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Khalid H Al Malki, MD, PhD


Communication and Swallowing
Disorders Unit (CSDU)

كرسي بحث
أمراض الصوت والبلع

Internet Site

http://c.ksu.edu.sa/vas

Communication and Swallowing Disorders

Khalid H Al Malki, MD, PhD

Aim of this presentation:

Introduce Communication and Swallowing Disorders and how they are managed generally, and NOT to cover all disorders in details.

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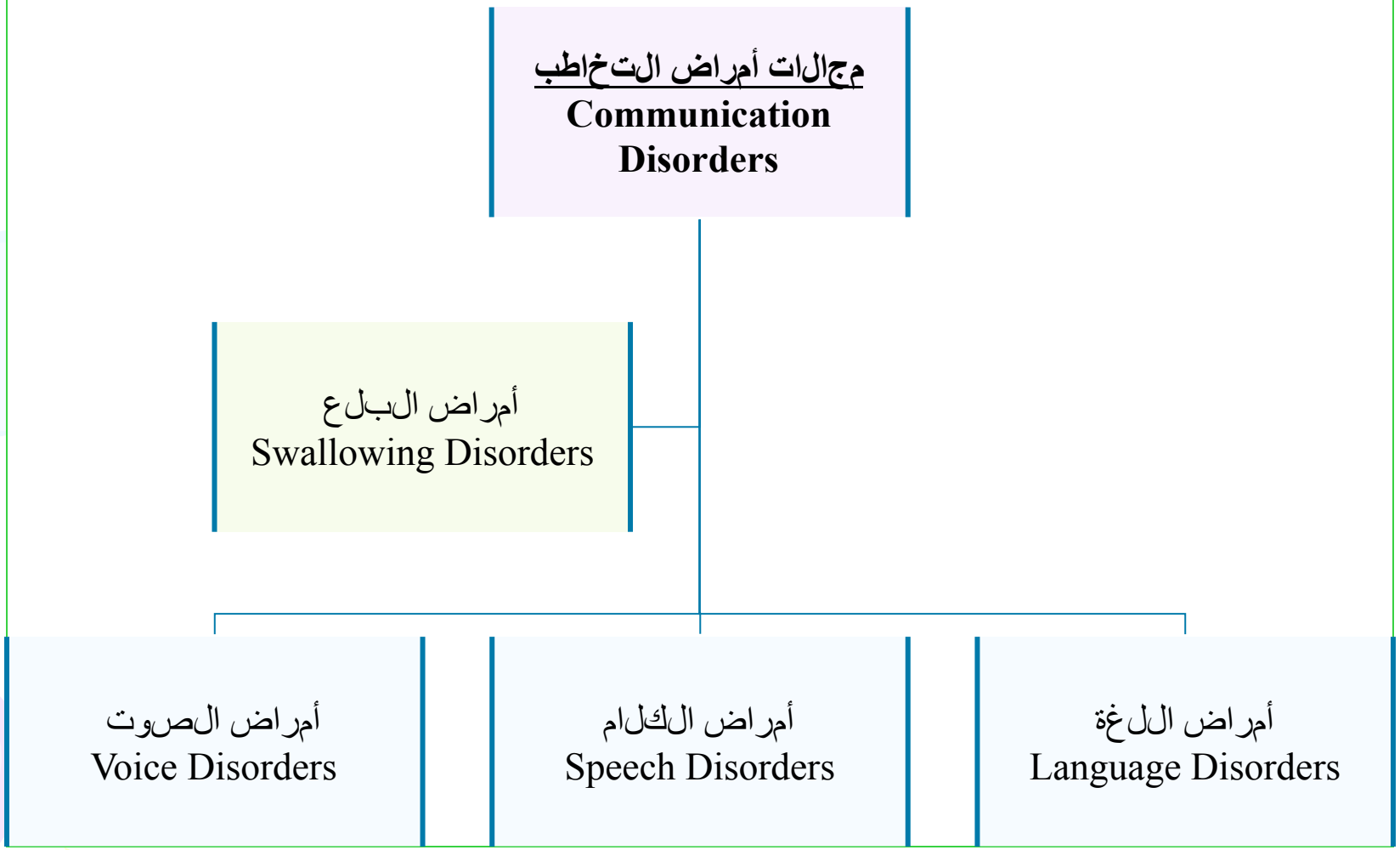
Communication Disorders

Communication difficulties have an impact on the following aspects:

- **Academic,**
- **Social,**
- **Psychological,**
- **Employment,**
- **Professional,**
- **Financial,**
- **Family relations.**



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Languag

A symbolic arbitrary system relating sounds to meaning.

Speech

A neuro-muscular process whereby language is uttered. It includes the coordination of respiration, phonation, articulation, resonation and prosody.

Voice

The result of vibration of the true vocal folds using the expired air.

Swallowing

The process of successful passage of food and drinks from the mouth through pharynx and esophagus into the stomach.

Phoniatrics

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Who is managing Communication and Swallowing Disorders?

Two schools:

1. Phoniatricians (MD's).

2. Speech-Language pathologists.

What is Phoniatrics?

- **A medical specialty that deals with communication and swallowing disorders.**
- **It stems mainly from ORL (ENT), especially when dealing with VOICE disorders.**

Union of the European Phoniatricians (UEP)

www.phoniatrics-uep.org

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Phoniatrics (cont.)

- **In 1931, "Phoniatrics" was officially recognized and acknowledged as an independent medical specialty of its own in Sweden.**
- **In 1992, "Phoniatrics & Pedaudiology" became a new self-standing medical discipline in Germany.**

Union of the European Phoniatricians (UEP)
www.phoniatrics-uep.org

Phoniatrics (cont.)

A medical subspecialty of ENT (Otorhinolaryngology) as approved by:

- Saudi Commission For Health Specialties.
- ENT Department, King Saud University.
- Saudi Society of Otorhinolaryngology.

The Phoniatrician:

- Deals with the patient from a MEDICAL prospective.
- Can perform endoscopies without any limitations.
- Can prescribe medications when needed.
- Can perform surgeries if interested and trained.

JALP

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Is Phoniatrics recognized internationally?

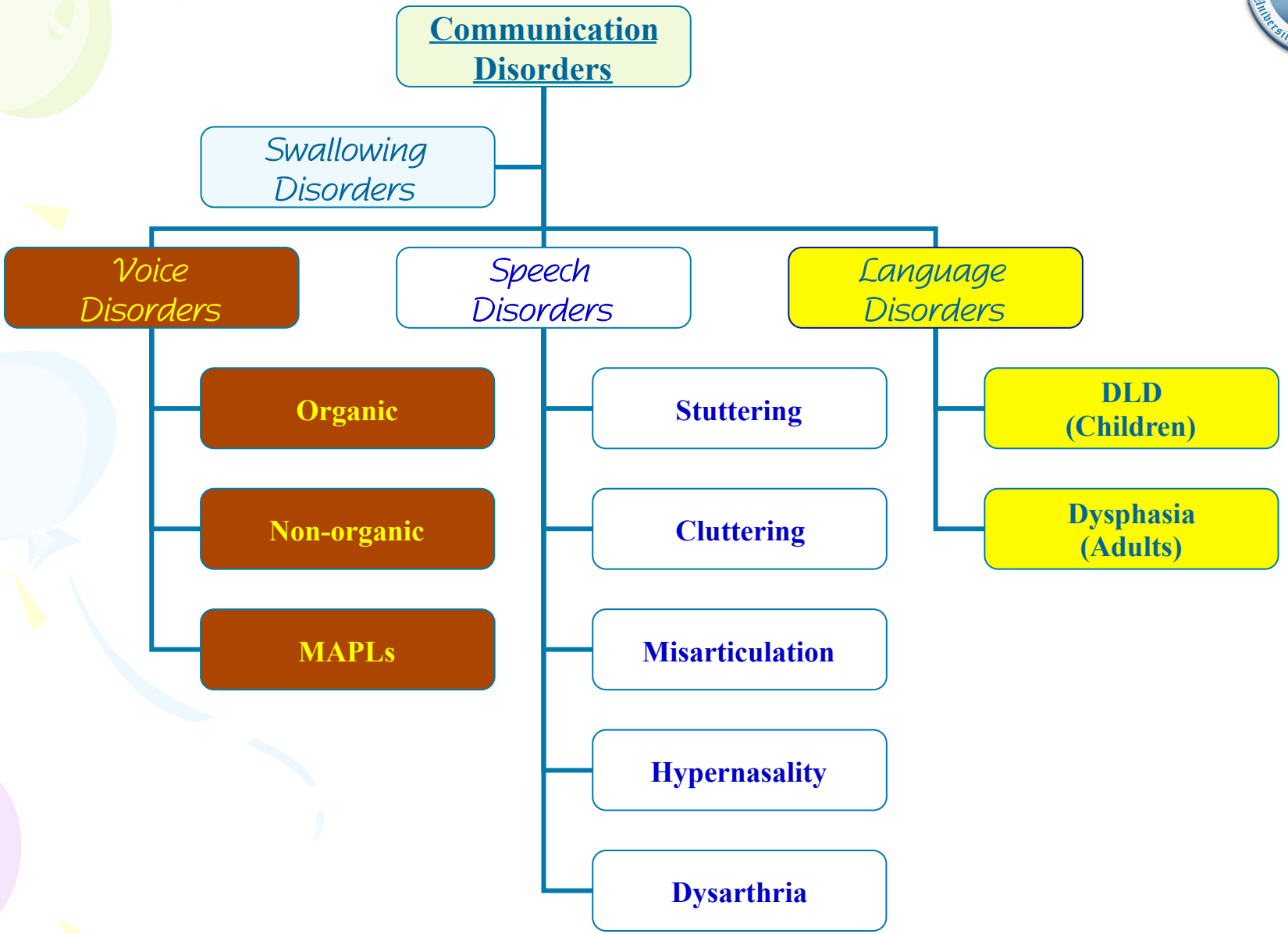
The International Association of Logopedics and Phoniatrics (IALP) is a global organization which promotes the improvement of care for people with communication disorders.

www.ialp.info

IALP:

IALP represents a professional body of:

- ✓ **125.000 members in human communication**
- ✓ **56 affiliated national societies from**
- ✓ **38 countries and**
- ✓ **over three hundred individual members.**
- ✓ **IALP has informative status with UNESCO, UNICEF, WHO, ….**



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Language Disorders

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I. Language Disorders:

[1] Delayed Language Development (DLD):

Definition of DLD:

Delay or failure to acquire language matched with age.

Prerequisites of normal language development:

1. Normal brain function.
2. Intact sensory channels (eg auditory).
3. Normal psyche.
4. Stimulating environment.

Causes of DLD:

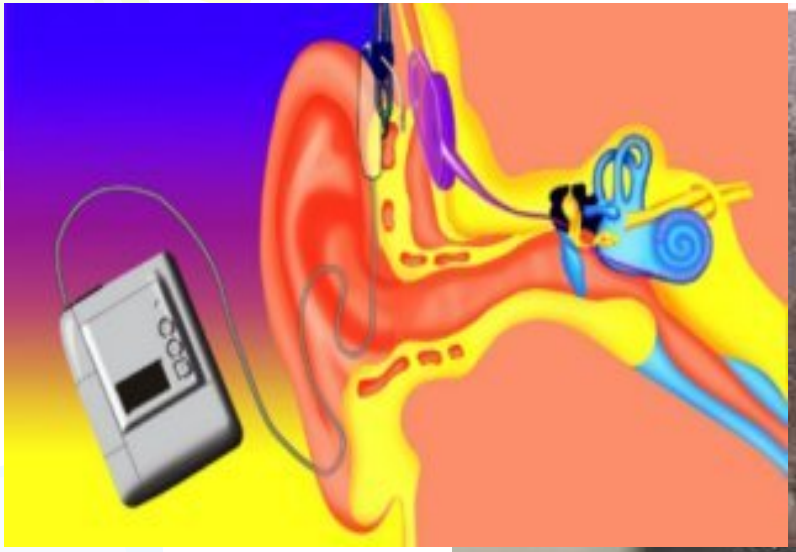
A) Brain damage:
- Diffuse brain damage (MR).
- Brain damaged motorly handicapped child (CP).
- Minimal brain damage (ADHD).

B) Sensory deprivation:
Hearing impairment.

C) Psychiatric disorders:
- Autism.
- Childhood schizophrenia.

D) Non-stimulating environment.

E) Idiopathic.

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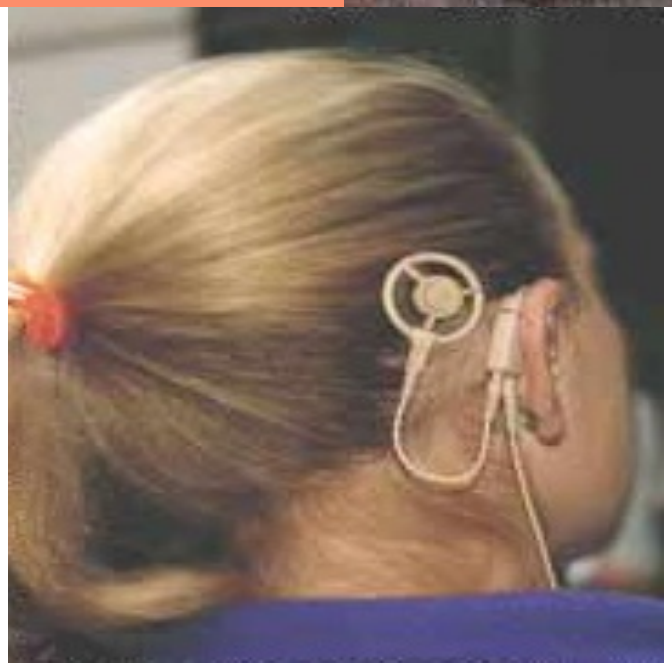


Diagnosis of the Cause of DLD:

I. History taking.

II. Physical examination.

III. Investigations:
- Psychometry (IQ).
- Audiometry.

DLD Sheet

Management of DLD:

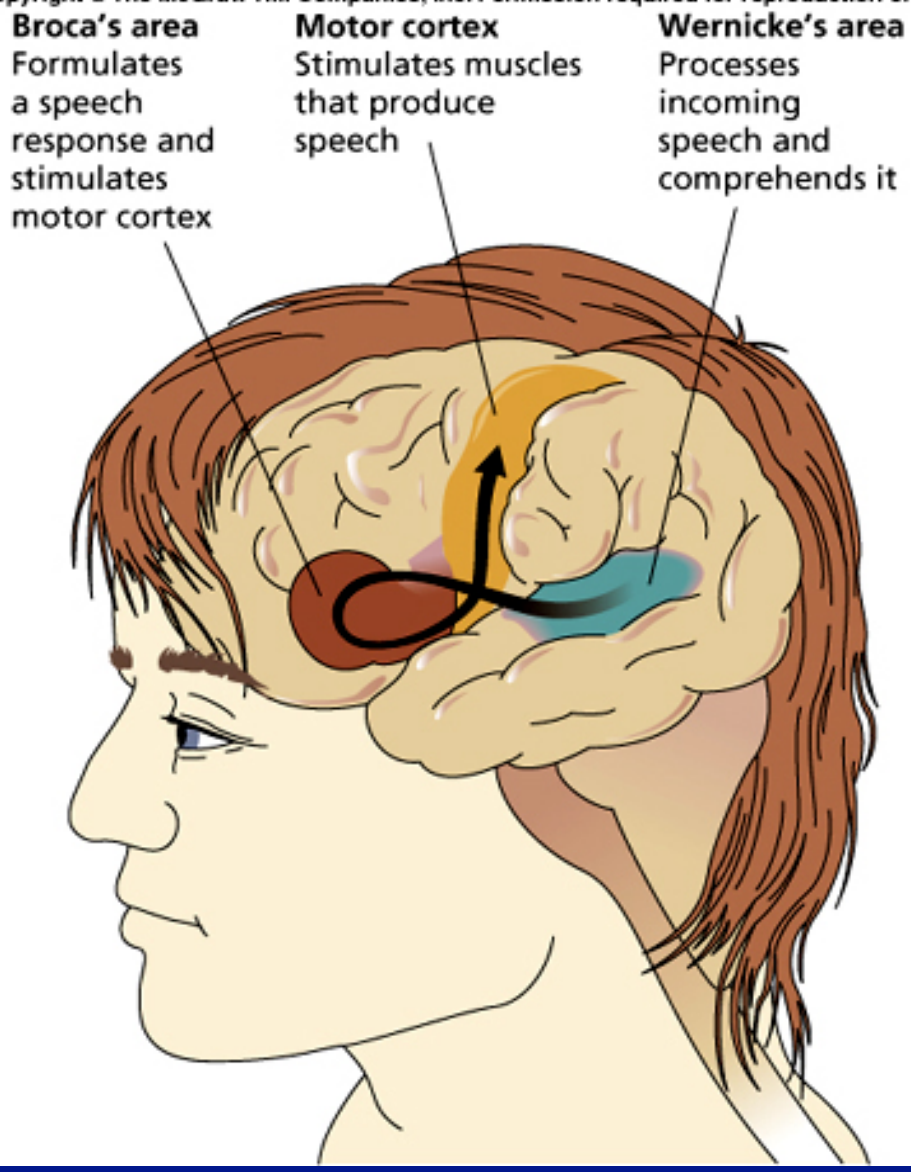
- Early detection.
- Providing the suitable aid (HA or CI).
- Family counseling.
- Language therapy.

I. Language disorders:

[2] Dysphasia:

Definition:

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



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Types of dysphasia:

1. Expressive.
2. Receptive.
3. Mixed predominantly expressive.
4. Mixed predominantly receptive.
5. Global.

Diagnosis of dysphasia:

I. History taking.

II. Physical examination: … , neurological exam.

III. Investigations:
- CT / MRI brain.
- Dysphasia test.
- Psychometry (IQ).
- Audiometry.

Dysphasia Sheet

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Management of dysphasia:

Individualized:

- **Management of the cause.**
- **Physical rehabilitation (Physiotherapy).**
- **Family counseling.**
- **Language therapy.**
- **Alternative and augmentative communication.**

Speech Disorders

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III. Speech disorders:

1. Dyslalia (Misarticulation):

Definition:

Faulty articulation of one or more of speech sounds not appropriate for age.

Types of dyslalia:

A) **Sigmatism** (/s/ defect):-

- Interdental sigmatism.
- Lateral sigmatism.
- Pharyngeal sigmatism.

B) **Back-to-front dyslalia**:-

/k/ /

t/ /g/ /

d/

C) **Rotacism** (/r/ defect).

D) **Voiced-to-nonvoiced dyslalia**:-

/g/ /k/

/d/ /t/

/z/ /s/ etc…

Diagnosis of dyslalia:

I. History taking.

II. Physical examination: … , tongue, …

III. Investigations:
- Audio recording.
- Articulation test.
- Psychometry (IQ).
- Audiometry.

Dyslalia Sheet

Management of dyslalia:

- **Treatment of the cause:**
  - **. Tongue tie.**
  - **. Dental anomalies.**

- **Speech therapy.**

II. Speech disorders:

2. Stuttering:

Definition:

The intraphonemic disruptions resulting in sound and syllable repetitions, sound prolongations, and blocks.

Normal dysfluency:

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

Incidence of stuttering: 1%.

Onset:

- Earliest = 18 months.
- Latest = 13 years.

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)

Theories of Stuttering:

The exact cause is unknown.

- **Organic theory.**
- **Neurosis theory.**
- **Learning theory.**

Diagnosis of stuttering:

I. History taking.

II. Physical examination: APA, VPA, …

III. Investigations:
- Audio and video recording.
- Stuttering severity (eg SSI).
- Articulation test.
- Psychometry (IQ).

Stuttering Sheet

Auditory Perceptual Analysis (APA):

A. Core behaviors:

- Intraphonemic disruption.
- Repetitions.
- Prolongations.
- Blocks.

B. Secondary reactions:

- Muscular activity and struggle.
- Interjection.
- Word substitutions and circumlocution.

C. Concomitant reactions:

- Fear.
- Breathing (antagonism, interruption, prolongation, cessation, …).
- Eye contact.
- Skin pallor/flushing.

Management of stuttering:

- Family and patient counseling.
- Speech therapy:

  a. Indirect therapy: if not aware.

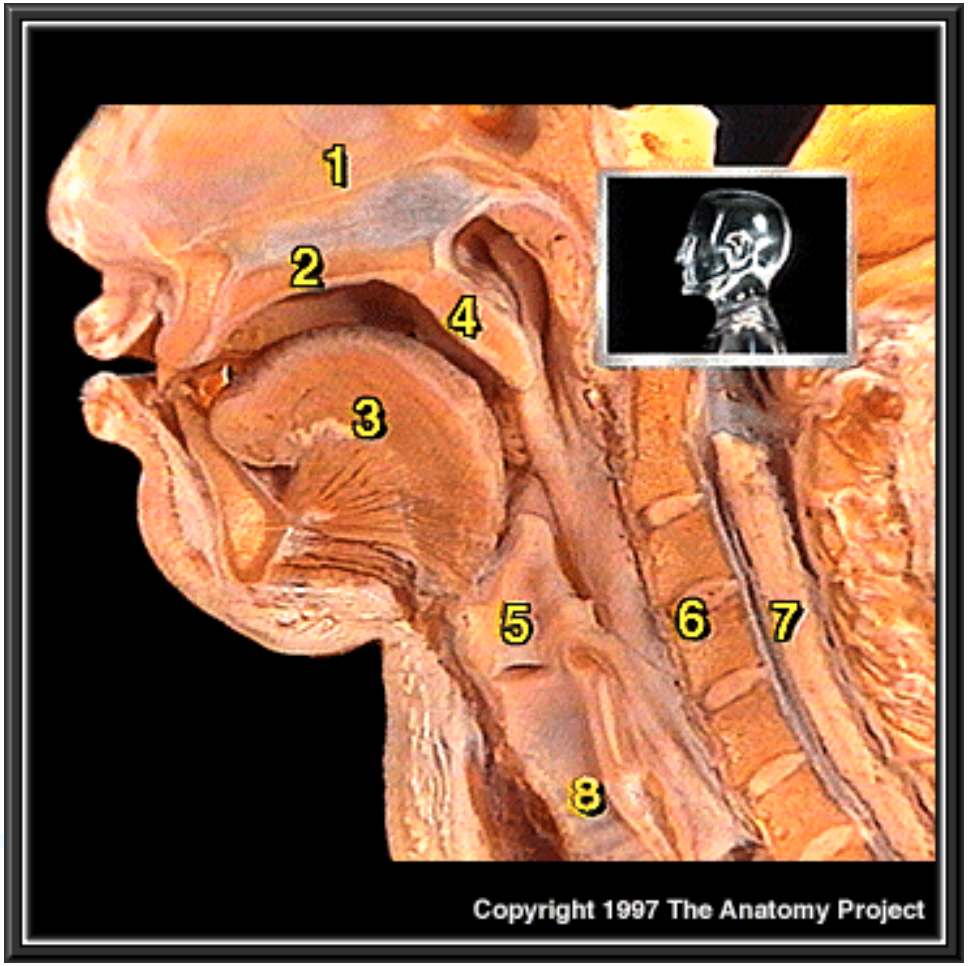
  b. Direct therapy: if aware.

II. Speech disorders:

3. Hypernasality:

Definition:

Faulty contamination of the speech signal by the addition of nasal noise. It results from velopharyngeal insufficiency (VPI).



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Causes of hypernasality:

I. Organic:

1.Structural:

a) Congenital:

- Overt cleft palate.
- Submucous cleft palate.
- Non-cleft causes:
  - . Congenital short palate.
  - . Congenital deep pharynx.

b) Acquired:

- Adenotonsillectomy.
- Palatal trauma.
- Tumors of the palate & pharynx.

2. Neurogenic:

- Palatal upper motor neuron lesion.
- Palatal lower motor neuron lesion.

Causes of hypernasality (cont.):
II. Non-organic (Functional):

- Faulty speech habits.
- Mental retardation.
- Neurosis or hysteria.
- Hearing impairment.
- Post-tonsillectomy pain.

Effects of VPI:

- Feeding problems: nasal regurgitation.
- Ear infections (tensor palati: V).
- Psychosocial problems.
- Communicative problems:
    - . Speech: hypernasality.
    - . Language: DLD.
    - . Voice: hyper or hypofunction.

Diagnosis of hypernasality:

I. History taking.

II. Physical examination:

- General.
- ENT examination: …, palate (inspection, palpation) ...
- Simple tests:
  - . Gutzman's (a/i) test.
  - . Czermak's (cold mirror) test.

III. Investigations:

- Audio recording.
- Fiberoptic nasopharyngolaryngoscopy.
- Psychometry (IQ).
- Audiometry.
- Articulation test.
- Nasometry.

Hypernasality Sheet

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Management of hypernasality:

- Team work.
- Feeding.
- Hearing.
- Maxillofacial.
- Palatal and lip surgeries.
- Obturators.
- Communication:
  - . Language: Language therapy.
  - . Speech: Speech therapy.
  - . Voice: Voice therapy.

II. Speech disorders:

4. Dysarthria:

Definition:

Any combination of disorders of respiration, phonation, articulation, resonance, and prosody, that may result from a neuromuscular disorder.

Types of dysarthria:

1. ***Flaccid dysarthria:***
   - Lesion: lower motor neuron level.
   - Communication:
     * breathy phonation.
     * hypernasality.

2. ***Spastic dysarthria:***
   - Lesion: upper motor neuron level.
   - Communication:
     * strained strangled phonation.
     * labored breathing.

Types of dysarthria (cont.):

3. *Ataxic dysarthria:*

- Lesion: cerebellum level.

- Communication:

*** increased equal stresses.**

*** irregular articulatory breakdown.**

Types of dysarthria (cont.):

4. ***Dyskinetic dysarthria:***

- Lesion: basal ganglia level.

A. Hypokinetic type (Parkinsonism):

* breathy phonation.
* rapid rate.
* short rushes of speech with final decay.

B. Hyperkinetic type:

i. Quick hyperkinetic (Chorea):

* variable rate and loudness.

ii. Slow hyperkinetic (Athetosis):

* slow rate.

Types of dysarthria (cont.):

5. *Mixed dysarthria:*

- may the most common.

- Examples:

*** Motor neuron disease ….Flaccid + Spastic.**

*** Multiple sclerosis …….. Ataxic + Spastic.**

*** Wilson's disease ……. Ataxic + Spastic + Hypokinetic.**

Diagnosis of dysarthria:

I. History taking.

II. Physical examination: … , mouth, palate, … , neurological exam, …

III. Investigations:

- Audio recording.
- Fiberoptic nasopharyngolaryngoscopy.
- CT/MRI brain
- Dysphasia test.
- Psychometry (IQ).
- Articulation test.
- Audiometry.
- Nasometry.
- MDVP.
- Aerodynamics (Aerophone II).

Management of dysarthria:

Individualized:

- Management of the cause.
- Patient counseling.
- Communicative therapy:
  - * Articulation.
  - * Phonation.
  - * Resonance.
  - * Respiration.
  - * Prosody.
- Alternative and augmentative communication.

Voice Disorders

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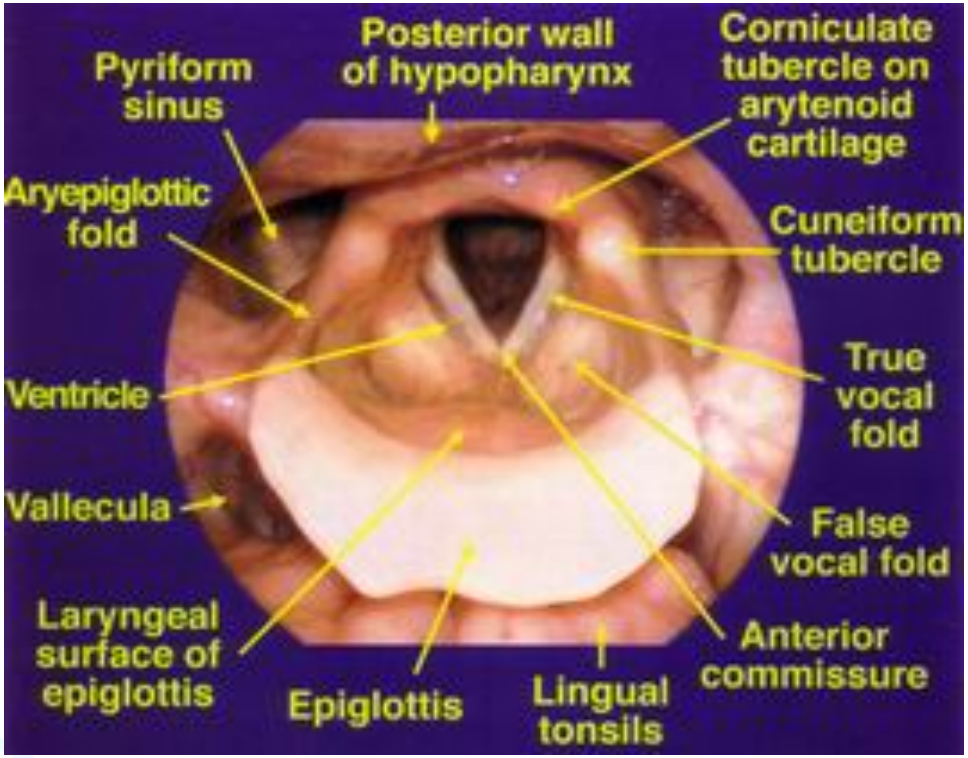
Functions of the larynx:

(1) Airway.

(2) Protection.

(3) Phonation.

(4) Increasing intra-thorasic Pressure.



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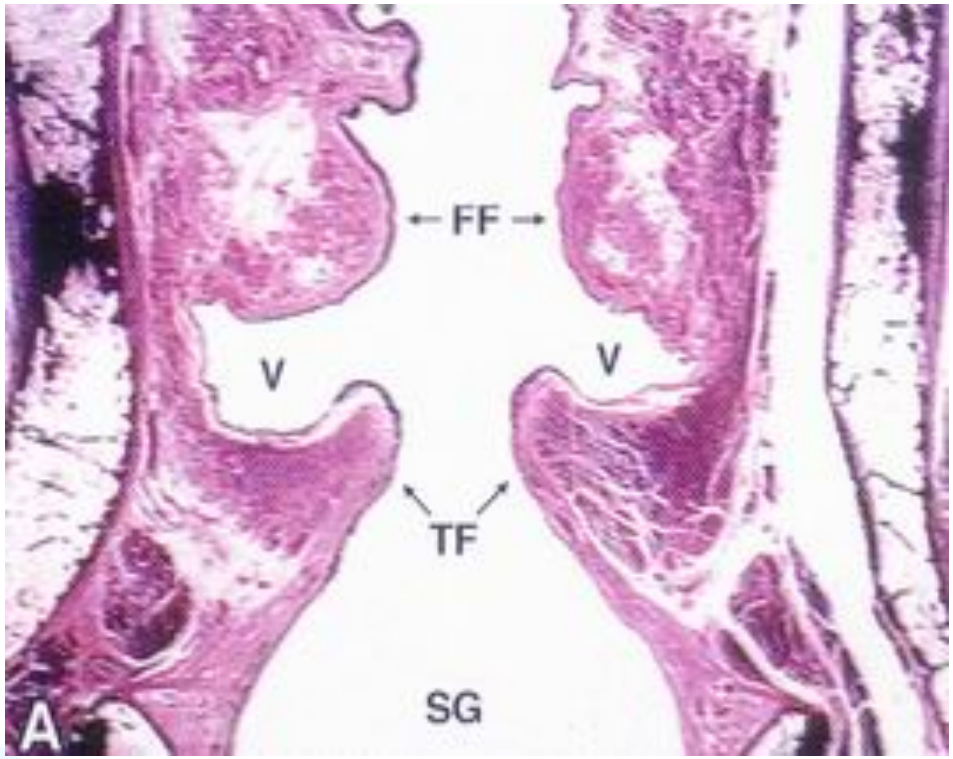

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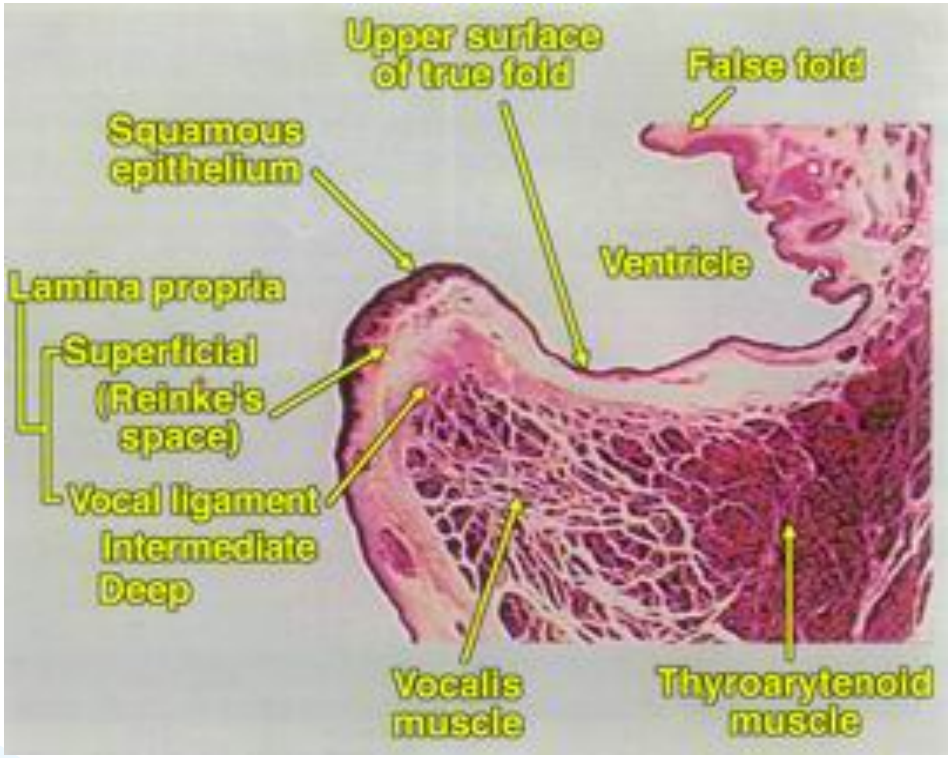

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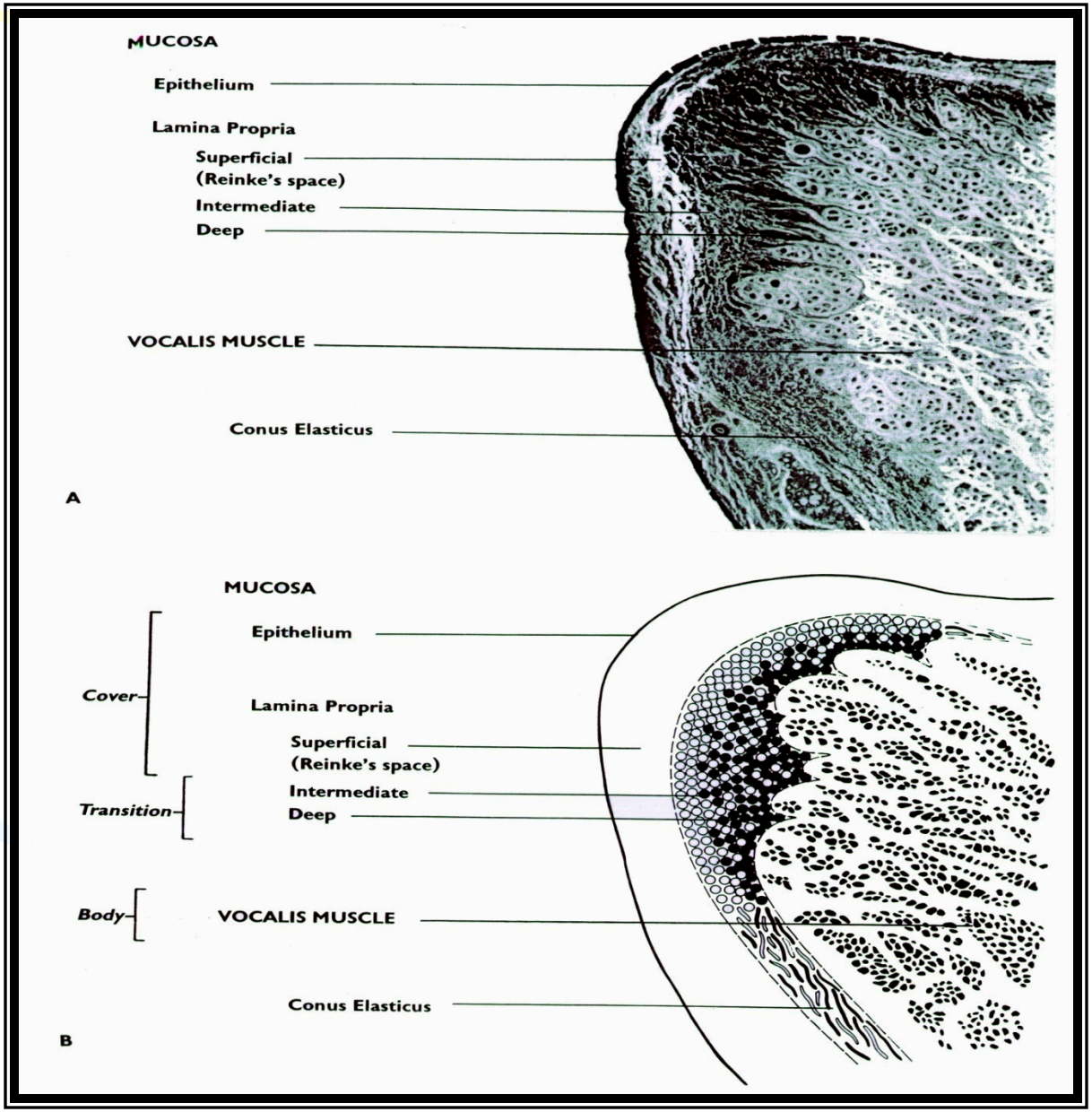

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Prerequisites of "normal" voice production:

1. Normal range of movement of vocal folds.
2. Normal mobility of mucosa on deep layers.
3. Optimal coaptation of vocal folds' edges.
4. Optimal motor force.
5. Optimal pulmonary support.
6. Optimal timing between vocal fold closure and pulmonary exhalation.
7. Optimal tuning of vocal fold musculature (int. & ext.).

Definition of dysphonia:

- "Difficulty in phonation".
- "Change of voice from his /her habitual".
- "Hoarseness" = roughness & harshness of voice.

Etiological classification of dysphonia:

I. Organic Causes

II. Non-Organic Causes

Habitual **Psychogenic**

III. Minimal Associated Pathological Lesions (MAPLs)

IV. Accompaniment of Neuro-psychiatric Ailments

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III. Voice disorders:

A) Organic voice disorders:

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

Sulcus vocalis

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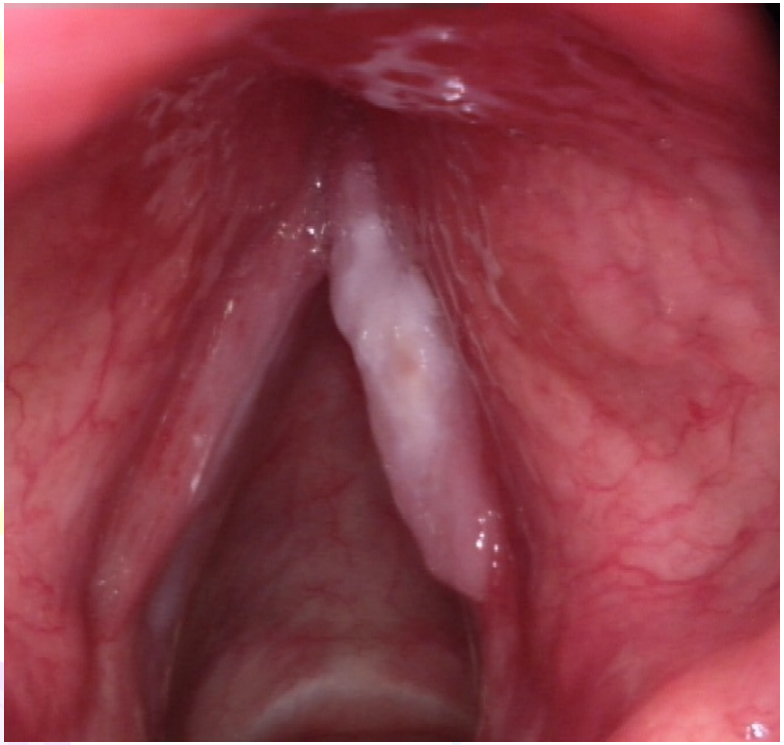
Laryngeal carcinoma



Respiration

Phonation

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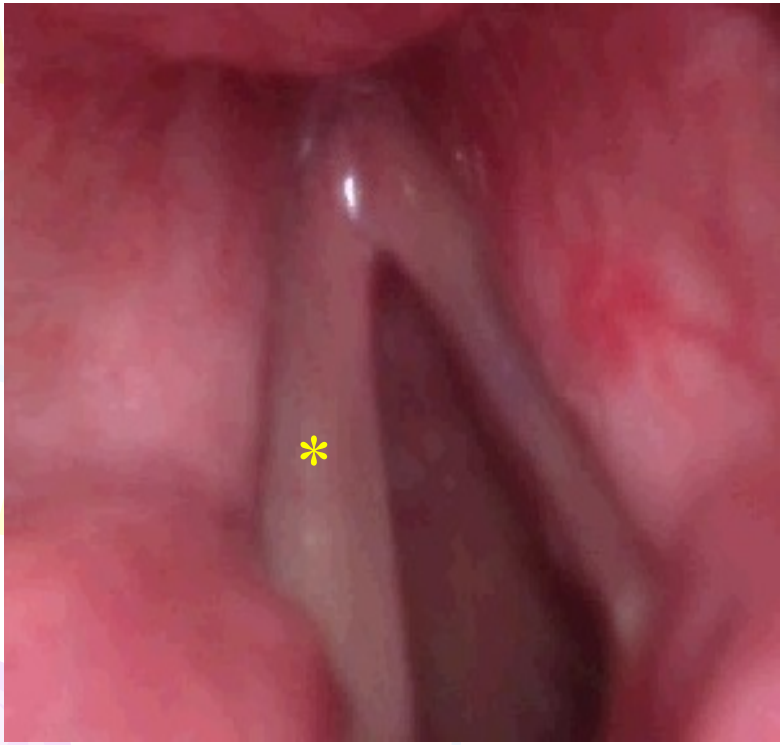
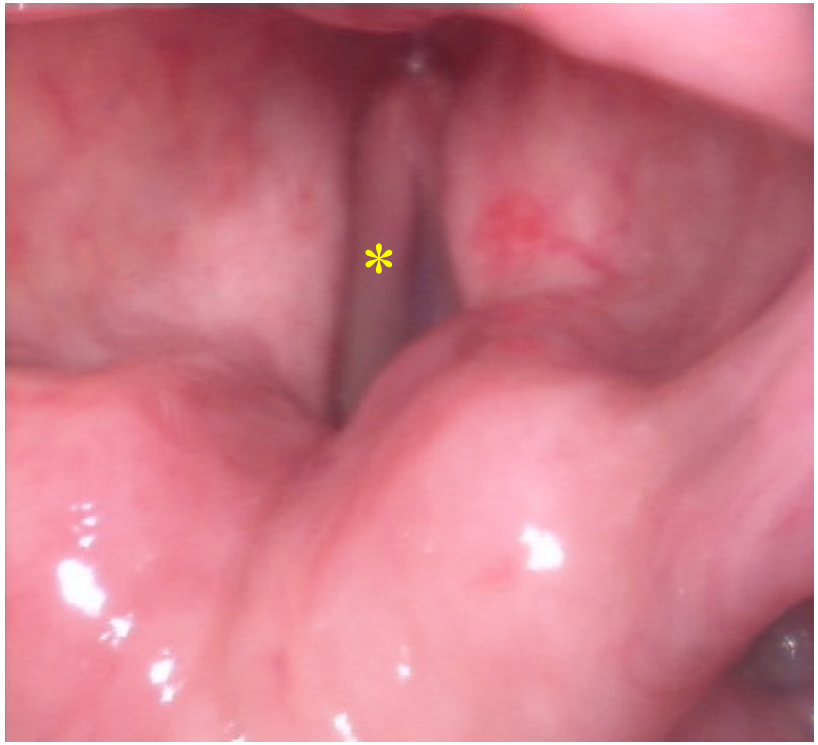
Left vocal fold paralysis



Respiration



Phonation

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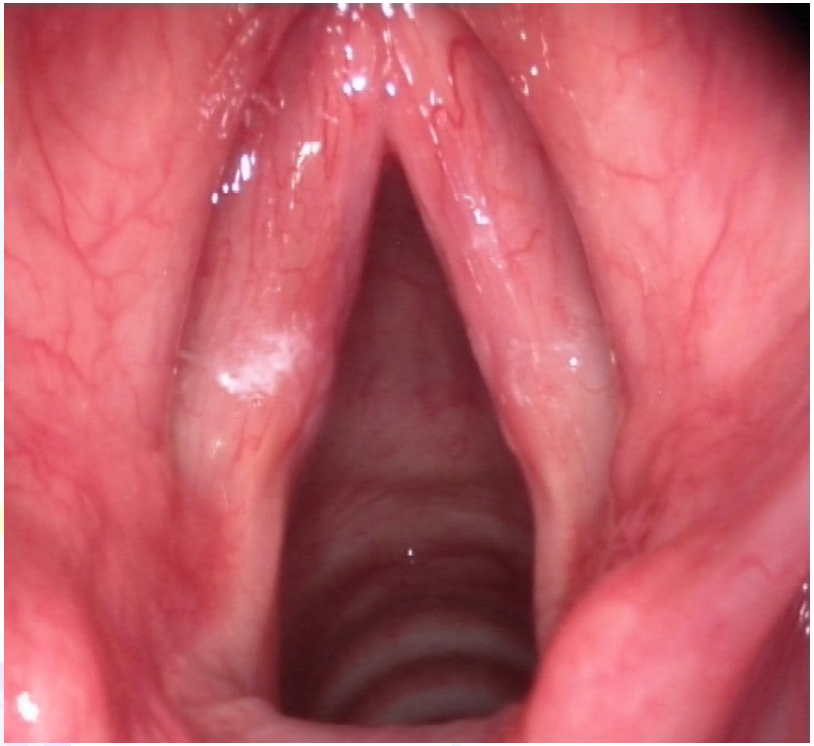
III. Voice disorders:

B) Non-organic voice disorders:

i. Habitual:

1. **Hyperfunctional childhood dysphonia.**
2. **Incomplete mutation.**
3. **Phonasthenia (Voice fatigue).**
4. **Hyperfunctional dysphonia.**
5. **Hypofunctional dysphonia.**
6. **Ventricular dysphonia.**

Hyperfunctional dysphonia



Respiration

Phonation

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Phonasthenia

Respiration

Phonation

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B) Non-organic voice disorders (cont.):

ii. Psychogenic:

1- Psychogenic dysphonia.

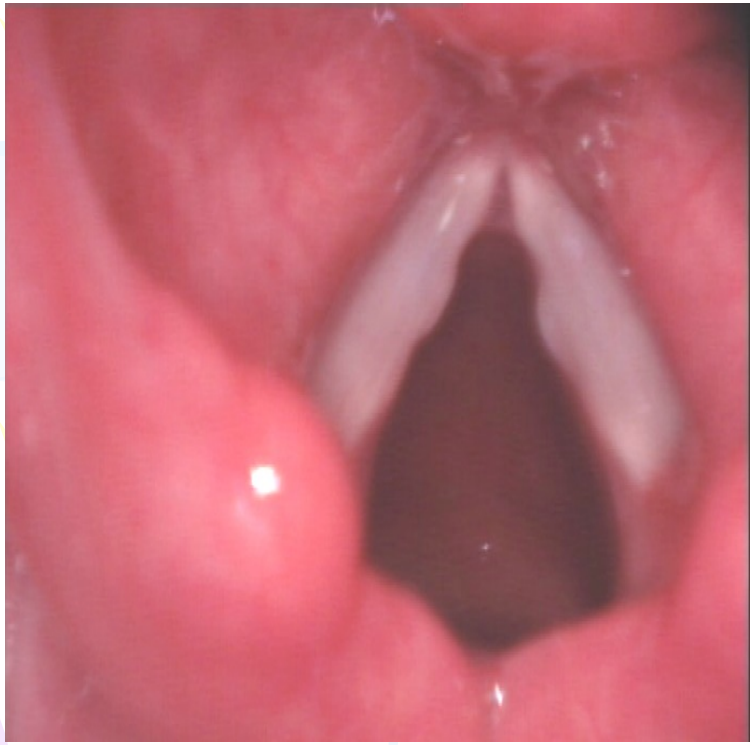
2- Psychogenic aphonia.

III. Voice disorders:

C) Minimal associated pathological lesions (MAPLs) :

1. **Vocal fold nodules.**
2. **Vocal fold polyps.**
3. **Vocal fold cysts.**
4. **Reinke's edema.**
5. **Contact granuloma.**

Vocal Fold Nodules: Adult Type



Respiration

Phonation

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Vocal Fold Nodules: Juvenile Type

Respiration

Phonation

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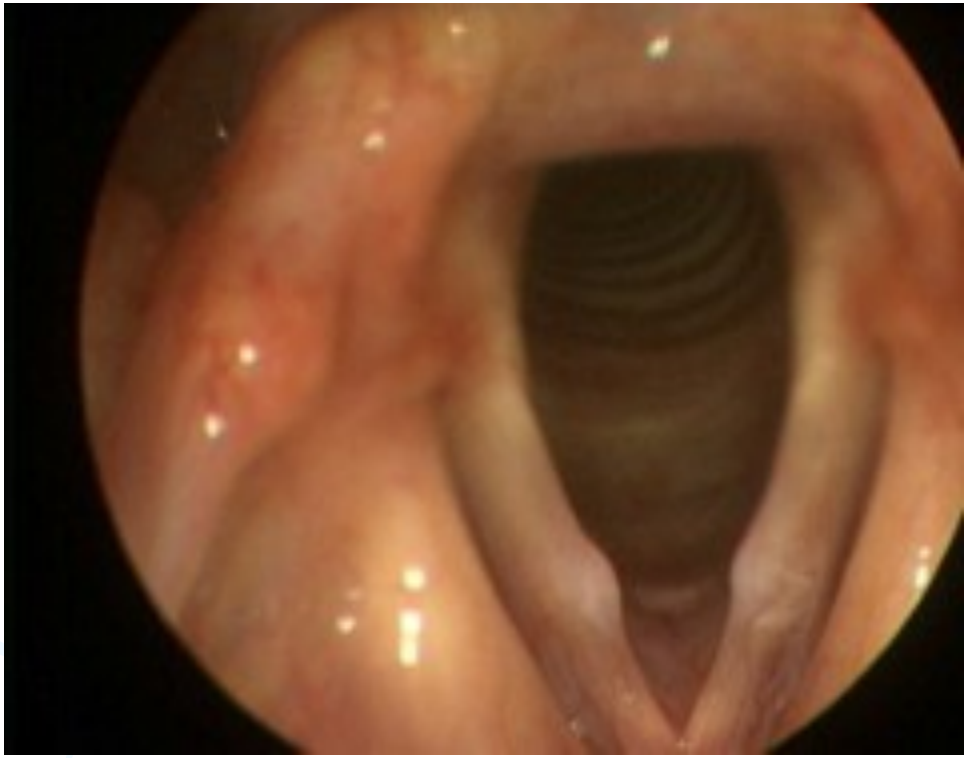

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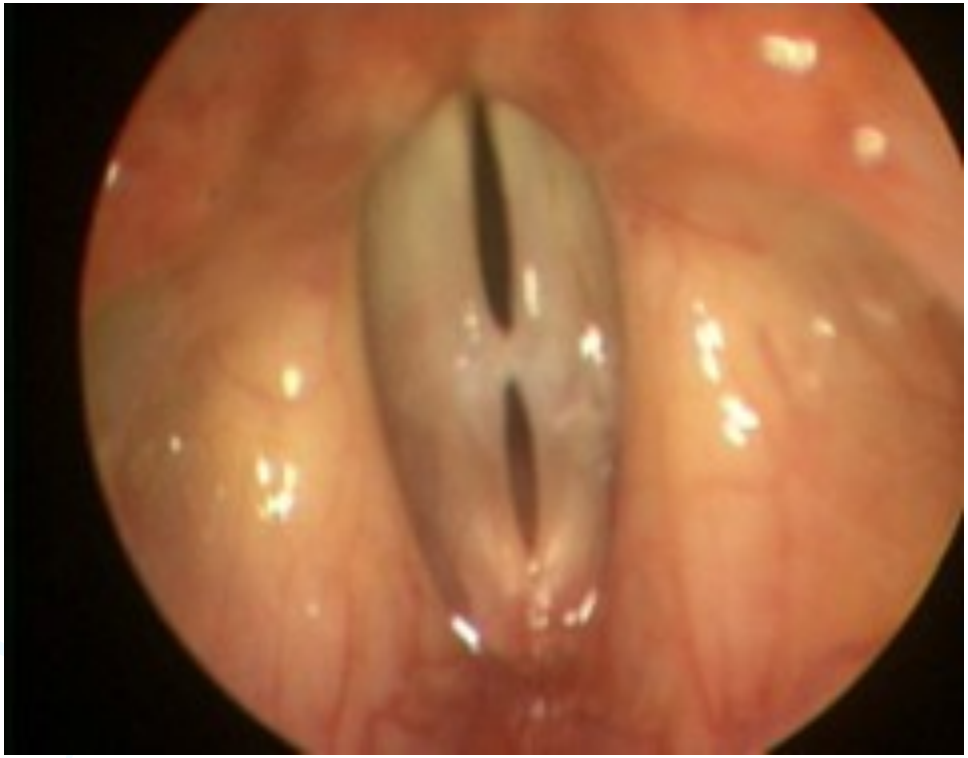

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Left Vocal Fold Polyp with a Reaction

Respiration

Phonation

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Respiration

Phonation

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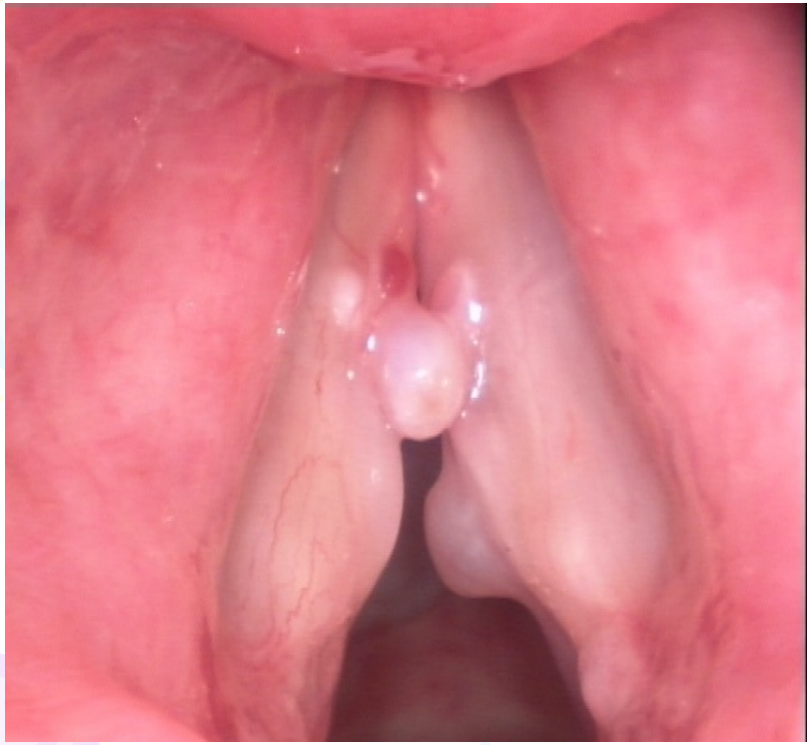

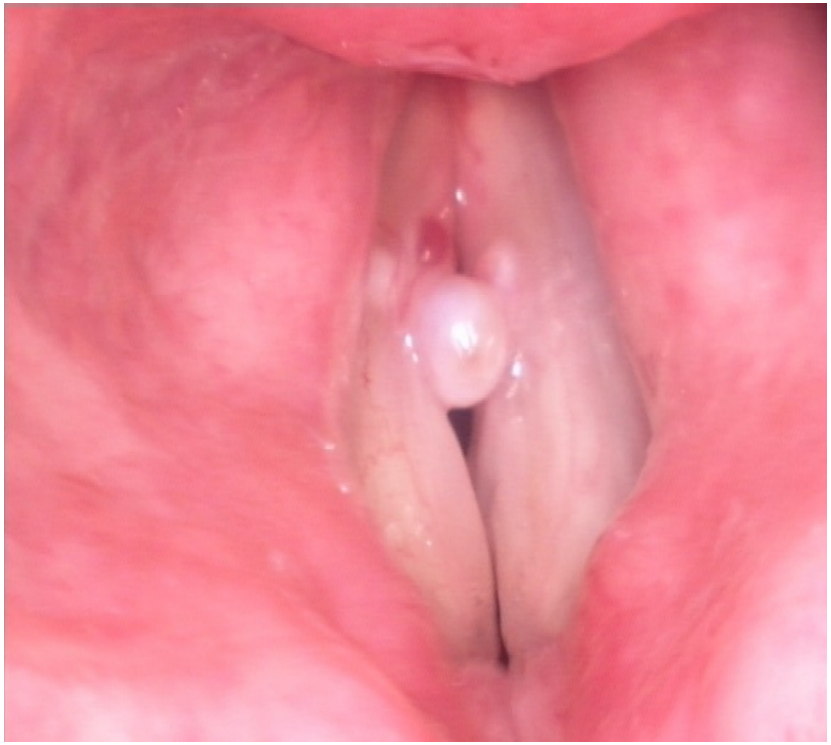

Respiration

Phonation

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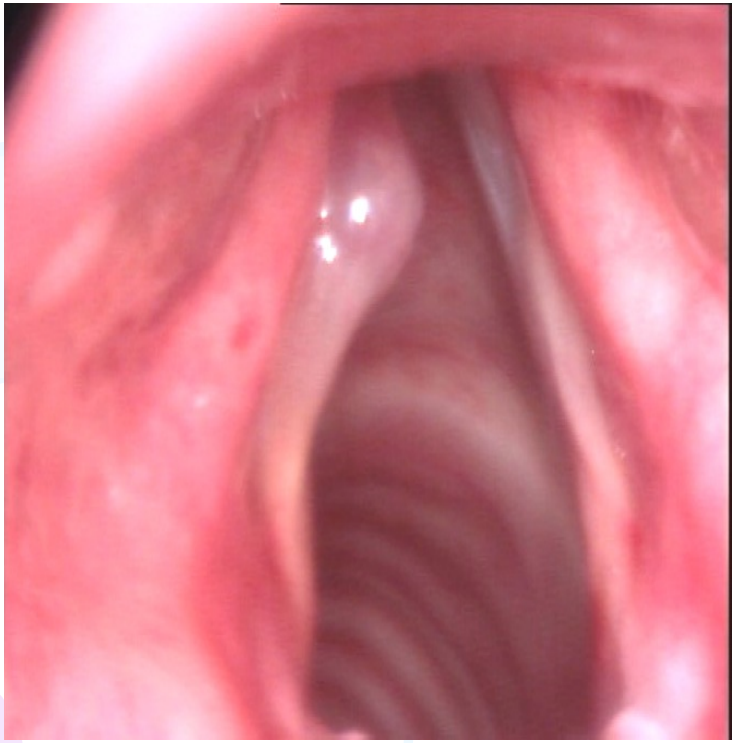
Left Vocal Fold Cyst



Respiration

Phonation

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Right-sided Reinke's Edema

Respiration

Phonation

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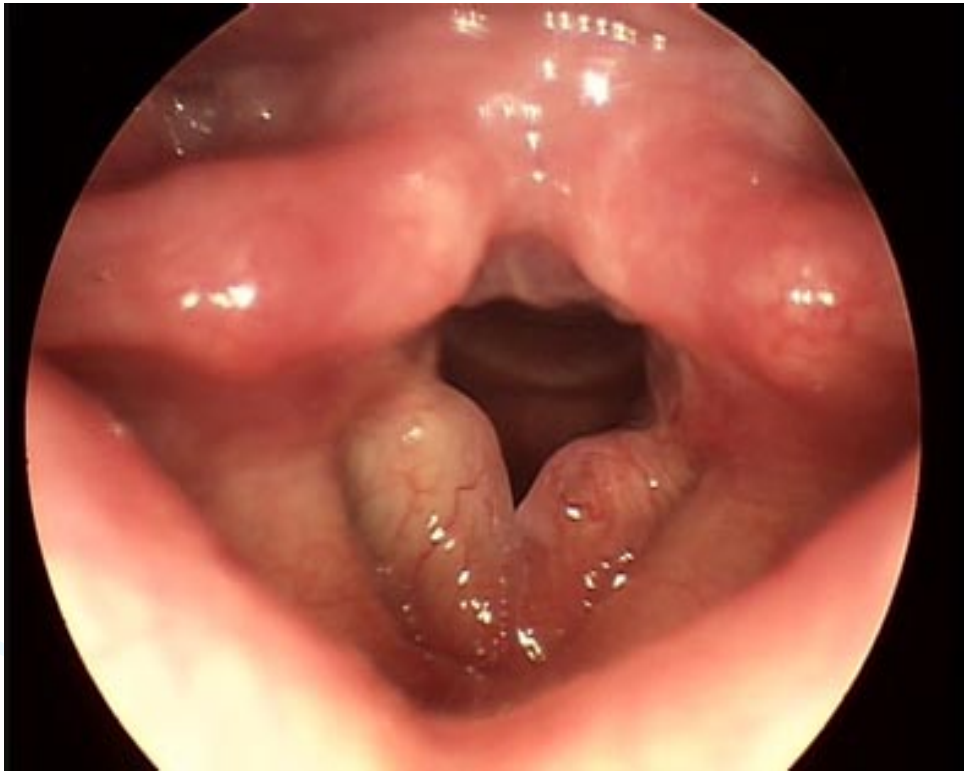

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Right-sided Contact Granuloma

Respiration

Phonation

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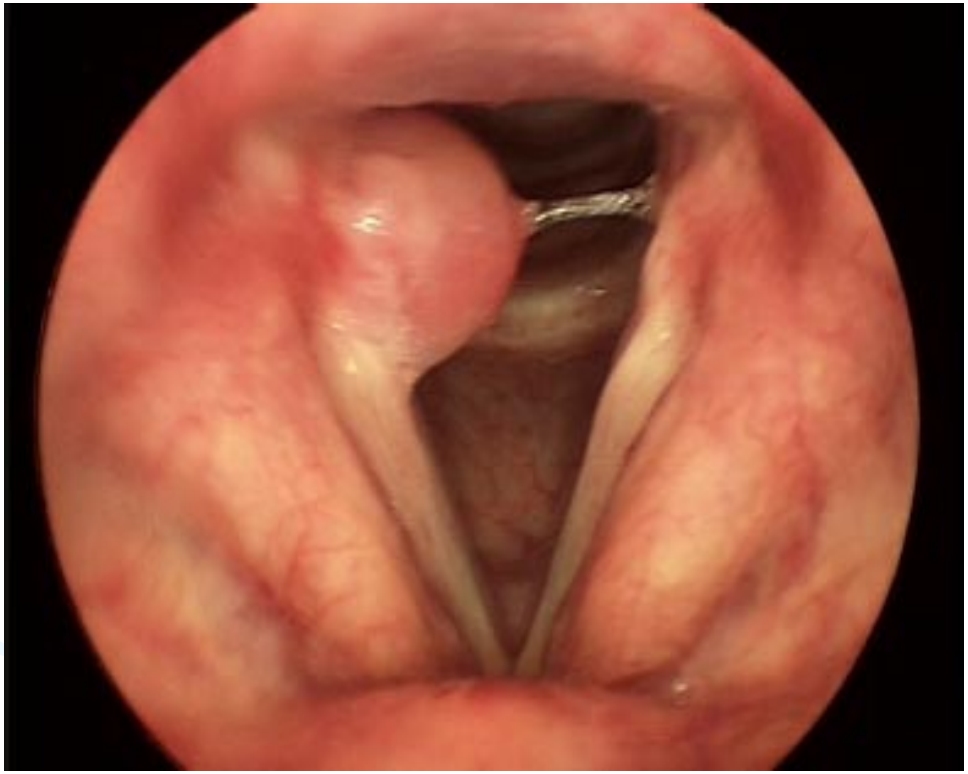

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Diagnosis of dysphonia:

I. History taking.

II. Physical examination: APA , … , neck , …

III. Investigations:
- Audio recording.
- Digital laryngostroboscopy.
- Digital laryngokymography.
- Acoustic analysis (MDVP).
- Aerodynamic analysis (Aerophone II).
- GERD (LPR) work-up.
- CT neck.

*Voice Sheet

Auditory Perceptual Analysis (APA):

1. Overall grade: normal, slight, moderate, severe.

2. Character (quality): strained, leaky, breathy, rough.

3. Pitch: increased, decreased, diplophonia, normal for age.

4. Register:
   - habitual register: modal, falsetto, vocal fry.
   - register break.

5. Loudness: loud, soft, fluctuation, normal.

6. Glottal attack: hard, soft, normal.

7. Associated laryngeal functions: cough, whisper, laughter.

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Stroboscopic examination:

1- Glottic closure: complete, incomplete (shape).

2- Glottic gap: site, size.

3- Glottic wave: great, normal, small, absent.

4- Amplitude: great, normal, small, zero.

5- Symmetry: in phase, in amplitude.

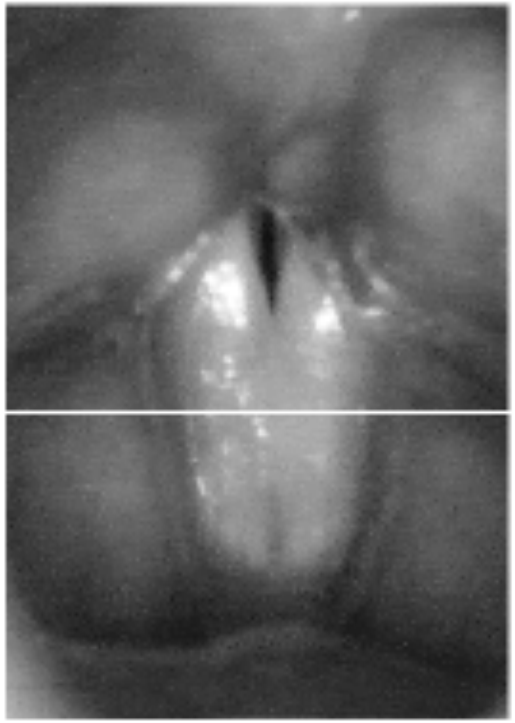
6- Phase closure: open phase predominate, close phase predominate.

7- Stroboscopic fixation.

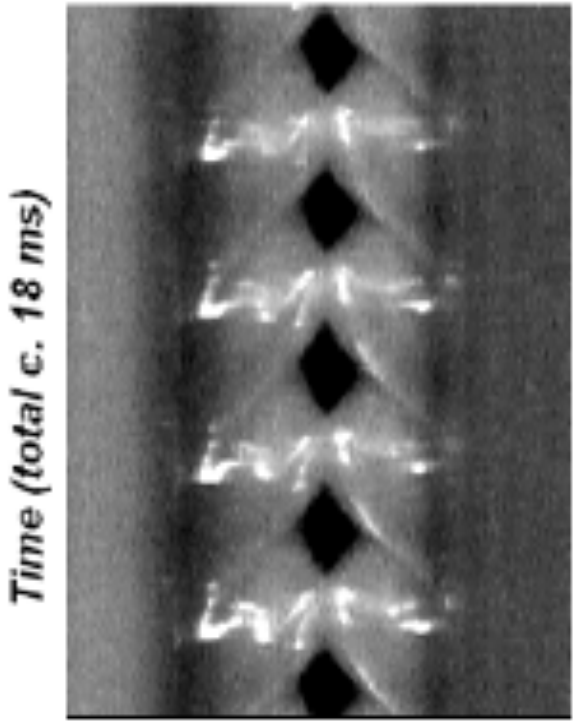
8- Additional morphological findings.

VIDEOKYMOGRAPHY (VKG) - Principle

STANDARD mode



HIGH-SPEED (VKG) mode



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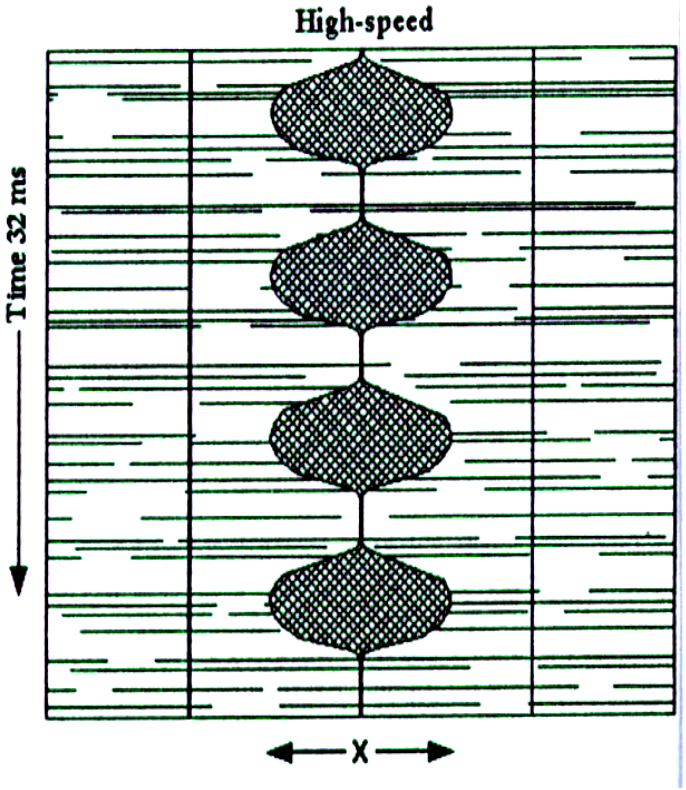

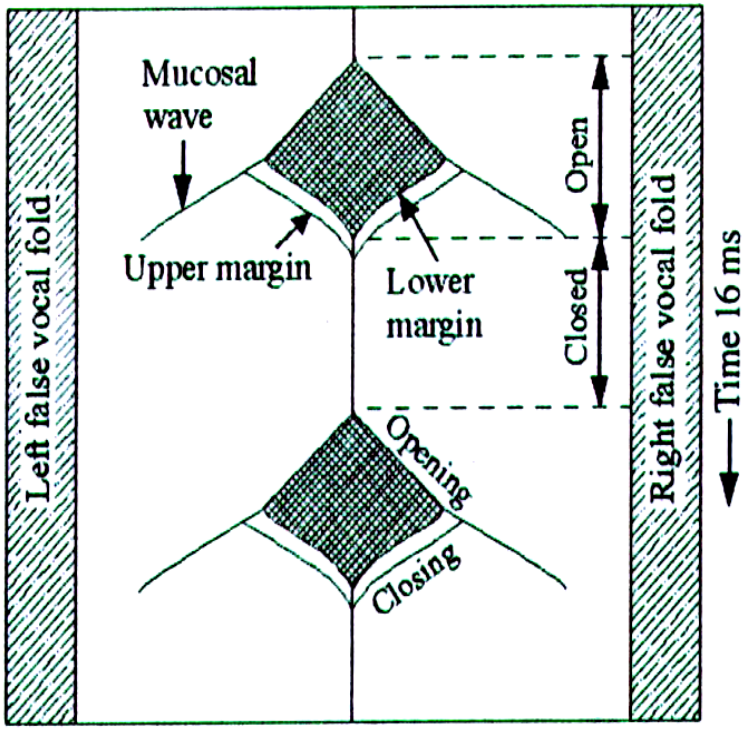

Videolaryngokymogram

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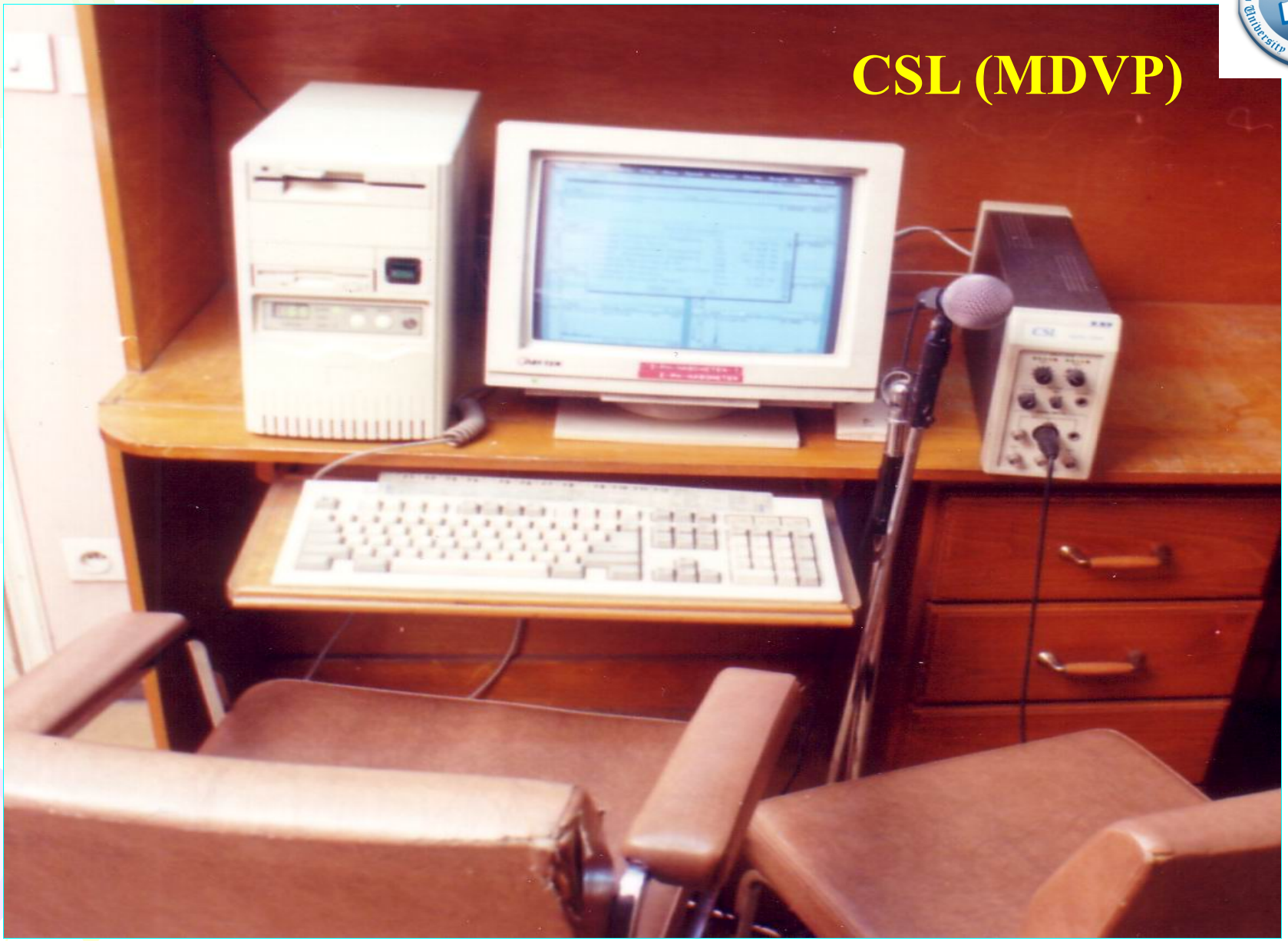
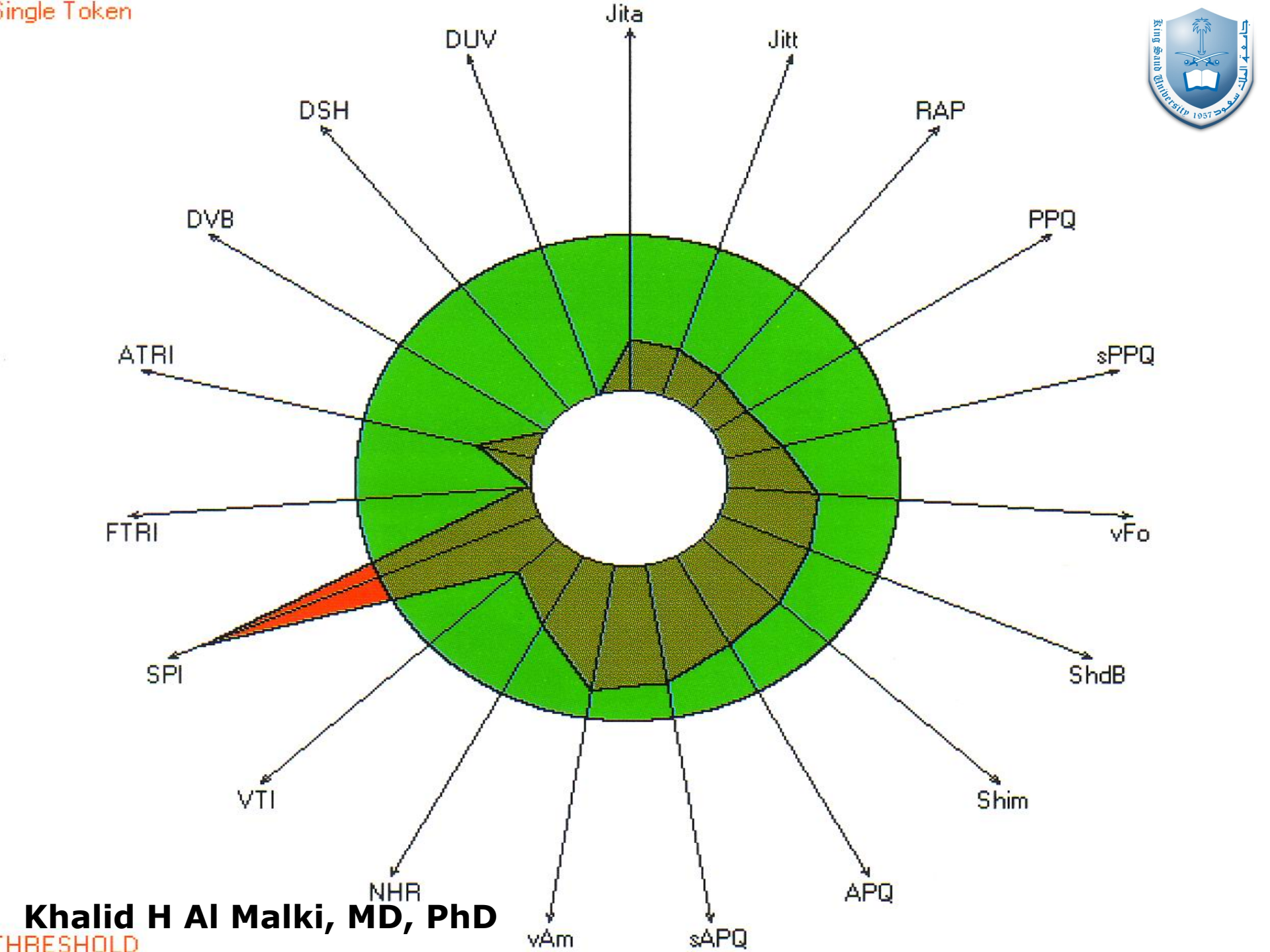
Videolaryngokymography:

- Symmetry (both sides) in: # Amplitude.
  # Mucosal wave.
  # Phase.
- Periodicity (same side) in: . Amplitude.
  . Glottal cycle timing.
- Closed phase.


CSL (MDVP)



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Aerophone II

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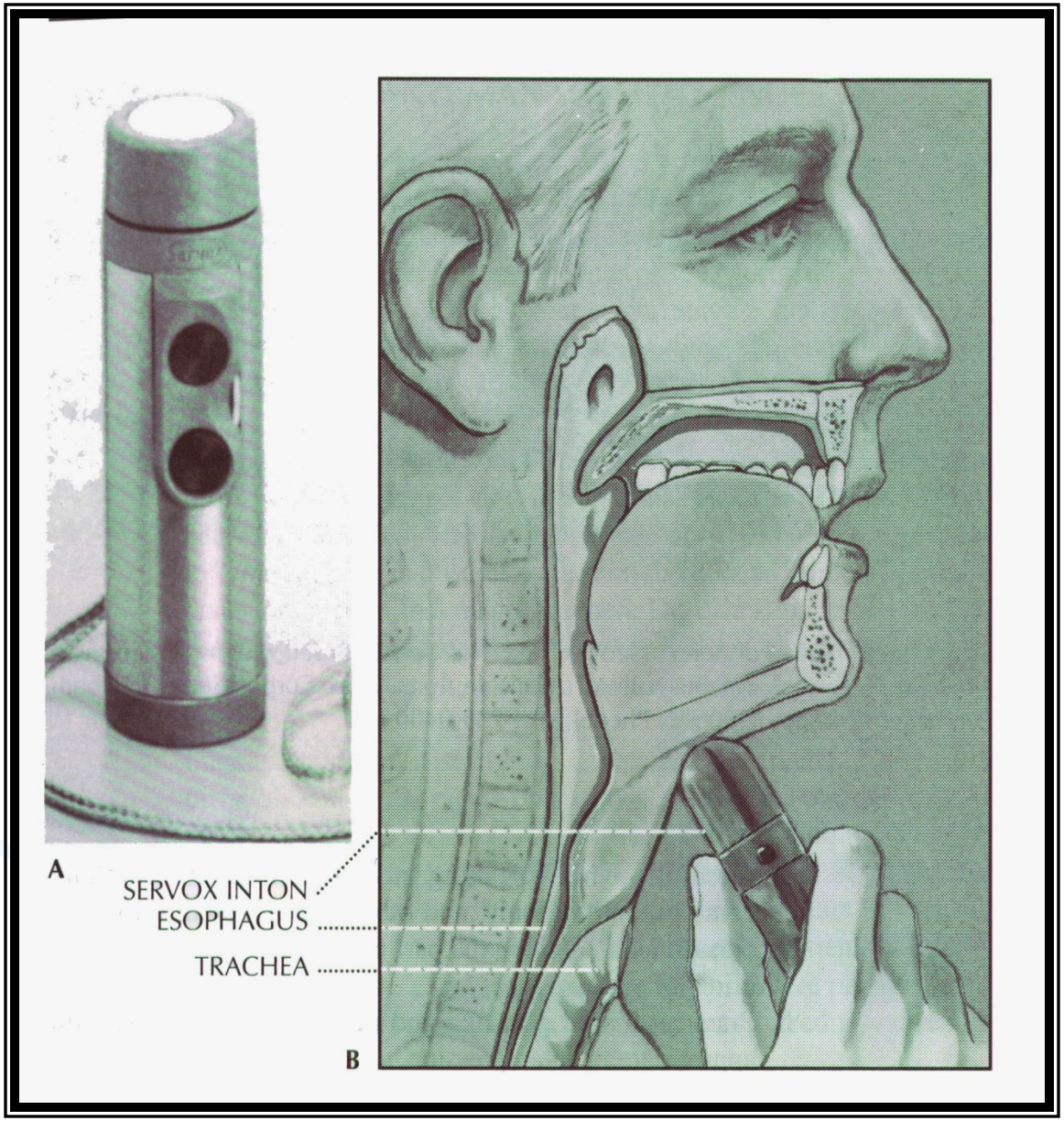
Management of voice disorders:

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



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Swallowing Disorders

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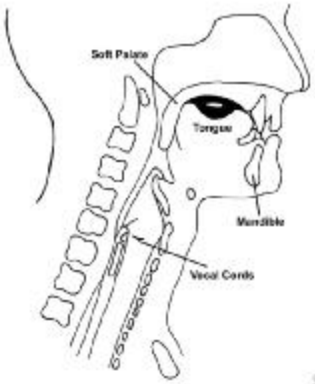
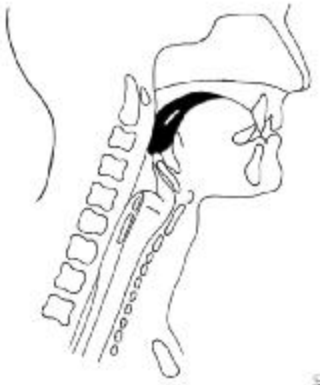
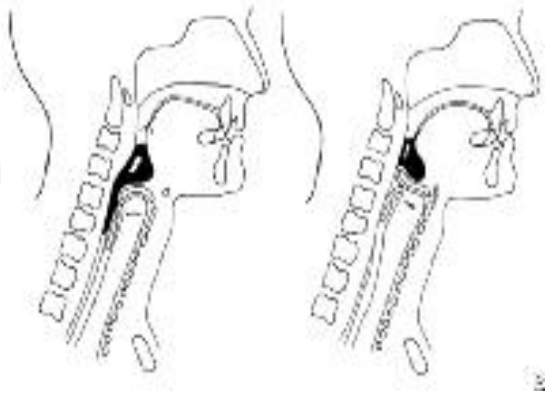
Phases of normal swallowing:



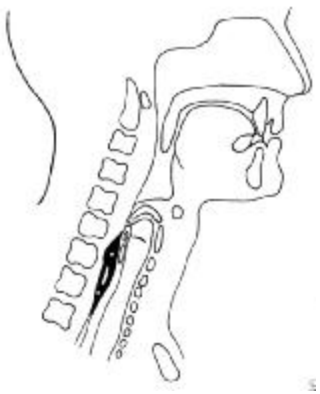
1. Oral preparatory phase



2. Oral propulsive phase



3. Pharyngeal phase



4. Esophageal phase

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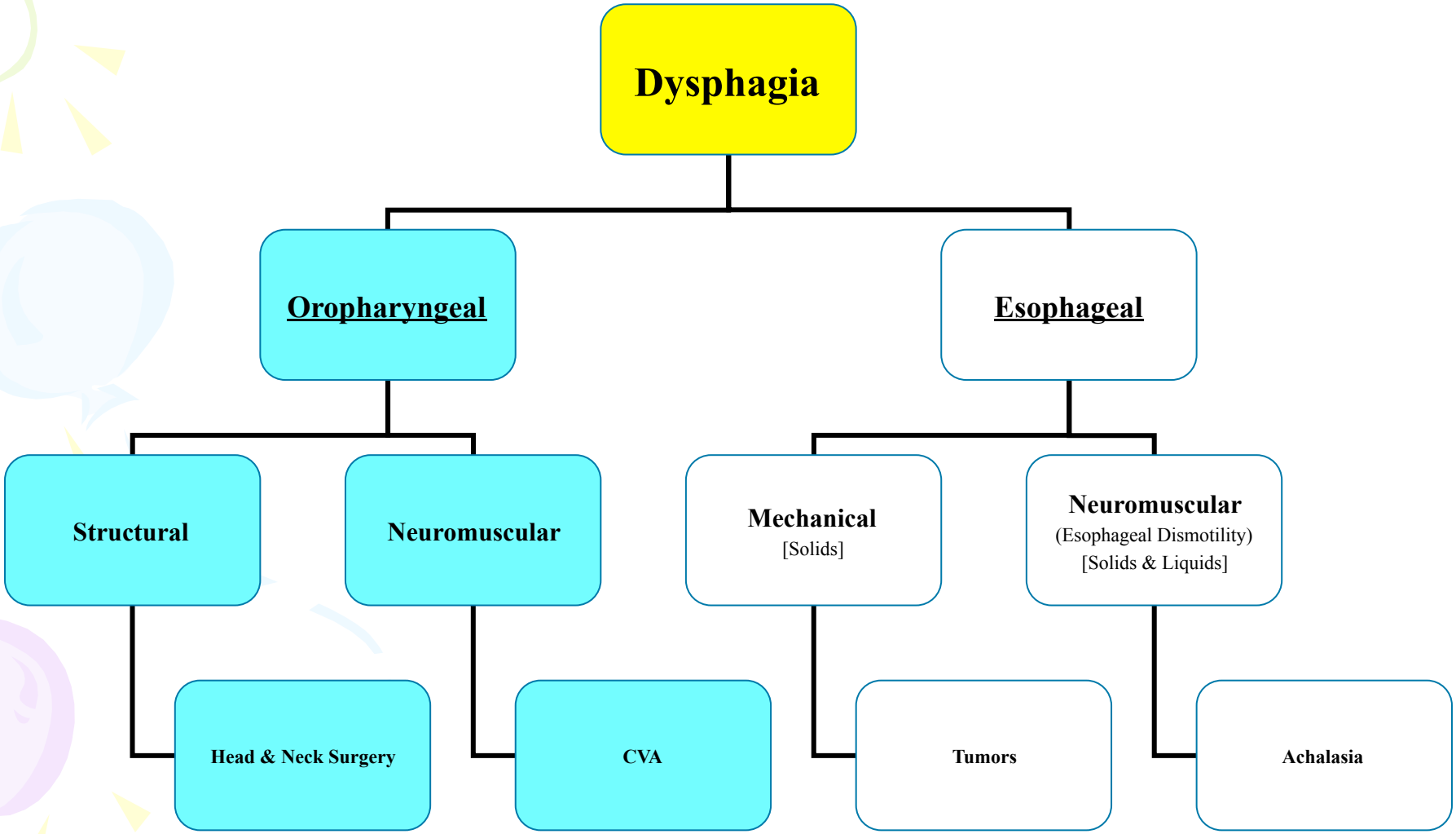
Definition of dysphagia:

- "Difficulty in moving food from the mouth to the stomach".
- "Odynophagia" = painful swallowing due to a disorder of the esophagus.

Consequences of dysphagia:

- Dehydration.
- Weight loss.
- Aspiration pneumonia.
- Airway obstruction.
- Loss of joy of eating.



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Diagnosis of dysphagia:

I. History taking.

II. Physical examination:

- General examination.
- Language and Speech assessment.
- Vocal tract examination.
- Neck examination.
- Trail feeding.

III. Investigations:

- FEES.
- VFES (MBS).
- GERD (LPR) work-up.

Dysphagia Sheet

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FEES

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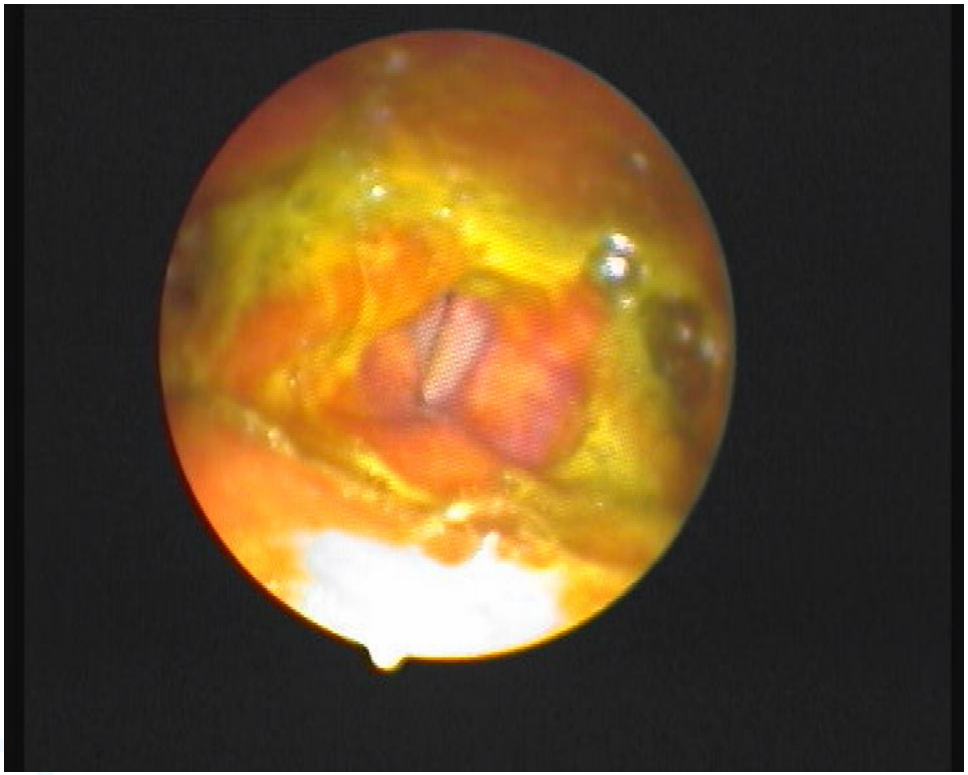
FEES protocol of evaluation (Langmore, 2003):

I. **Anatomic and physiologic assessment.**

II. **Assessment of food and liquid swallowing.**

III. **Assessment of theraputic interventions.**

FEES Form



Residue

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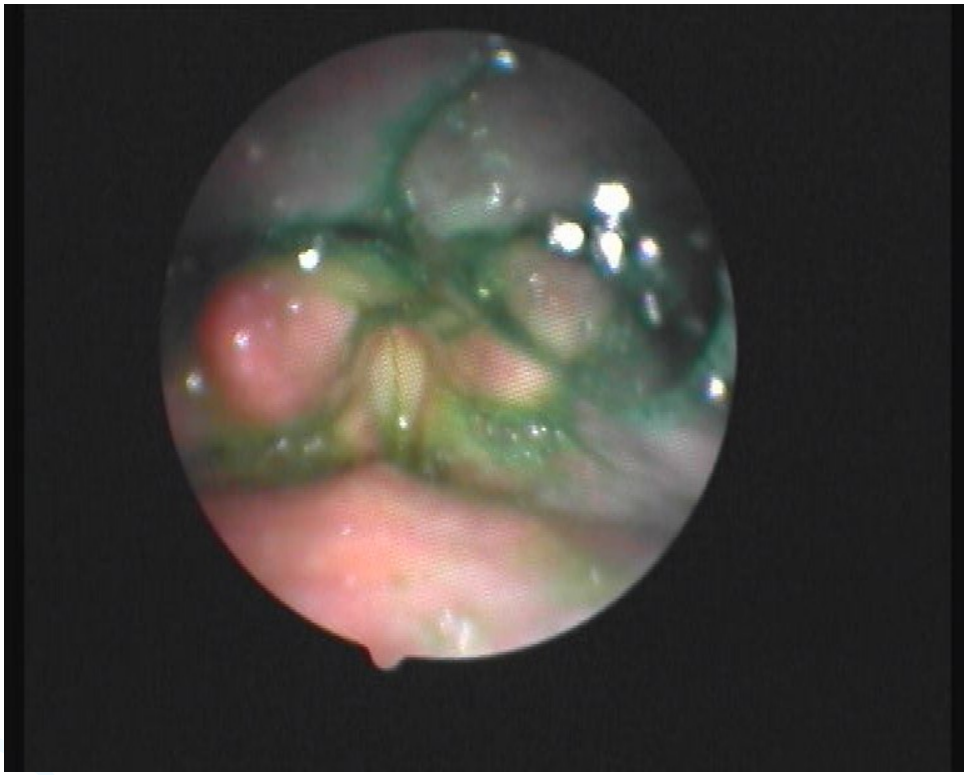

Penetration

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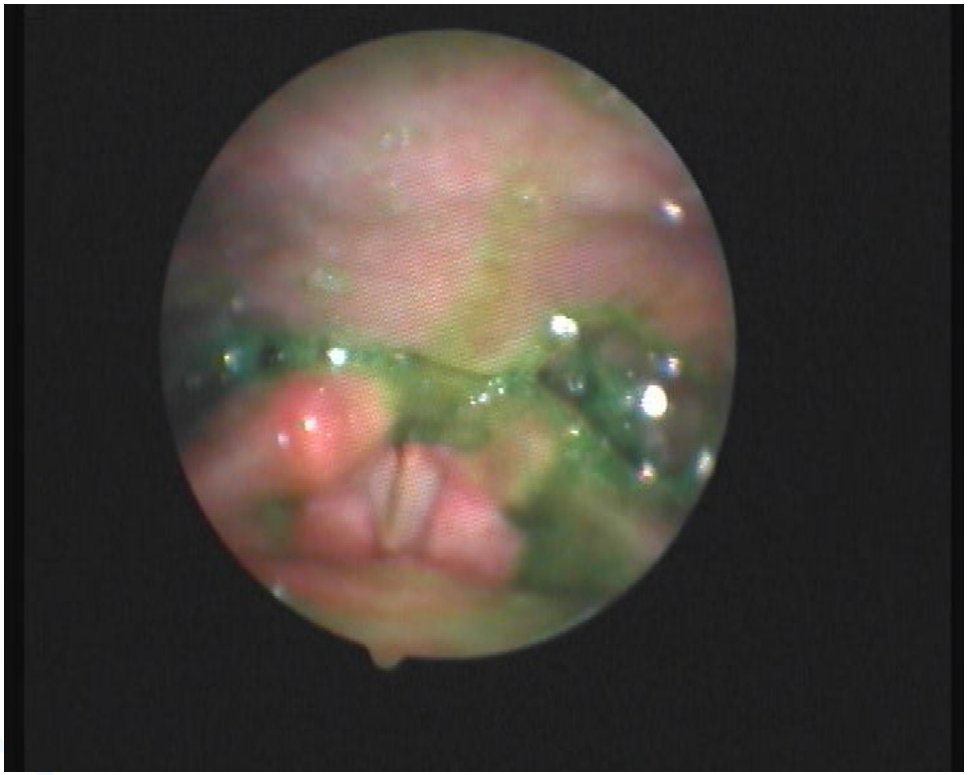

Aspiration

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VFES (MBS)

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Management of dysphagia:

- **Oral vs. Nonoral feeding:**

  Nonoral feeding when:

  a. Aspiration > 10%.

  b. Oral + pharyngeal transit time > 10 sec.

- **Direct vs. Indirect therapy:**

  a. Direct: food or liquid is given to the patient.

  b. Indirect: no food or liquid is given (only saliva).

- **Compensatory vs. Therapy techniques:**

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

  b. Therapy techniques: change of swallowing physiology, such as swallowing maneuvers.

Management of dysphagia:

- **Swallowing therapy:**
  - **Diet modification.**
  - **Postural techniques.**
  - **Swallowing maneuvers.**
  - **Sensory enhancement techniques.**
  - **Motor exercises.**
- **Surgical treatment, eg medialization laryngoplasty.**
- **Medical (Drug) treatment, eg anti-parkinsonism drugs.**
- **Intraoral prosthesis.**
- **Alternative routes of feeding, eg NG tube feeding.**