Temporal measures:

• Oral Transit Time (OTT)
• Pharyngeal Delay Time (PDT)
• Pharyngeal Transit Time (PTT)
• Oropharyngeal Swallowing Efficiency Score (OPSE score)
Course Objectives

• Know the normal anatomy of swallowing
• Know the normal physiology of swallowing
• Enumerate different etiologies of oropharyngeal dysphagia
• Be able to do bedside assessment
• Interpret MBS and FEES procedures
• Write MBS and FEES reports
• Put a short-term and long-term treatment plan
Abnormal oropharyngeal Swallow: Conditions and Diseases
Definitions

• Swallowing (Phagein = to eat)
• Dysphagia (dis-fa´je-ə)
• Aphagia?
• Coughing
• Choking
• Regurgitation
• Nasal regurgitation
Definitions (Cont.)

• Penetration

• Aspiration: Prandial ➔ Mendesohn classification

<table>
<thead>
<tr>
<th>Aspiration before the pharyngeal stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Most common type in central neurological disease</em></td>
</tr>
<tr>
<td>Due to loss of bolus control during oral phase or to delayed pharyngeal swallow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspiration during the pharyngeal stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Least common type of aspiration</em></td>
</tr>
<tr>
<td>Due to vocal palsy, paresis, or incoordination</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspiration after the pharyngeal stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Due to inhalation of uncleared residue at the laryngeal inlet</em></td>
</tr>
</tbody>
</table>

Epidemiology

❖ 50 – 90 % of normal elderly patients show some degree of dysphagia.

❖ 30 – 40 % of stroke patients have dysphagia.

❖ 50 % of stroke patients have silent aspiration.

❖ 10 – 15 % of stroke patients die of aspiration pneumonia.

❖ 90 % of dementia patients demonstrate dysphagia.

❖ 70 % of head and neck cancer patients complain of dysphagia.
Importance

• The average human swallows more than 2000 times in a day and even swallows while asleep.

• It is not surprising that dysphagia produces a significant disability.
Consequences of swallowing disorders

- Aspiration pneumonia
- Dehydration
- Malnutrition
- Weight loss
- Affect post-treatment recovery
- Quality of life:
  - General health
  - Psychological Well-Being
  - Financial Well-Being
Causes of dysphagia

Dysphagia

Oropharyngeal
- Structural (Obstructive)
  - Head & Neck Surgery
- Neuromuscular (Functional)
  - CVA

Esophageal
- Mechanical [Solids]
  - Tumors
- Neuromuscular (Esophageal Dismotility) [Solids & Liquids]
  - Achalasia
Neurological disorders

Cerebrovascular accident
Parkinson’s disease
Amyotrophic lateral sclerosis
Myasthenia gravis
Polymyositis/dermatomyositis
Guillain-Barré syndrome
Dystonia/tardive dyskinesia
Vocal fold paralysis
Progressive muscular dystrophy
Meningitis
Traumatic brain injury
Cerebral palsy
Parkinson’s disease and other movement and neurodegenerative disorders
Progressive supranuclear palsy
  - Olivopontocerebellar atrophy
  - Huntington’s disease
  - Wilson’s disease
Torticollis
Tardive dyskinesia
Alzheimer’s disease and other dementias
Motor neuron disease (amyotrophic lateral sclerosis)
Guillain-Barré syndrome and other polyneuropathies
Neurological disorders (Cont.)

Neoplasms and other structural disorders
- Primary brain tumors
- Intrinsic and extrinsic brainstem tumors
- Base of skull tumors
- Syringobulbia
- Arnold-Chiari malformation
- Neoplastic meningitis

Multiple sclerosis
Postpolio syndrome

Infectious disorders
- Chronic infectious meningitis
- Syphilis and Lyme’s disease
- Diphtheria
- Botulism
- Viral encephalitis, including rabies

Myasthenia gravis

Myopathy
- Polymyositis, dermatomyositis, including body myositis and sarcoidosis
- Myotonic and oculopharyngeal muscular dystrophy
- Hyper- and hypothyroidism
- Cushing’s syndrome

### Critical care patients

- Multiple medical conditions
- Nasogastric tubes
- Endotracheal intubation
- LPRD

#### Possible causes of Dysphagia in the Critical Care Patient: Common Signs and Immediate Trial Treatments

<table>
<thead>
<tr>
<th>Type</th>
<th>Signs</th>
<th>Possible cause</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>Buccal pocketing, labial leakage</td>
<td>Facial weakness</td>
<td>Oral motor exercises</td>
</tr>
<tr>
<td></td>
<td>Labored mastication</td>
<td>Lack of dentition, poor cognition</td>
<td>Present food to stronger side</td>
</tr>
<tr>
<td></td>
<td>Premature spill</td>
<td>Lingual weakness</td>
<td>Modify food texture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chin tuck position, modify food texture</td>
</tr>
<tr>
<td>Pharyngeal</td>
<td>Delayed swallow</td>
<td>Poor oral phase, vagus nerve dysfunction, prolonged intubation</td>
<td>Thermal stimulation</td>
</tr>
<tr>
<td></td>
<td>Deceased laryngeal elevation</td>
<td>Tracheostomy, NGT, suprathyroid muscle dysfunction, edema</td>
<td>Tracheotomy cuff deflation, d/c NGT</td>
</tr>
<tr>
<td></td>
<td>Multiple swallow pattern</td>
<td>Decreased pharyngeal peristalsis/contraction</td>
<td>Alternate liquid and solid swallows</td>
</tr>
<tr>
<td></td>
<td>Cough/throat clear immediately after the swallow</td>
<td>Aspiration secondary to decreased epiglottic deflection, poor oral phase/ Tracheoesophageal fistula</td>
<td>Supraglottic swallow, modify food texture</td>
</tr>
<tr>
<td></td>
<td>Delayed cough, throat clear</td>
<td>Aspiration after the swallow secondary to pooling in the pharynx</td>
<td>Utilize dry swallow, alternating liquid and more solid swallows</td>
</tr>
<tr>
<td></td>
<td>Change in vocal quality</td>
<td>Penetration to the level of the vocal folds, Vocal folds weakness</td>
<td>NPL. Modify food texture</td>
</tr>
</tbody>
</table>

Infectious diseases

- Oral cavity/ Oropharynx
- Chaga’s disease
- Deep neck infections
- Laryngeal infections
# Medications

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Examples</th>
<th>Common Indications</th>
<th>Possible Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neuroleptics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antidepressants</td>
<td>Elavil (tricyclic)</td>
<td>Relief of endogenous depression</td>
<td>Drying of mucosa, drowsiness</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Haldol, Thorazine</td>
<td>Management of patients with chronic psychosis</td>
<td>Tardive dyskinesia</td>
</tr>
<tr>
<td><strong>Sedatives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barbiturates</td>
<td>Phenobarbital, Nembutal</td>
<td>Treatment of insomnia</td>
<td>CNS depressant (drowsiness causing decompensation of patients with cognitive deficits)</td>
</tr>
<tr>
<td><strong>Antihistamines</strong></td>
<td>Cold and cough preparations</td>
<td>Relief of nasal congestion and cough</td>
<td>Drying mucosa, sedative effects</td>
</tr>
<tr>
<td><strong>Diuretics</strong></td>
<td>Lasix</td>
<td>Treatment of edema (e.g., associated with congestive heart failure)</td>
<td>Signs of chronic dehydration (dryness of mouth, thirst, weakness, drowsiness)</td>
</tr>
<tr>
<td><strong>Mucosal Anesthetics</strong></td>
<td>Hurricane (contains benzocaine)</td>
<td>Topical anesthetic used to aid passage of fiberoptic nasopharyngoscopes, control of dental pain</td>
<td>Suppresses gag and cough reflex</td>
</tr>
<tr>
<td><strong>Anticholinergics</strong></td>
<td>Cogentin</td>
<td>Adjunct in Parkinsonism therapy</td>
<td>Dry mouth and reduced appetite</td>
</tr>
</tbody>
</table>

Adapted from Periman AL, Schulze-Deitieu K. Deglutition and its Disorders. San Diego, Calif: Singular Publishing Group; 1997:139.
Post-Surgical

- Anterior cervical spinal surgery
- Head and Neck surgery
- Skull base surgery
- Floor of the mouth surgery
- Partial glossectomy
- Palate surgery
- Lip surgery
- Mandibular surgery
- Oropharyngeal surgery
- Hypopharyngeal surgery
- Tracheotomy
- Zenker’s diverticulum
Others

• Neoplasms (Intrinsic, Extrinsic)

• Radiotherapy (Acute, Chronic)

• Autoimmune disorders:

Crohn’s disease, Epidemolysis Bullosa, Giant Cell Arteritis, Mixed Connective Tissue Disease, Myositis, Pemphigus Vulgaris, Pemphigoid, Rheumatoid Arthritis, Sarcoidosis, Scleroderma, Sjögren’s Syndrome, Systemic Lupus Erythematosus, Wegener’s Granulomatosis
Assessment of Oropharyngeal Swallowing
Aim of assessment

1. Define the nature of the anatomic or physiologic dysfunction(s) in the oral cavity or pharynx which is (are) causing the patient’s swallowing difficulty

2. Examine the effectiveness of selected treatment strategies

3. Enable development of a treatment plan in the context of the patient’s medical diagnosis and medical history

Assessment modalities

- Swallowing Disorders Clinics (KKUH)
  - Out-patient Clinics
  - In-patients Clinics
  - Modified Barium Swallow (MBS) Clinic
  - Fiberoptic Endoscopic Evaluation of Swallowing (FEES) Clinic
Protocol of assessment

Outside/ Inside Referral → Bedside Swallowing Assessment → Instrumental Assessment (MBS/FEES) → Recommendations

Sheets
- Adults
- Pediatrics

Forms
- MBS/ FEES