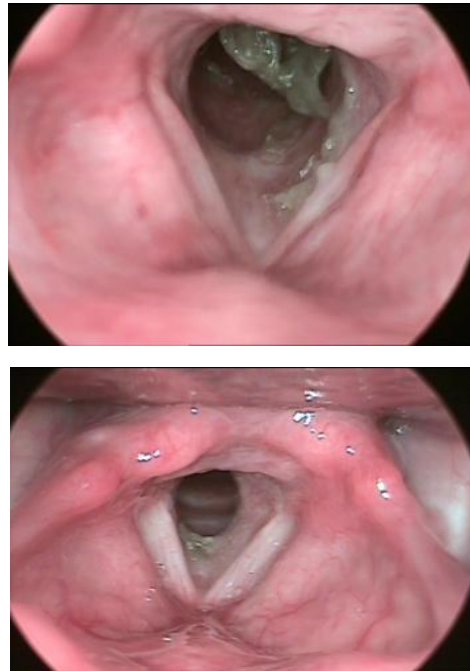
6- Laryngopharyngeal Reflux



7- Fungal infection



8- Laryngoscleroma



9- Laryngeal carcinoma

- squamous cell carcinoma is the most common.
- Risk factors: Tobacco use - Excessive ethanol use Infection with human papillomavirus Increasing age.



Respiration

Phonation

10- Cancer



11- Left vocal cord paralysis

Left vs right?

1-Determine anatomical landmarks (anterior and posterior) to know which side is left and which is right 2-During respiration vocal cords should be abducted if one of them is not abducted → paralysis. During phonation vocal cords should be adducted if one is not → paralysis

You cannot determine which cord is paralysed if you don't know if the picture is during inspiration or phonation How it presents?
Dysphonia- aspiration (if unilateral)
Airway obstruction - swallowing abnormality (if bilateral)



Respiration



Phonation

12- Trauma



Respiration



Phonation

→ **2- NON-ORGANIC VOICE DISORDERS:** (normal anatomy, medical treatment)

i HABITUAL:

- a. Hyperfunctional childhood dysphonia.
- b. Incomplete mutation.
 - Occurs in males during puberty. Change of voice from high frequency to low frequency voice.
- c. Phonasthenia (Voice fatigue).
- d. Hyperfunctional dysphonia.
- e. Hypofunctional dysphonia. E.g. acute pharyngitis. Patient won't talk because of pain. If they stopped talking for more than 3 weeks it will be difficult to get back normal voice.
- f. Ventricular dysphonia.
 - Misuse of voice will cause the ventricles to hypertrophy until they touch each other and dysphonia will occur (patient will sound like WWE fighter).
 - Normal function of ventricle: -Helps shape the cords -holds glands which decrease friction between false and true vocal cords -fine tuning.

ii PSYCHOGENIC:

- a) Psychogenic dysphonia
- b) Psychogenic aphonia

→ **NOTES:**

Misuse vs abuse of voice

■ Misuse: incorrect use of voice e.g. shouting

■ Abuse: overuse of voice

Voice frequencies

■ Children: 200-250



■ Males: 100-125

■ Females: 200










Male vs Female vocal cords

■ Male: 20-24 mm

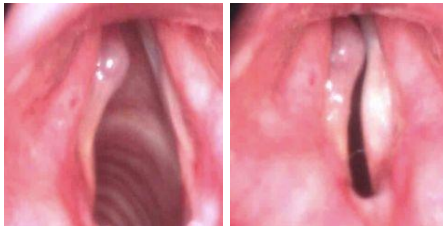
■ Female: 18-19 mm

<p>1- Hyperfunctional dysphonia</p> <ul style="list-style-type: none"> ● In professional voice users 	 <p style="text-align: center;">Respiration Phonation</p>
<p>2- Phonasthenia Most common</p> <ul style="list-style-type: none"> ● E.g. Teacher can't talk after 5th period (fatigue) ● Won't hear or see anything on examination 	 <p style="text-align: center;">Respiration Phonation</p>

→ 3- BENIGN VOCAL CORD LESIONS: (Minimal associated pathological lesions (MAPLs))

<p>1- Vocal fold nodule – Bilateral and symmetrical.</p>	
<p style="text-align: center;">Juvenile type</p> <p>Kissing nodules</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <p>Respiration</p> <p>Phonation</p> </div>	<p style="text-align: center;">Adult type</p> <p>Bilateral nodule in a female patient More common in females</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <p>Respiration</p> <p>Phonation</p> </div>
<p>2- Vocal fold polyp (different shapes)</p> <ul style="list-style-type: none"> • More common in males • From epithelial layer → well defined 	
<p style="text-align: center;">Left vocal fold polyp with a reaction (reaction occurs on the opposite side due to friction)</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <p>Respiration</p> <p>Phonation</p> </div>	<p style="text-align: center;">Left true vocal fold polyp</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <p>Respiration</p> <p>Phonation</p> </div>
<p>Right vocal fold polyp</p> 	

3- Vocal fold cyst
 Arises from deeper layers → ill defined

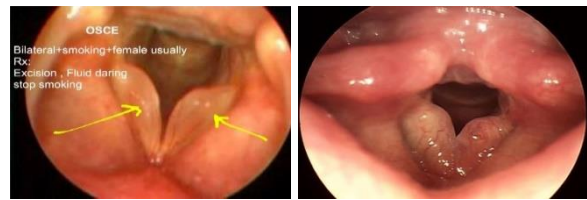


Etiology: phonotrauma, congenital

4- Reinke's edema – Usually bilateral.



Right-sided reinke's edema



Etiology: phonotrauma, smoking, reflux
 Common amongst middle aged female smokers

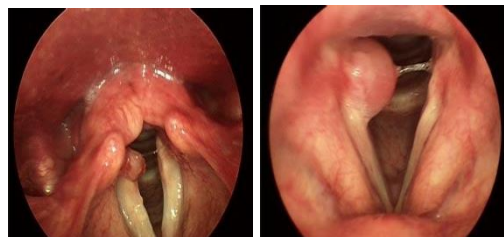
5- Contact granuloma

Right-sided Contact Granuloma



Respiration Phonation

Right-sided Contact Granuloma



Why not polyp? It's in the posterior part (usual place for a granuloma) More common in males 9:1 (it is very similar to polyps but differ in location, here, it involves the posterior cartilaginous part-which does not vibrate-, therefore no dysphonia)

Etiology: voice misuse, reflux, intubation (intubation granuloma)

Management: (very important)

- Nodule, granuloma → voice therapy
- Polyp, Reinke's edema, cyst → removal and voice therapy

→ ASSESSMENT OF DYSPHONIA:

- History taking.
- Physical examination: APA , neck
- Investigations:
 - Audio recording.
 - Digital laryngostroboscopy.
 - Digital laryngo kymography.
 - Acoustic analysis (MDVP).
 - GERD (LPR) work-up.
 - CT neck.
 - Aerodynamic analysis (Aerophone II).
 - Voice sheet
 - **CSL=Acoustic analysis of voice, intensity and frequency (Quantities).**



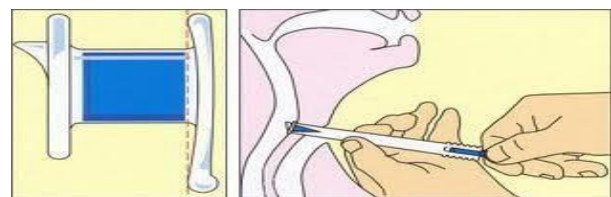
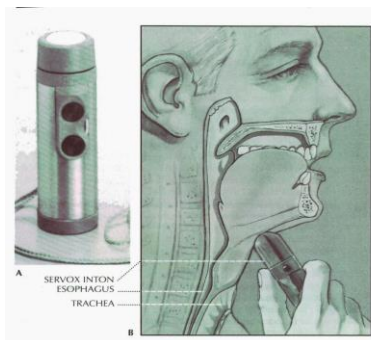
Computerized speech lab. (CSL)



Phonatory Aerodynamic System (PAS)

→ MANAGEMENT OF VOICE DISORDERS:

- Pharmacological agents. **Ex.GERD**
- Technical aid devices.
- Surgical procedures (Phonosurgery).
- Voice therapy.



Tracheo-esophageal puncture

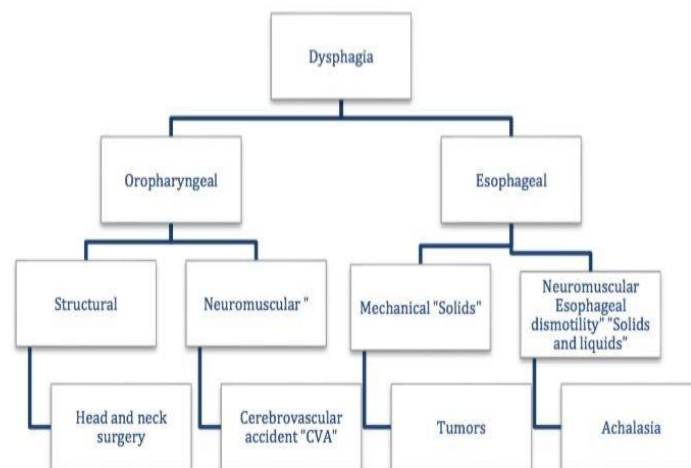
★Stroboscope: (it only takes samples) There is a HIGH-SPEED TYPE that is more detailed.

- is a special method used to visualize vocal fold vibration?
- It uses a synchronized, flashing light passed through a flexible or rigid telescope.

The flashes of light from the stroboscope are synchronized to the vocal fold vibration at a slightly slower speed, allowing the examiner to observe vocal fold vibration during sound production in what appears to be slow motion

- ✓ females reach 300 cycle/ sec. **up to 1000.**
- ✓ Males reach 120-130 cycle/ sec. **up to 200.**

SWALLOWING DISORDERS:



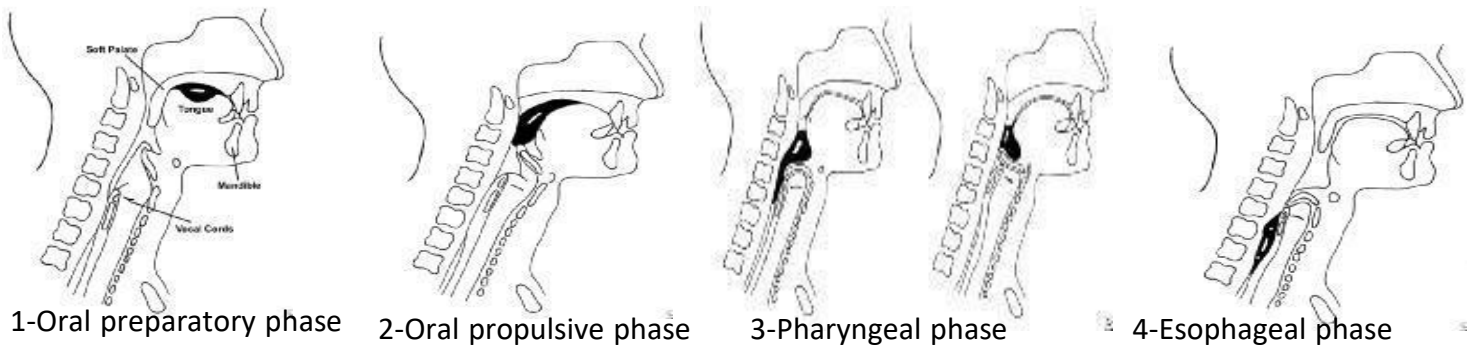
In ENT, they are concerned about the **oropharyngeal** causes.

→ DEFINITIONS:

- **SWALLOWING:** is the successful (**timely and efficiently**) passage of food and drinks from the mouth to the stomach. **Happens 2,000-3,000 times/day**
- **DYSPHAGIA:** pain, discomfort and/or difficulty in initiation or completing the act of swallowing
- **ODYNOPHAGIA:** painful swallowing due to a disorder of the esophagus.

→ PHASES OF SWALLOWING:

- Oral (**voluntary**)
- Pharyngeal
- Esophageal



→ CONSEQUENCES OF DYSPHAGIA:

- Dehydration.
- Weight loss.
- **Aspiration pneumonia. (MOST dangerous)**
- Airway obstruction.
- Loss of joy of eating.

→ ASSESSMENT OF DYSPHAGIA:

A. HISTORY TAKING.

B. Physical examination:

1. General examination
2. Language and speech assessment
3. Vocal tract examination
4. Neck examination
5. Trial feeding. Patient is given water, if they cough, that indicates aspiration.
6. Dysphagia sheet

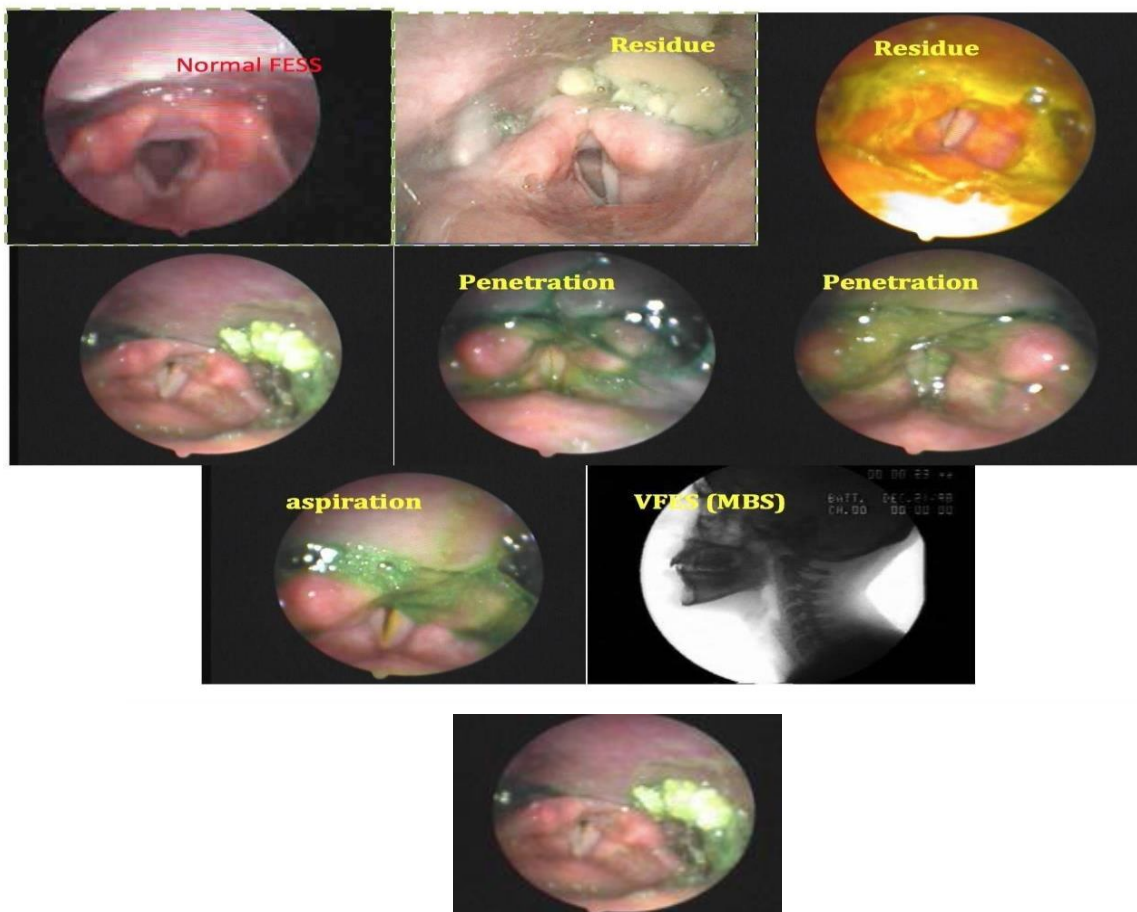
C. Investigations:

- --- FEES "Fiberoptic endoscopic evaluation of swallowing"
- --- VFES (MBS) "Video fluoroscopic evaluation of swallowing" (Modified barium swallow)
- --- GERD (LPR) work---up
- FEES protocol of evaluation (Langmore, 2003):

- A. Anatomic and physiologic assessment.
- B. Assessment of food and liquid swallowing.
- C. Assessment of therapeutic interventions.



FEES



Food stuck in the pyriform fossa (site of constriction).

✓ NOTES:

- Residue = in the pharynx, Penetration = at the true vocal folds, Aspiration = below vocal folds.
- If aspiration occurs, penetration must have occurred first (except in tracheoesophageal fistula where aspiration occurs without penetration).
- Aspiration of liquid is more common but less severe than aspiration of solids.

→ MANAGEMENT OF DYSPHAGIA:

✓ oral vs non oral feeding

- Non oral feeding when:
 - Aspiration >10%
 - Oral + pharyngeal transit time >10 s

✓ Direct vs Indirect therapy

- Direct: food or liquid given to the patient
- Indirect: no food or liquid given (only saliva)

✓ Compensatory vs Therapy technique

- Compensatory: elimination of symptoms but no change in swallowing physiology, such as postural techniques
- Therapy techniques: change of swallowing physiology such as swallowing maneuvers.

1. SWALLOWING THERAPY:

- a. Diet modification.
- b. Dysphagia with water?? Try make it more thick=> juice.
- c. Postural techniques.
- d. Swallowing maneuvers.
- e. Sensory enhancement techniques.
- f. Motor exercises.
- g. [Bolus control cup²](#)

2. SURGICAL TREATMENT, eg medialization laryngoplasty.

3. MEDICAL (DRUG) TREATMENT, eg anti-parkinsonism drugs.

4. INTRAORAL PROSTHESIS.

5. ALTERNATIVE ROUTES OF FEEDING, e.g. NG tube feeding.

[Temporary \(not more than 6 weeks\)](#) >6 weeks → [gastrostomy](#)

²(dysphagia cups) are a style of adapted drinking cups that are designed for individuals who have problems swallowing safely