Swallowing Course (RHS …)

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Course structure

1. Anatomy and Physiology of swallowing.
2. Etiology of oropharyngeal dysphagia, preliminary assessment.
3. FEES & MBS.
4. Management of oropharyngeal dysphagia.

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

General rules

- Not all information, but the important
- Notes
- Questions, any time
- More explanation
- Reactions and feedback

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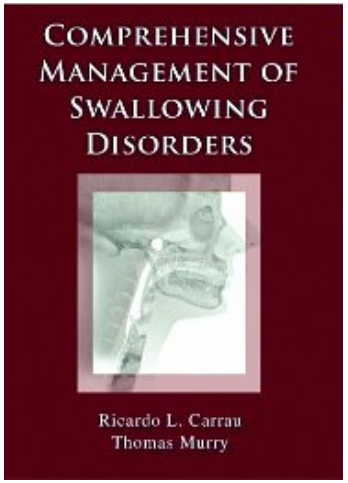
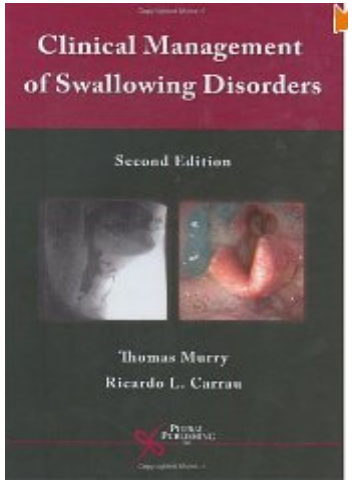
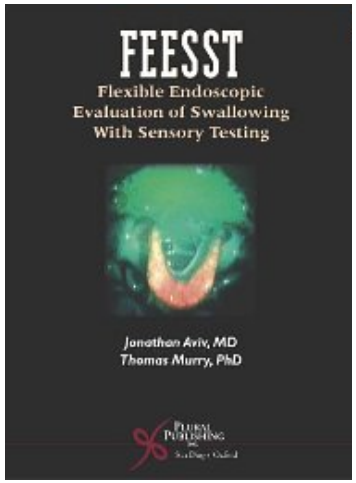
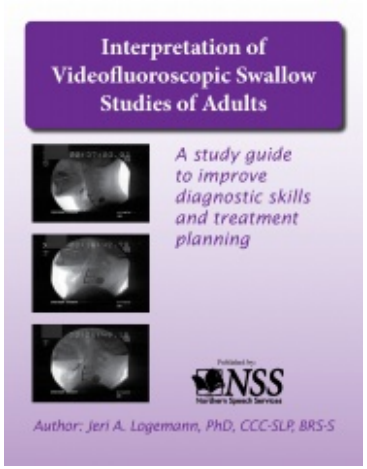
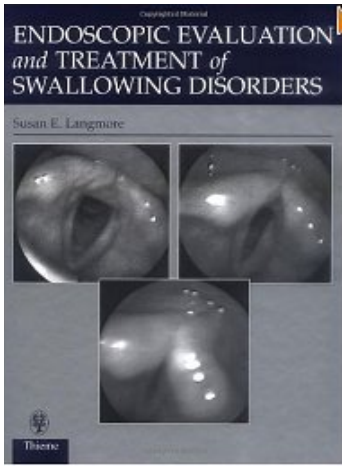
Recommended readings











World Swallowing Day
اليوم العالمي للبلع

Historical Perspective

"Swallowing"

- Swallowing addressed in CP children by "speech specialists" in 1930s

Dysphagia 8:180–184 (1993)

Dysphagia

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Speech-Language Pathology and Dysphagia: A Brief Historical Perspective

Robert M. Miller, PhD[1] and Michael E. Groher, PhD[2]

[1]Veterans Affairs Medical Center, Seattle, Washington; and [2]James A. Haley V.A. Hospital, Tampa, Florida, USA

Historical Perspective

"Swallowing"

Dysphagia 8:166–169 (1993)

Dysphagia

Dysphagia Diagnostics and Donner: Experiences in the Decade of Change

Barbara C. Sonies, PhD

Speech-Language Pathology Section, Rehabilitation Medicine Department, Clinical Center, National Institutes of Health, Bethesda, Maryland, USA

MARTIN W. DONNER PROFESSORSHIP IN RADIOLOGY

Established in 1988 by current and former faculty, fellows, and house staff of the Department of Radiology in honor of Martin W. Donner

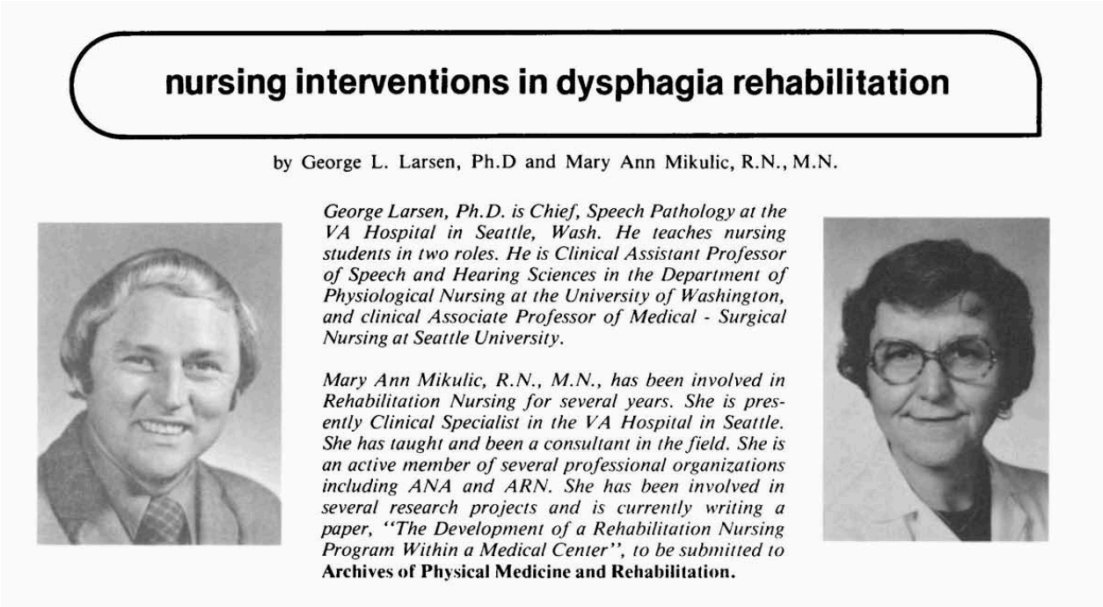
German-born MARTIN W. DONNER arrived at Hopkins in 1957 and for three decades researched the radiological aspects of understanding gastrointestinal functions. As chairman from 1972 to 1987, he led the Department of Radiology through three successive waves of technological advances in the imaging field--ultrasound, computerized tomography, and magnetic resonance imaging. A past president of the Society of Gastrointestinal Radiologists, Dr. Donner was honored with that society's Canon Medal in 1983. In 1980, he formed a multidisciplinary research and clinical facility at Hopkins, the first center of its kind in the nation, to study and treat swallowing disorders. Over the course of his career Dr. Donner contributed more than 150 articles and book chapters, and went on to become editor of *Dysphagia*, a journal that focuses on the treatment of these disorders. Dr. Donner, who died in 1992, retired as department director in 1987 to work full time at the swallowing center he had established.

Historical Perspective

"Swallowing"

- First article in SLP literature: Larsen, 1972
  - JSHD "Rehabilitation for dysphagia paralytica"
  - Introduced aspects of the clinical exam, radiographic techniques, postural adjustment, dietary changes, electrical stimulation and maneuvers

Larsen GL. Rehabilitation for dysphagia paralytica. J Speech Hear Disord. 1972 May;37(2):187-94.



nursing interventions in dysphagia rehabilitation

by George L. Larsen, Ph.D and Mary Ann Mikulic, R.N., M.N.

George Larsen, Ph.D. is Chief, Speech Pathology at the VA Hospital in Seattle, Wash. He teaches nursing students in two roles. He is Clinical Assistant Professor of Speech and Hearing Sciences in the Department of Physiological Nursing at the University of Washington, and clinical Associate Professor of Medical - Surgical Nursing at Seattle University.

Mary Ann Mikulic, R.N., M.N., has been involved in Rehabilitation Nursing for several years. She is presently Clinical Specialist in the VA Hospital in Seattle. She has taught and been a consultant in the field. She is an active member of several professional organizations including ANA and ARN. She has been involved in several research projects and is currently writing a paper, "The Development of a Rehabilitation Nursing Program Within a Medical Center", to be submitted to **Archives of Physical Medicine and Rehabilitation.**

Historical Perspective

"Swallowing"

- Between 1968-1970, Logemann began to study Parkinson patients with radiographic techniques
  - Landmark text, Evaluation and Treatment of Swallowing Disorders 1983
  - Introduced the MBS; provided objective data relative to maneuvers, diet consistencies and postural adjustments; extensive influence on educational standards and policies

Logemann JA, Blonsky ER, Boshes B. Editorial: Dysphagia in parkinsonism. Br J Radiol. 1970 Jul;43(511):456–457.
Logemann JA. Evaluation and Treatment of Swallowing Disorders. 1st ed. Austin, TX, Pro-Ed Publishers; 1983.

Historical Perspective

"Speech and Language"

- Formative Years (1900-1925):

  First school-based program (1910) - ASHA

- Processing Period (1945-1965):

  Assessment and intervention (internal and psychological)

- Linguistic Era (1965-1975):

  Separation between speech and language deficits

- Pragmatics Revolution:

  Shaping of professional practice, ecological factors

Duchan, J.F. (2008). Getting here: A short history of speech pathology in America. Retrieved July 15, 2009, from http://www.acsu.buffalo.edu/~duchan/new_history/overview.html.
Smith, Deborah D.; Tyler, Naomi Chodhuri (2009). *Introduction to Special Education: Making A Difference (7th Edition)*. Englewood Cliffs, N.J: Prentice Hall. ISBN 0-205-60056-5. OCLC 268789042

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Anatomy of Swallowing

"Before you examine the body of a patient, be patient to learn his story. For once you learn his story, you will also come to know his body."

Suzy Kassem

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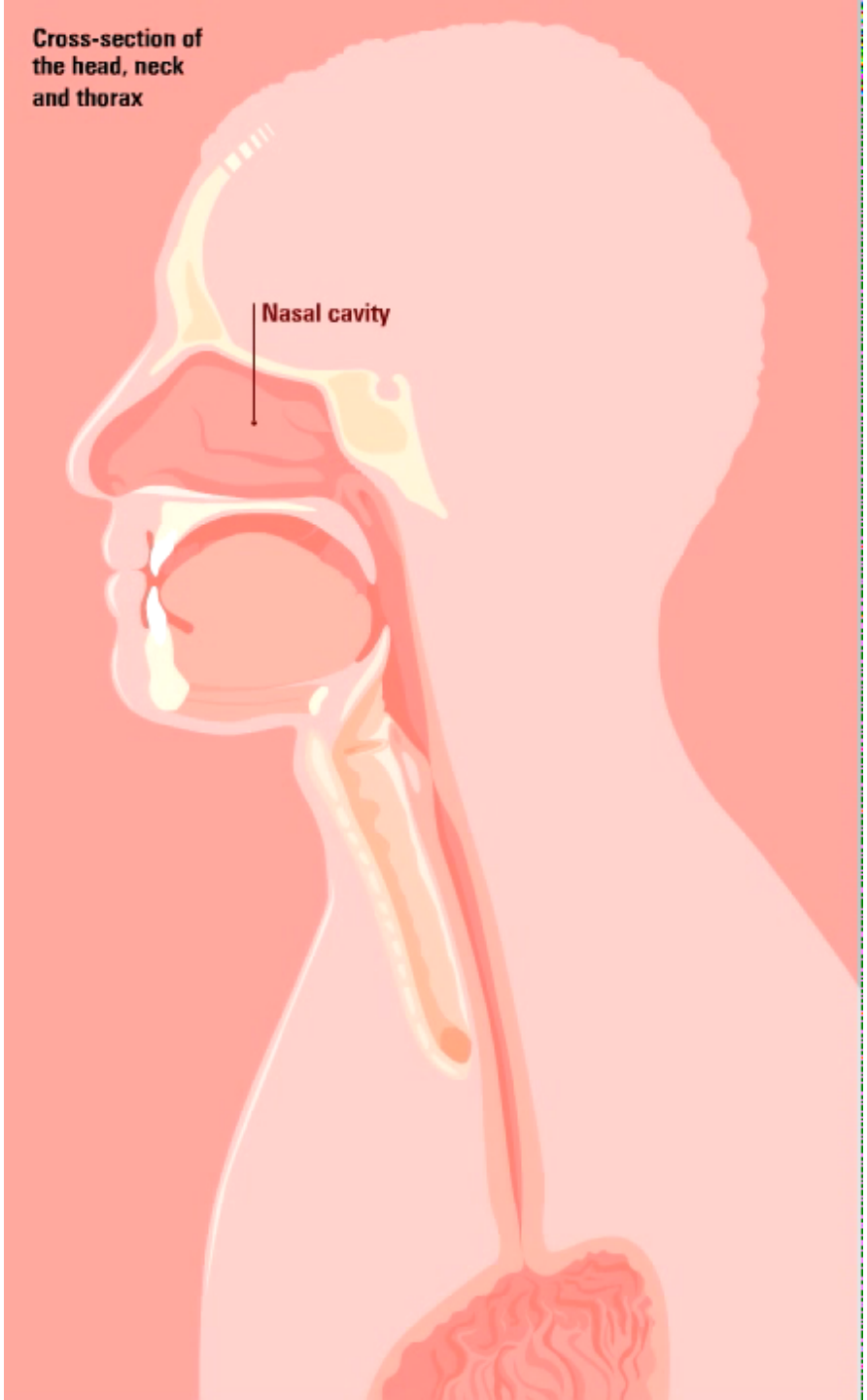
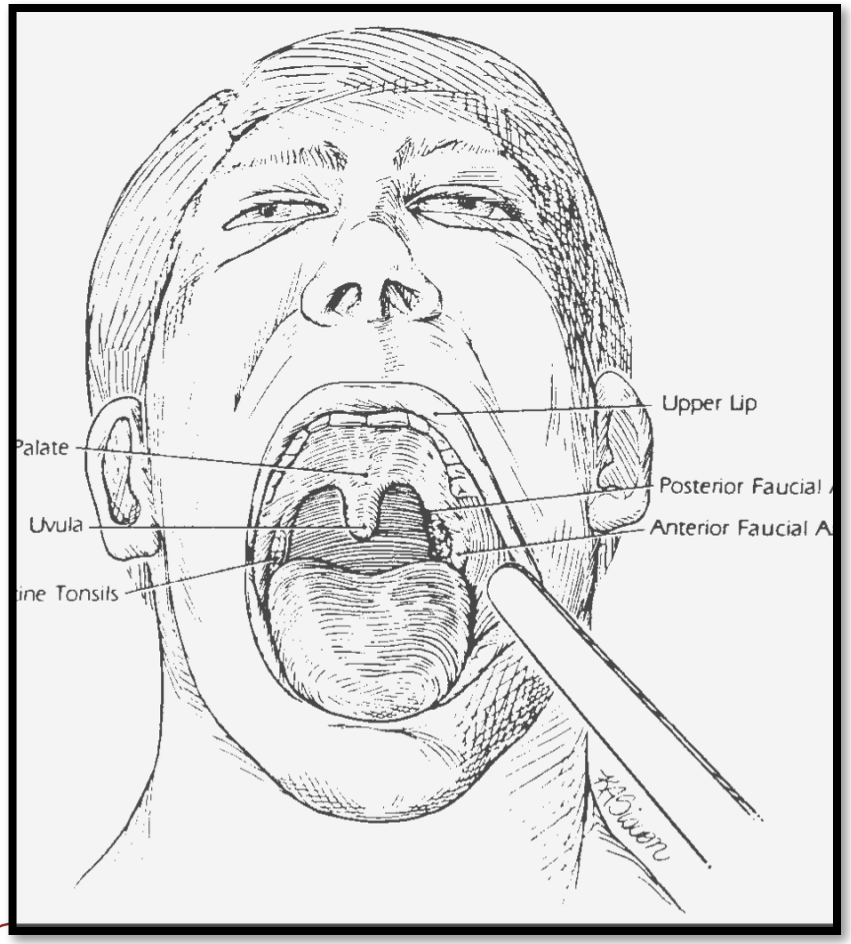
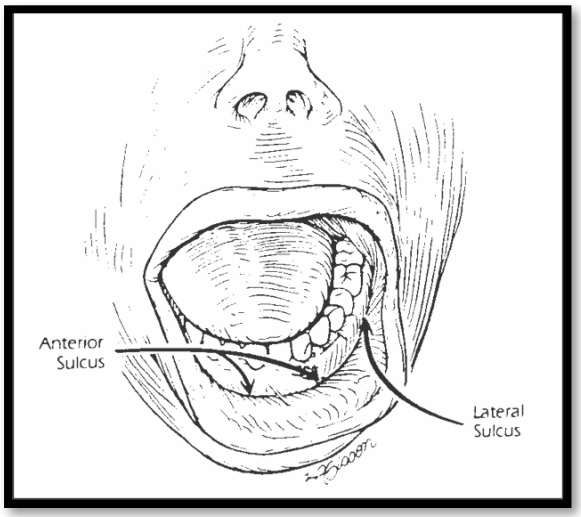


I- Oral Cavity

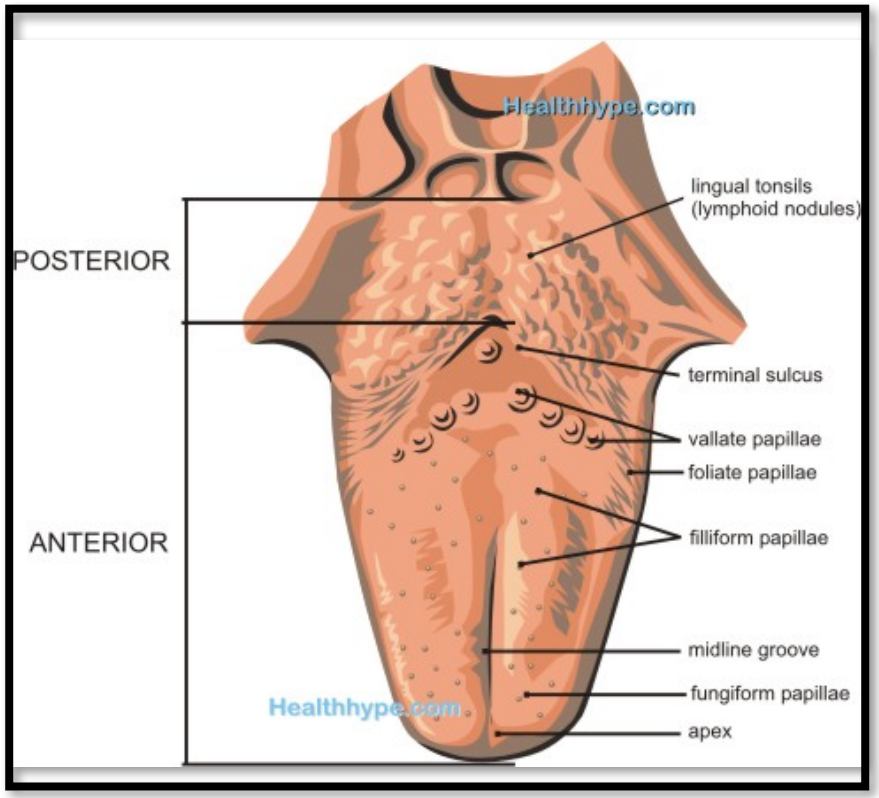


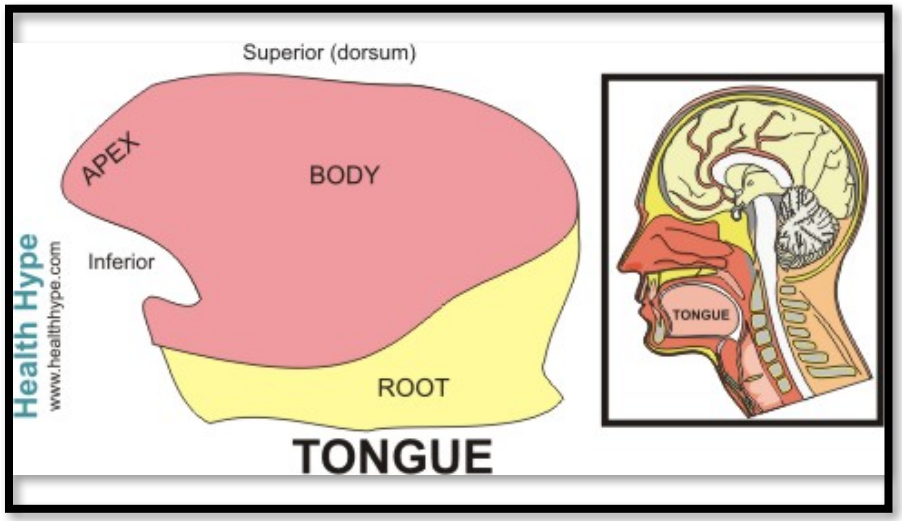
- Lips, cheeks
- Teeth, gingiva
- Tongue
- Vestibules



I- Oral Cavity (Cont.)

Tongue

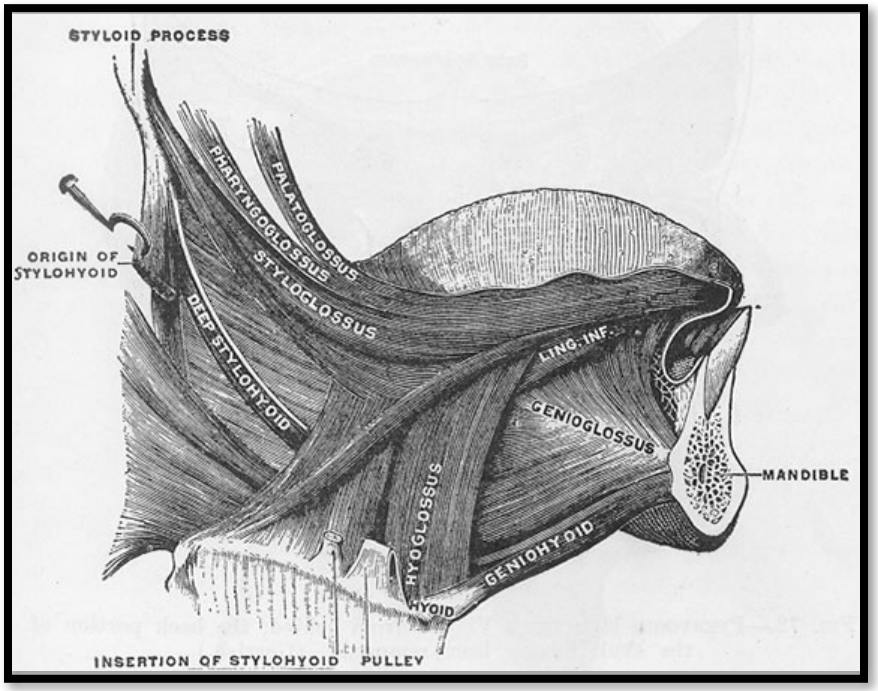




I- Oral Cavity (Cont.)

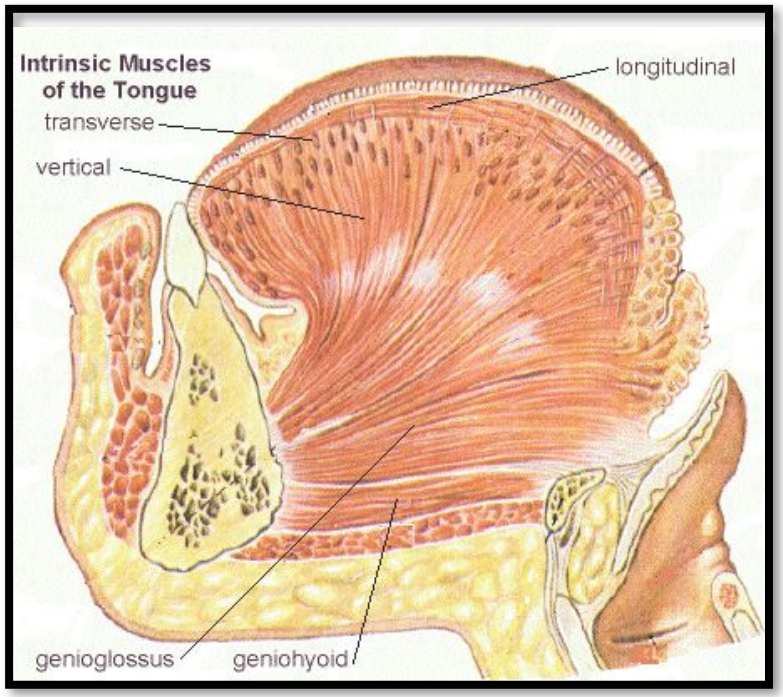
Tongue muscles

Extrinsic (4)



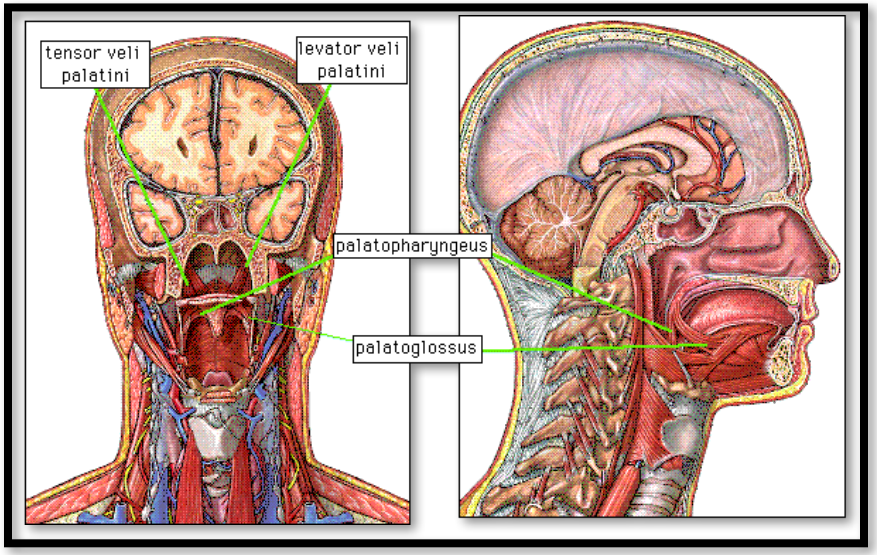
Position

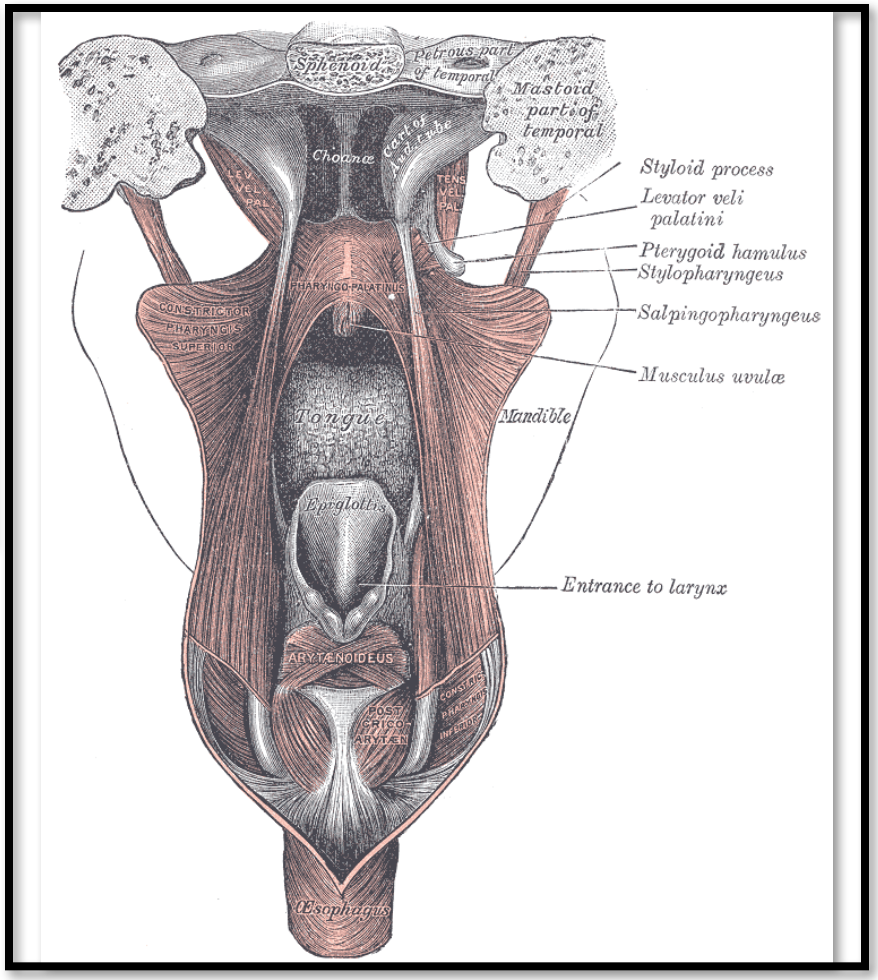
Intrinsic (4)



Shape

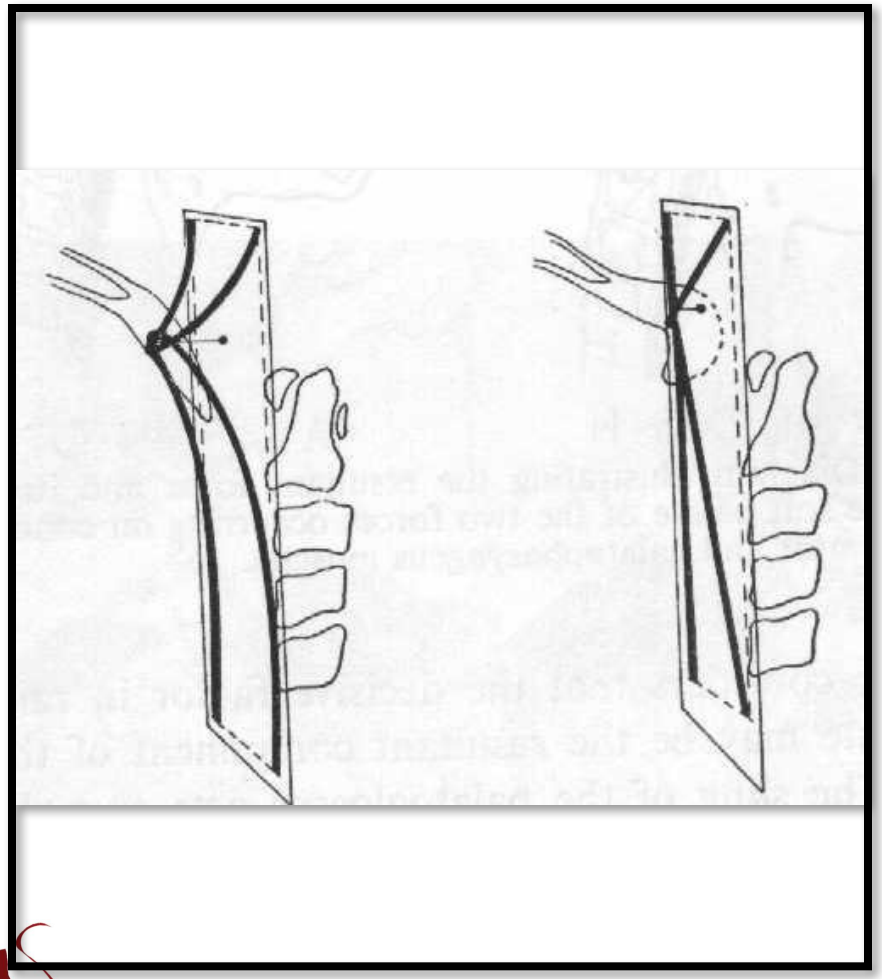
II- Soft Palate

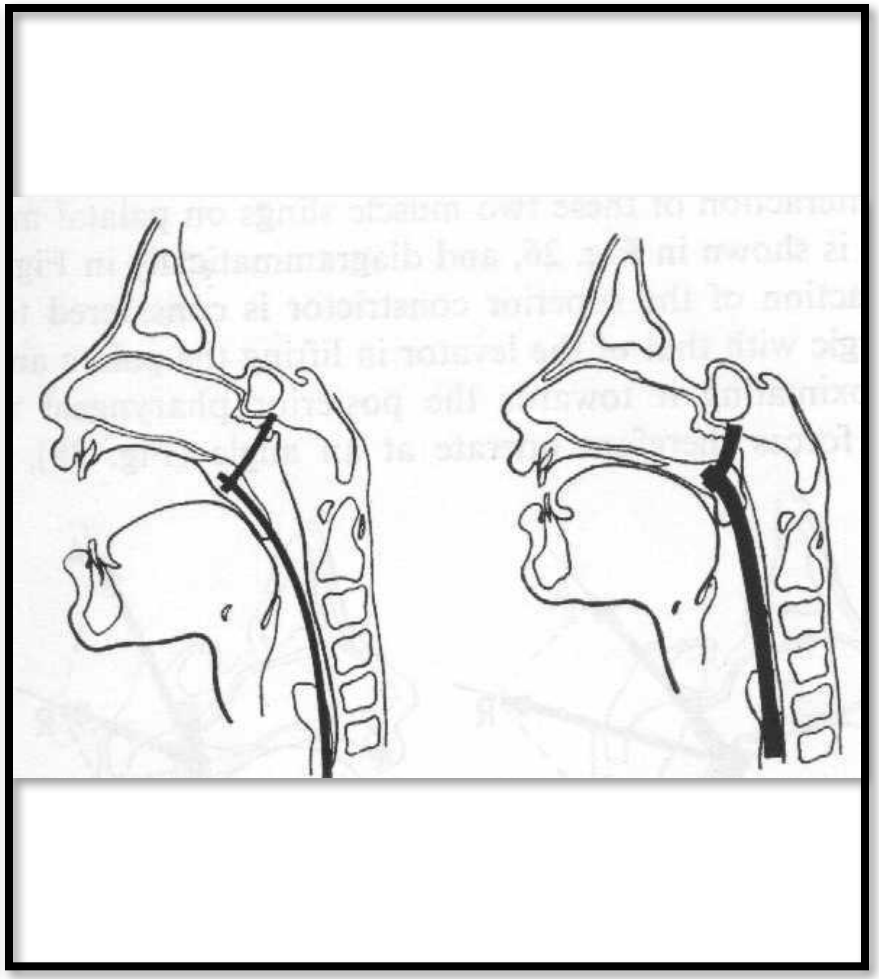




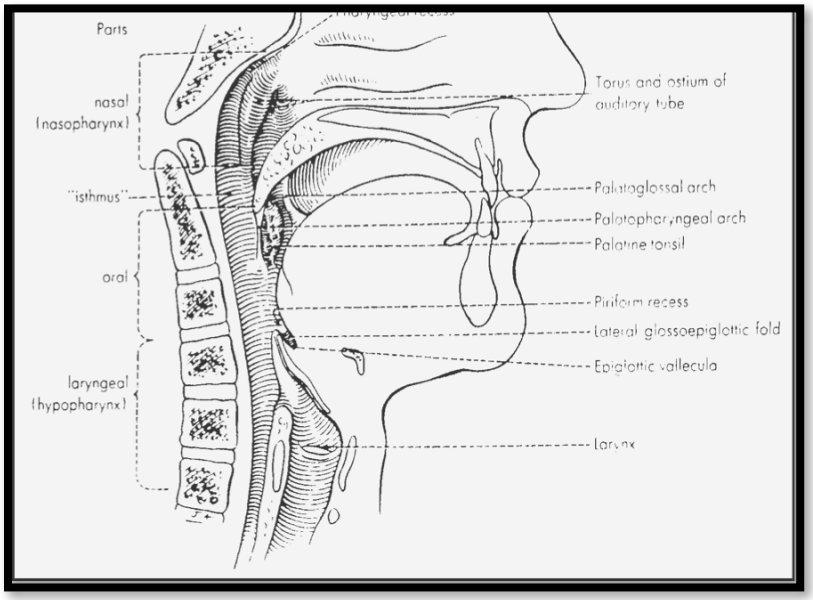
- Muscles (5)
- Functions (5)

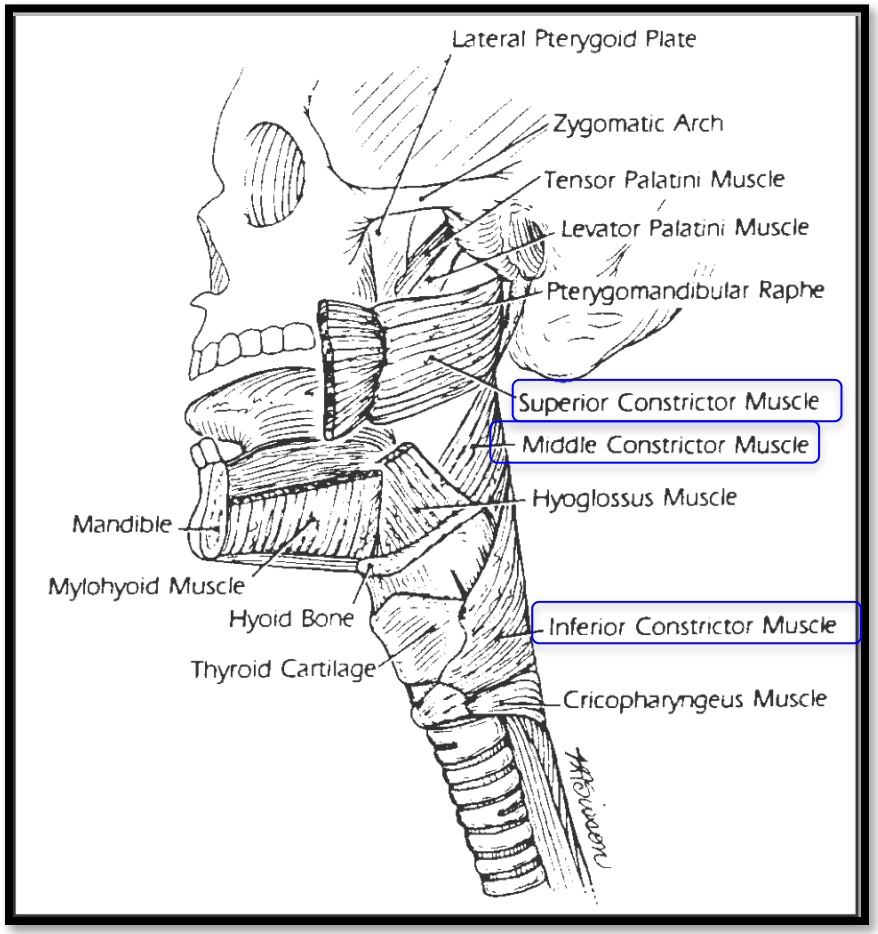
II- Soft Palate





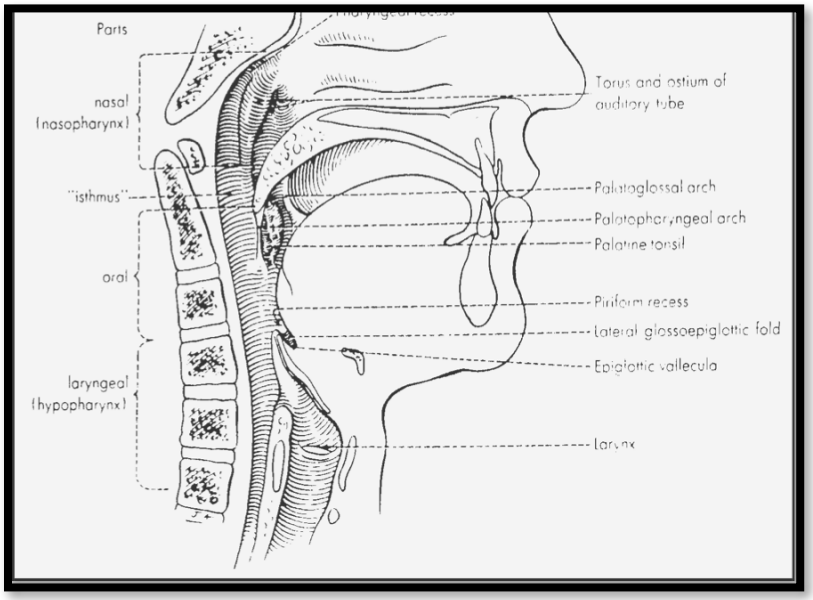
III- Pharynx

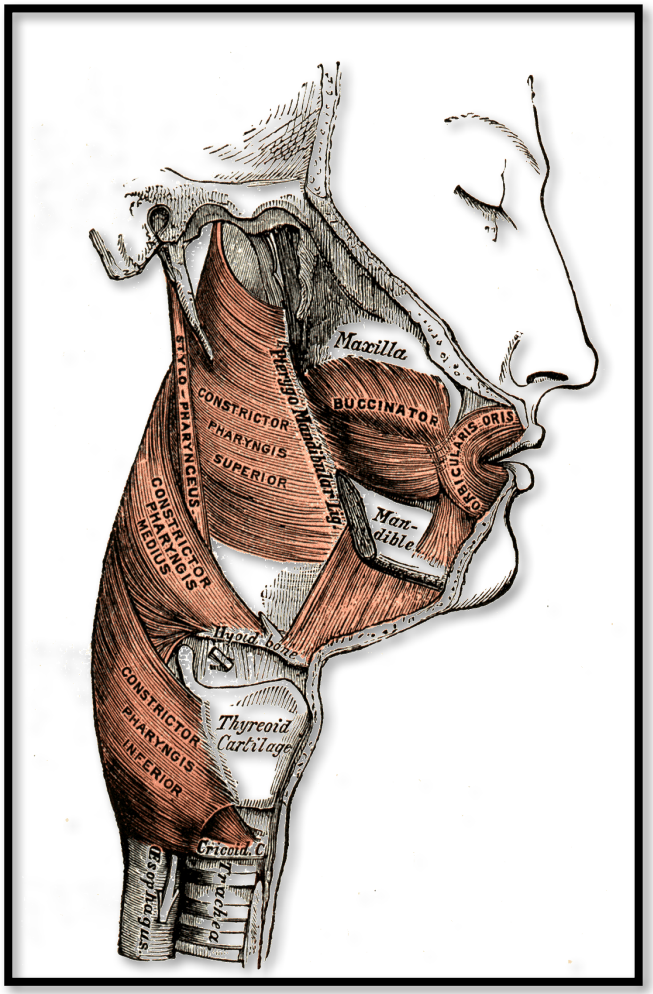




- Compartments (3)
- Walls (3)
- Muscles (3)

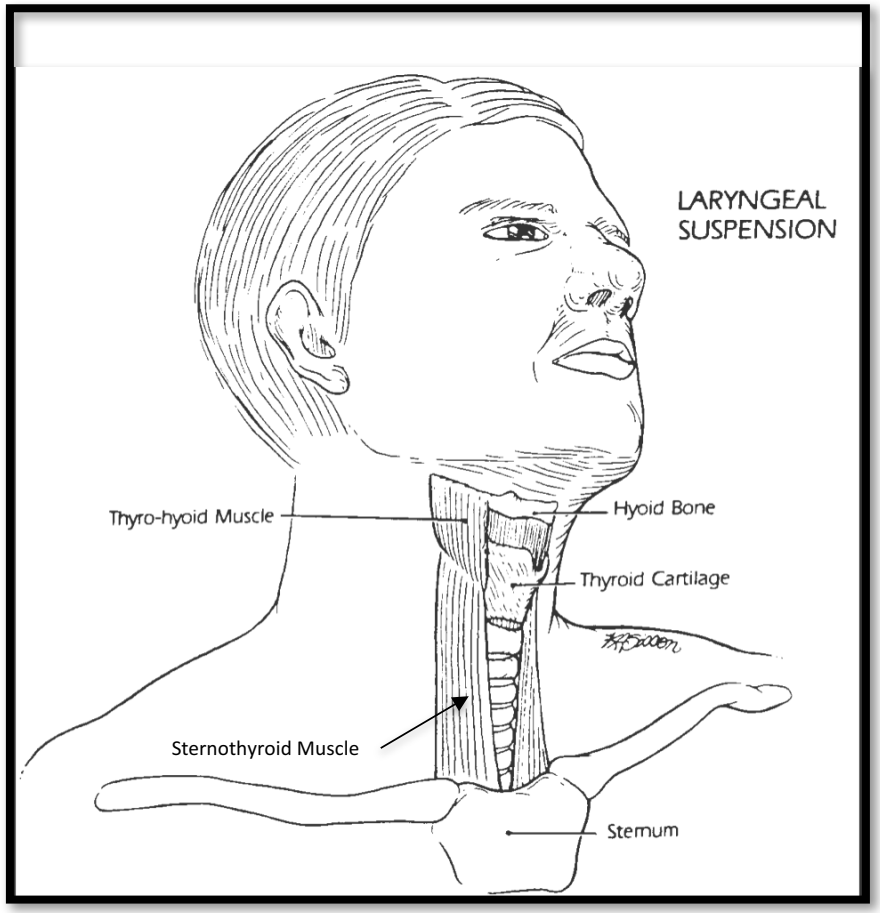
III- Pharynx

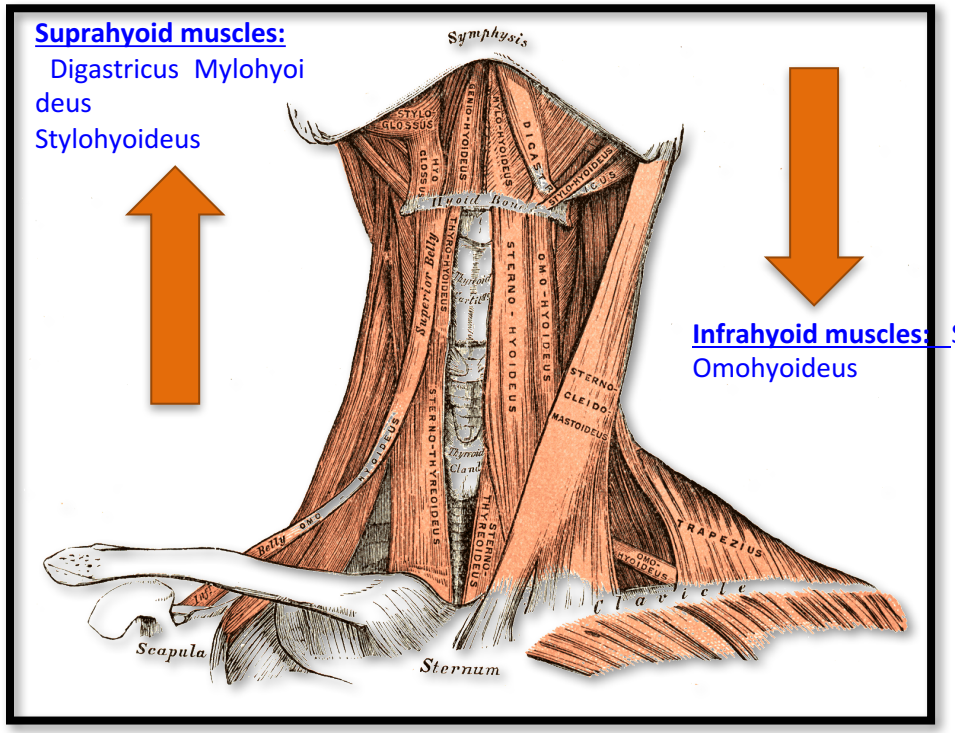




- Compartments (3)
- Walls (3)
- Muscles (3)

IV- Larynx





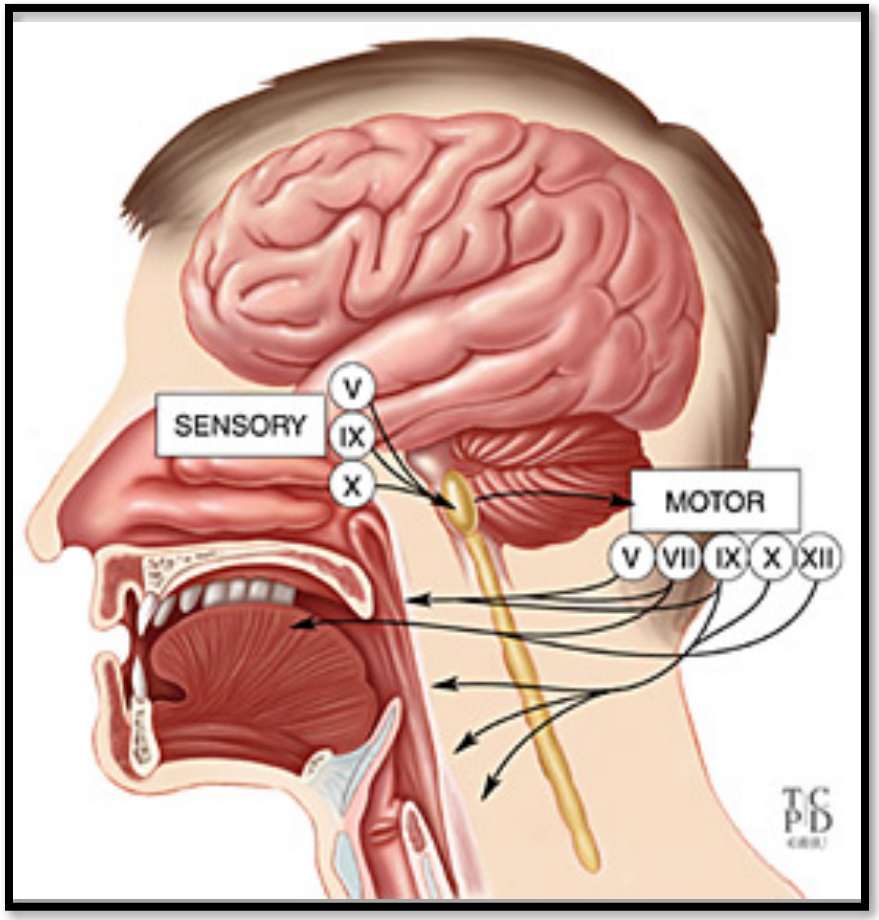
- RHS 466
- Sphincteric action
- Laryngeal suspension !!

Summary

- Oral cavity (Tongue: 4 extrinsic, 4 intrinsic)
- Soft palate (5 muscles, 5 functions)
- Pharynx (3 compartments, 3 walls, 3 muscles)
- Larynx (Sphincter, laryngeal suspension)

Neural Control of swallowing

- Receptors (types, sites?)
- Afferent
- Efferent
- Swallowing center
- Suprabulbar & Cortical



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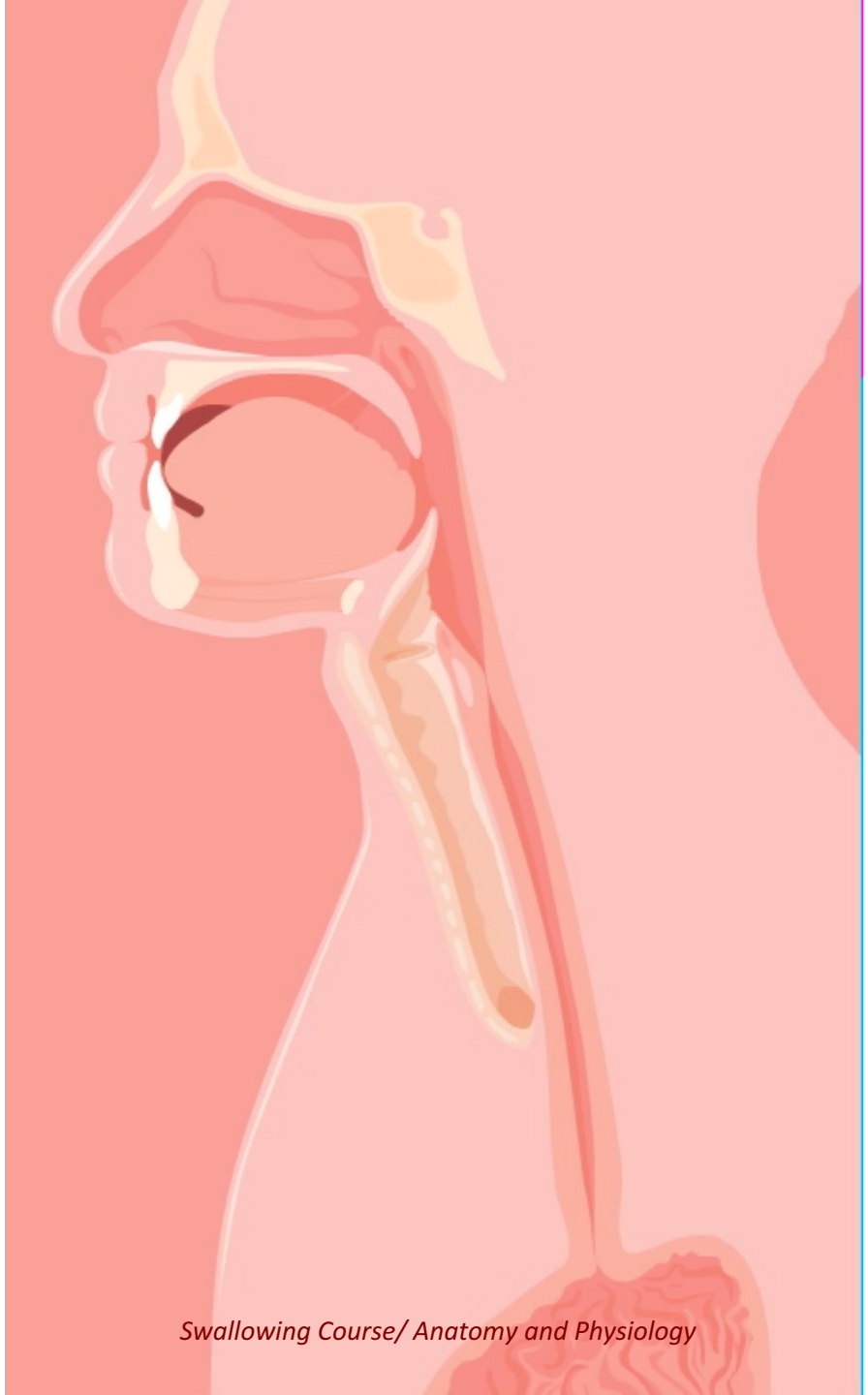
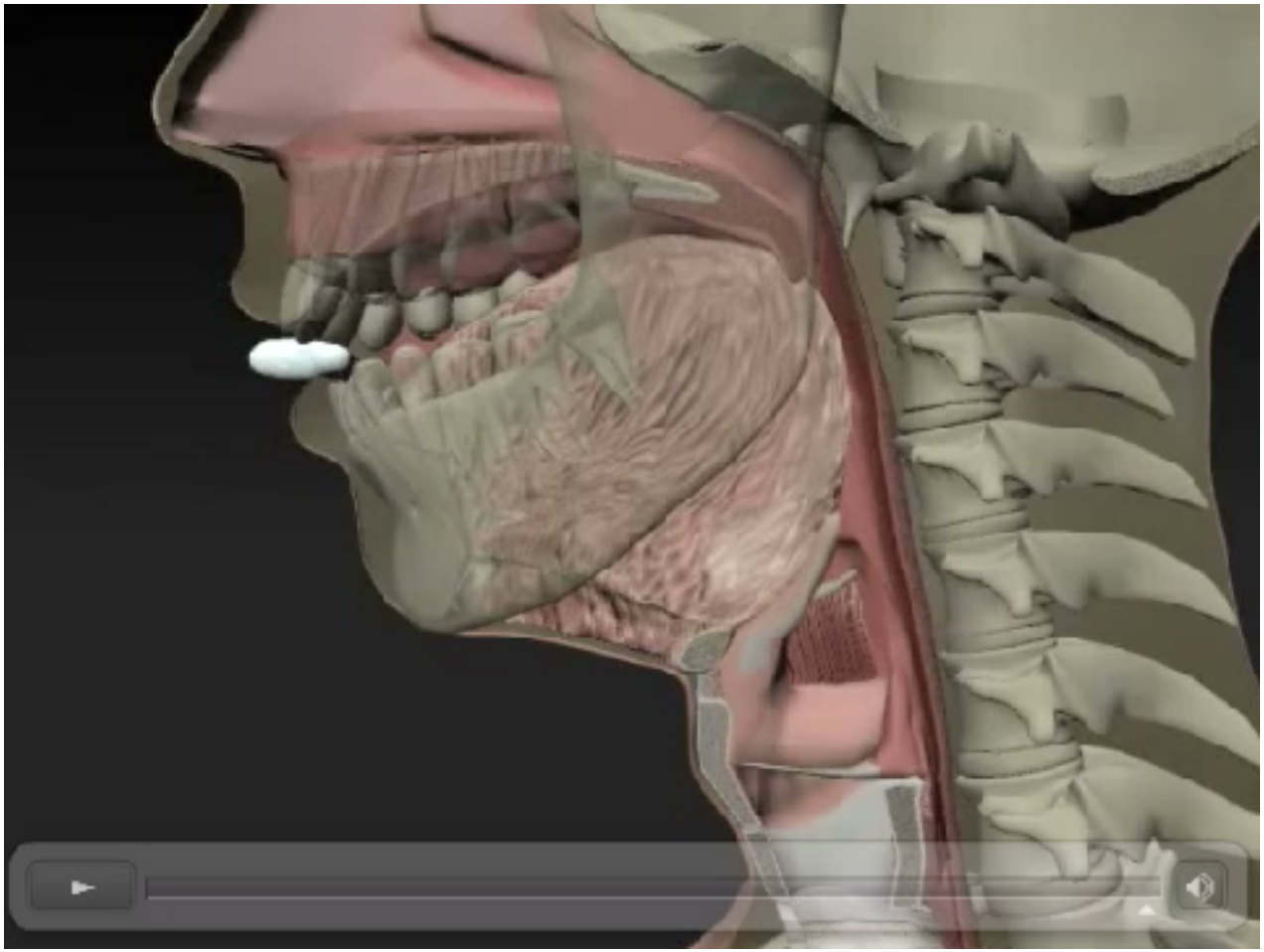
Physiology of Swallowing



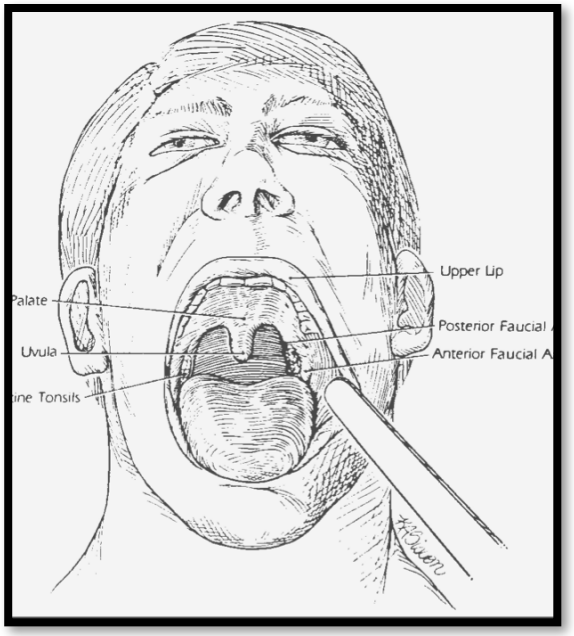
Dysphagia Application (iTunes)



Oral preparatory phase

Oral Cavity: Bolus containment and presentation

1. Containment
   - Lips, Cheeks
     - Closure
     - Adequate tension
2. Bolus preparation
   a. Teeth: mastication
   b. Tongue: driving force to initially propel the bolus
   c. Gingival and buccal gutters: channel the bolus
   d. Soft palate (Shut off !)



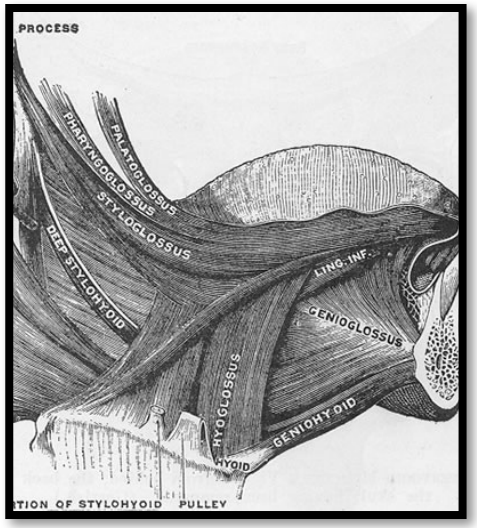
- Transfer phase ?
- Reduction phase ?

Taste, temperature, viscosity and size of bolus are sensed

Oral transport phase

Oropharynx: Delivery system

1. Oropharyngeal propulsion pump
   a. Soft palate
   b. Lateral pharyngeal walls
   c. Base of tongue
2. Velopharyngeal function
   a. Soft palate: elevates as tongue propels
   b. Tongue elevation: necessary for propulsion

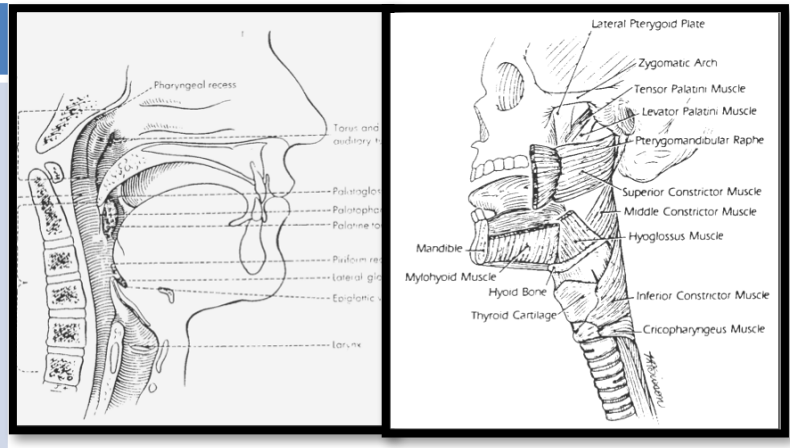


The tongue is the primary manipulator of food during the oral phase

Pharyngeal phase

Hypopharynx

1. Muscular propulsion
   a. Pharyngeal constrictors
   b. Piriform sinuses
   c. Cricopharyngeal function
2. Laryngeal protection
   a. Closure: glottis, ventricular bands, epiglottis
   b. Pharyngeal squeeze
   c. Hyoid elevation



INVOLUNTARY

Tongue elevation ➔ Velopharyngeal valve closure ➔ forward motion of the hyolaryngeal mechanism (increase opening of UES)

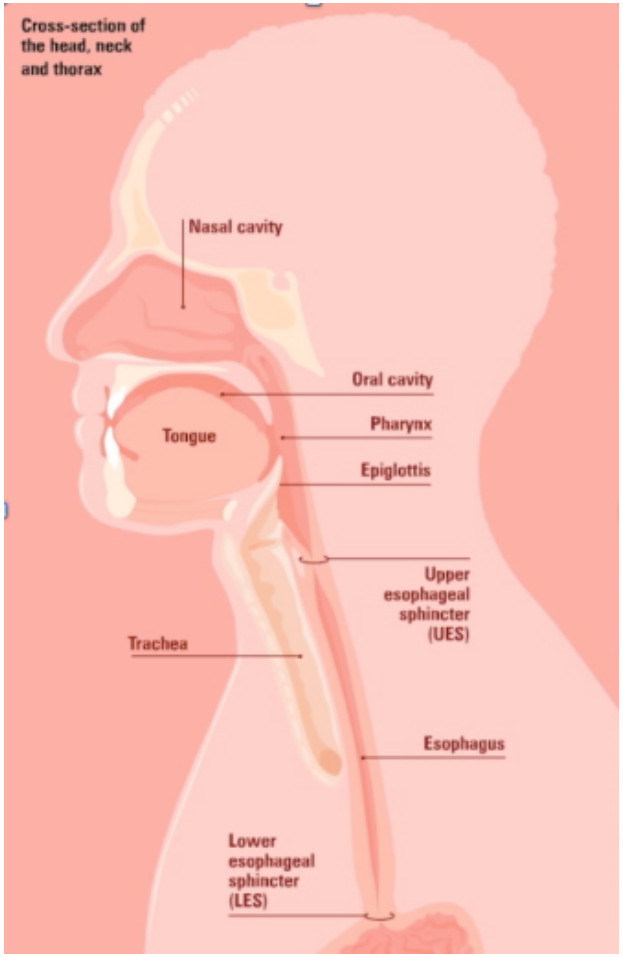
Laryngeal elevation ➔ relaxation of the cricopharyngeus musculature

- Size
- Consistency
- swallowing event "single/ continuous"

Applied anatomy

Sphincters:

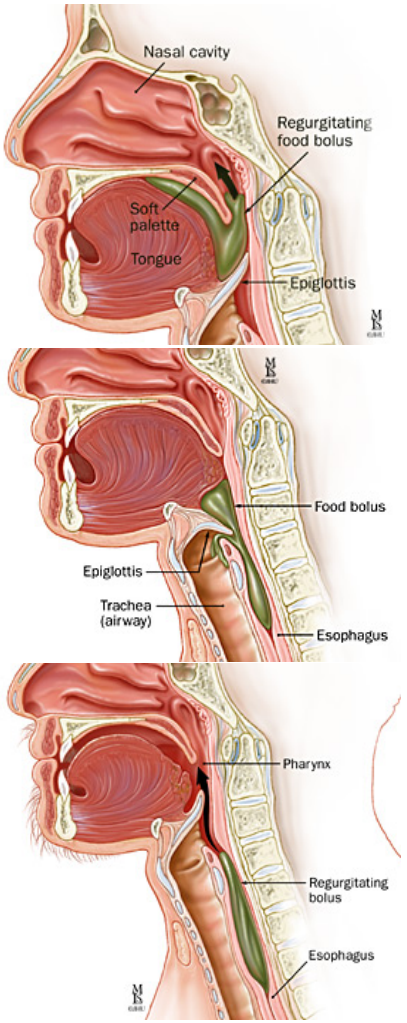
- Velopharyngeal
- Laryngeal
- UES



Applied anatomy

Sphincters:

- Velopharyngeal
- Laryngeal
- UES



Applied physiology

Temporal measures:

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