

Normal Oral, pharyngeal and esophageal transit

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Introduction

« Normal » is relative to anatomical variation, « natural » ageing, and adaptative behaviour linked to what we have to swallow or what we want to swallow.

VFS is targeting voluntary swallow of food or liquids mixed with contrast products. It's not « natural ».

Plan

- Analysing Videofluoroscopy
- Anatomical landmarks
- Neurological aspects
- Biomechanics of swallowing

Analysing Videofluoroscopy

You watch the anatomy and physiology, delineated by the bolus by
Perception of the seven functional units

1.) Moving of the structures

and observing their change of shape during action of the seven functional units,

- Pathologic movement?, dynamic pathologic morphology?

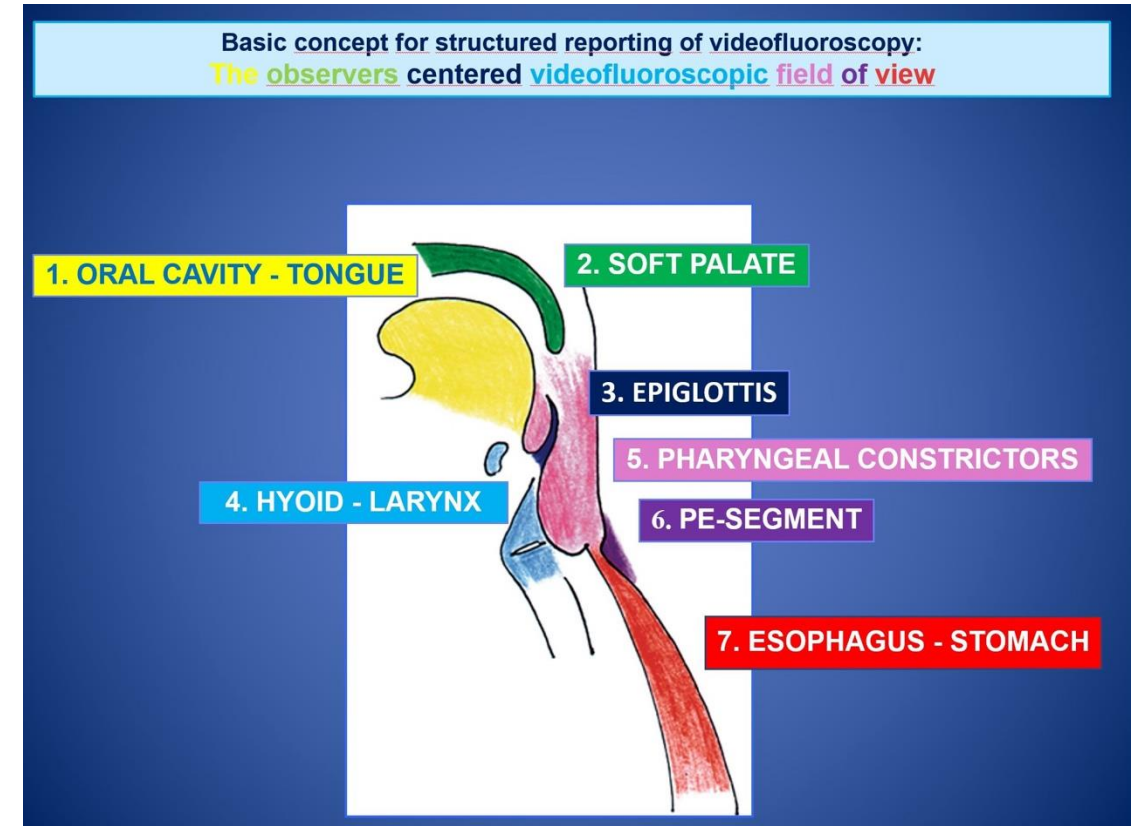
2.) Bolus transit:

a) Completeness of bolus passage

Retentions?

b) Direction along the swallowing tract

Misdirection into nasopharynx, larynx or a defect?



Analysing Videofluoroscopy

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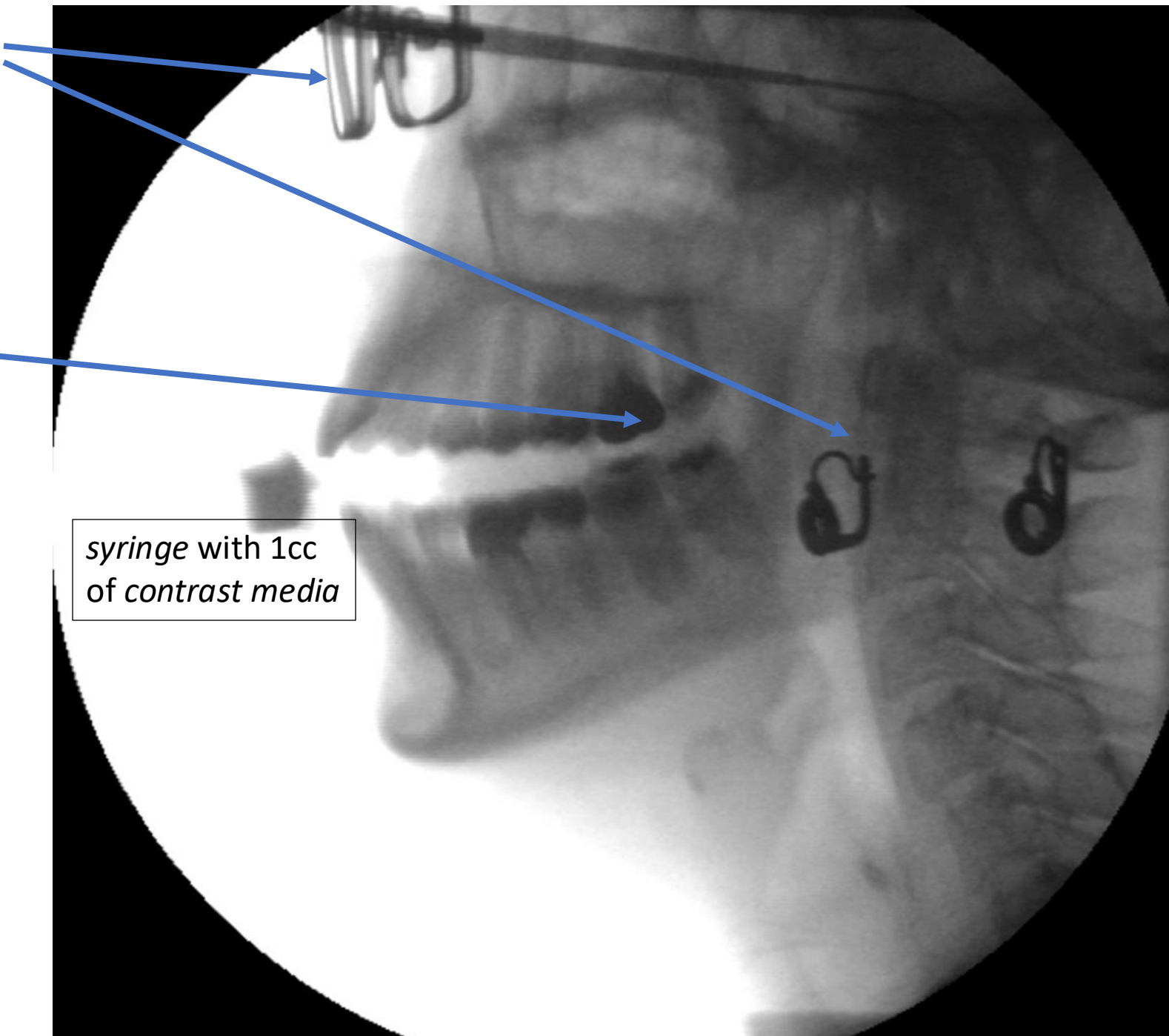
Anatomical landmarks

- Analysing Videofluoroscopy
- Anatomical landmarks
- Neurological aspects
- Biomechanics of swallowing

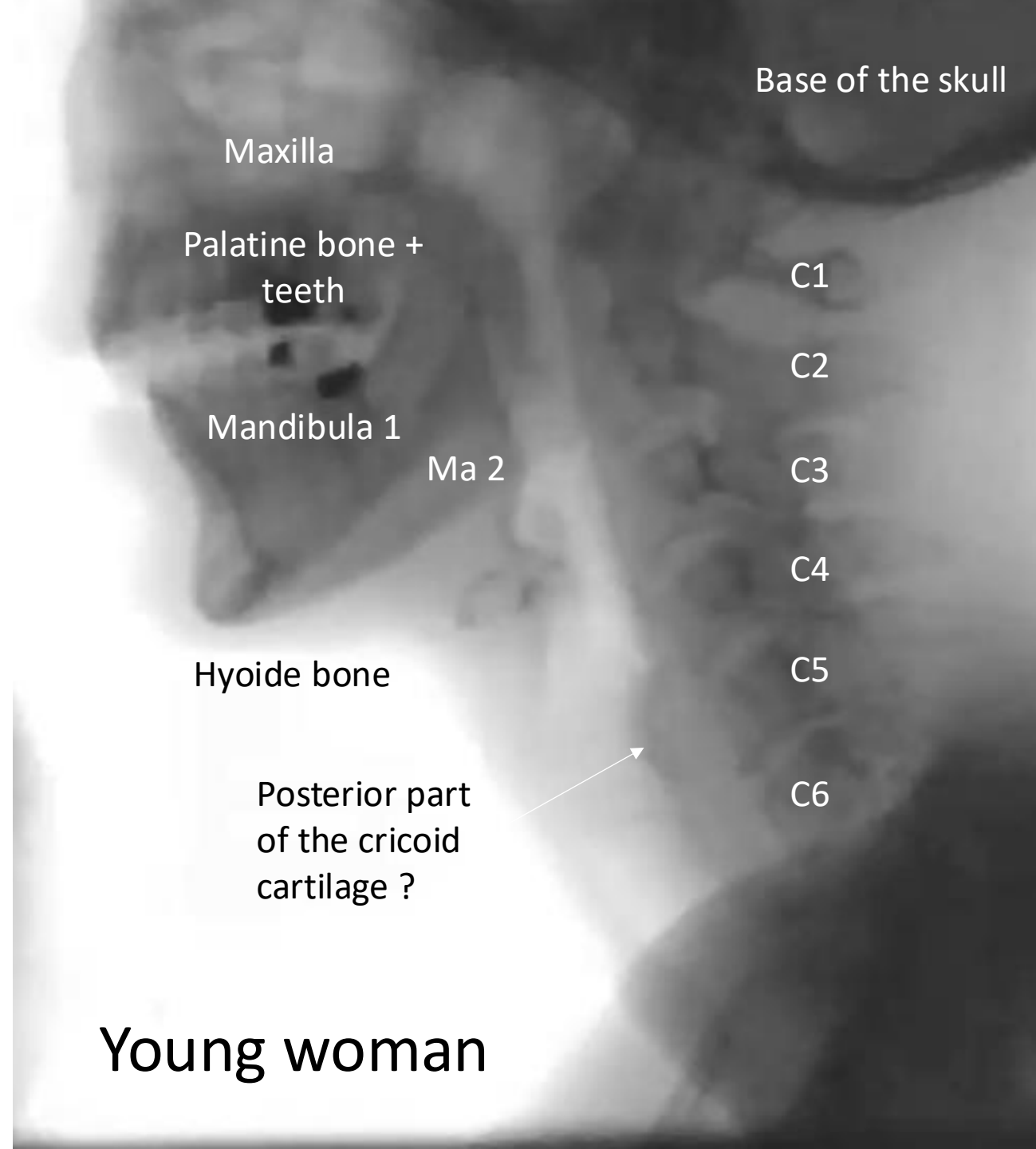
Not to keep ?

Not removable
but about *dental
prosthesis*

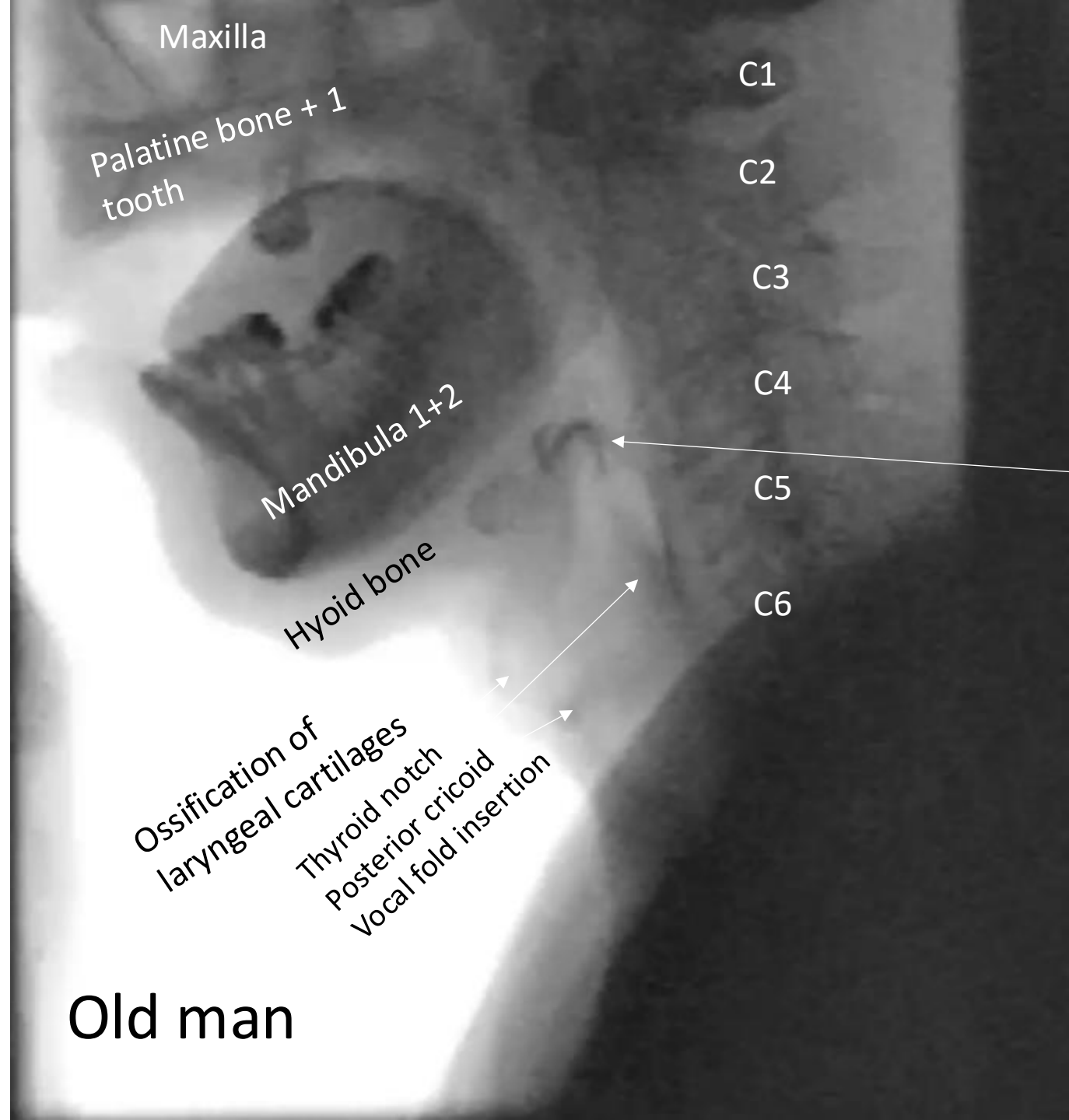
syringe with 1cc
of contrast media



The bony spots



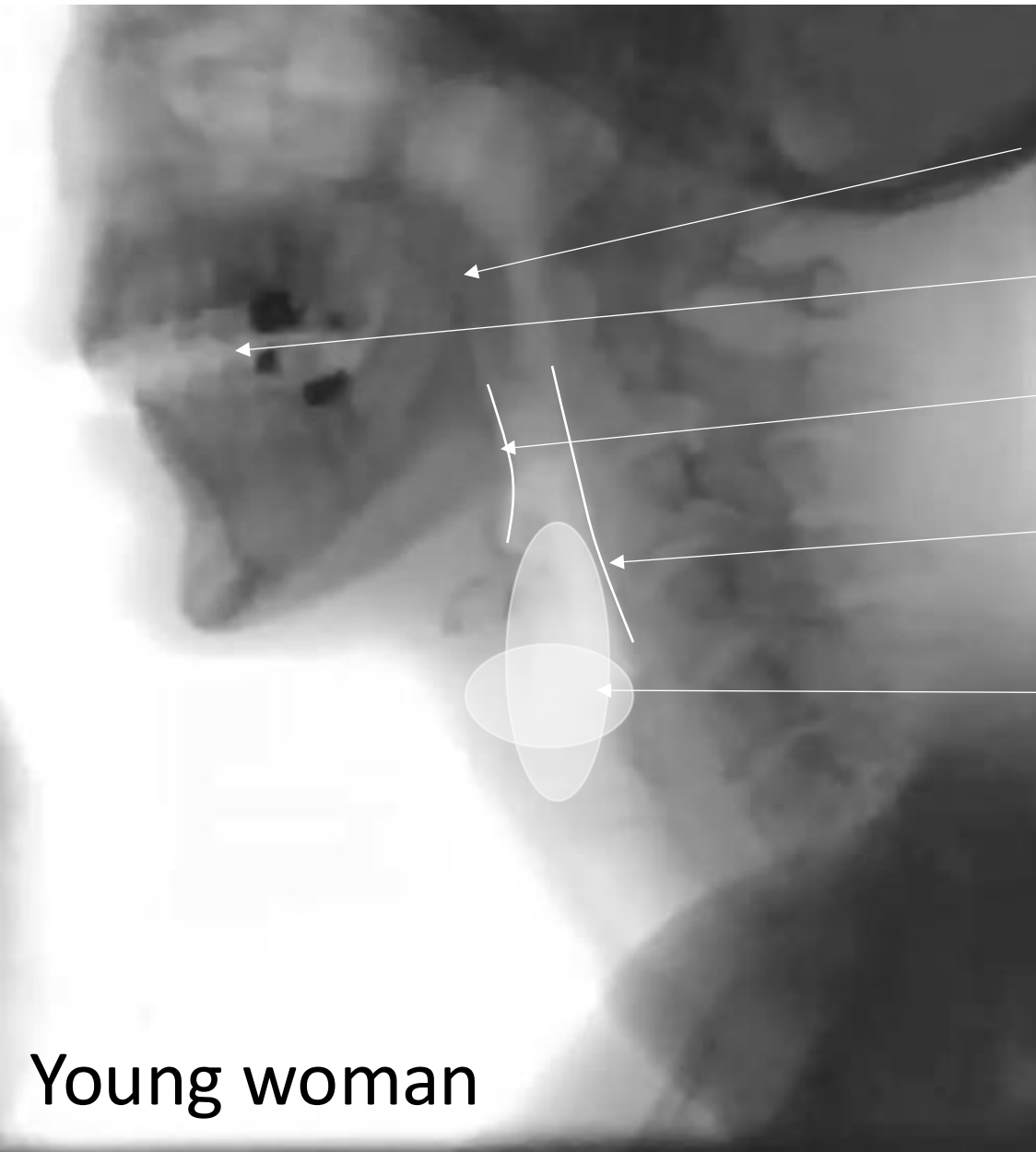
The bony spots



Contrast
products
because not
the first swallow

Old man

Soft tissue



Soft palate
or velum

Tongue

Base of
the tongue

Posterior
pharyngeal
wall

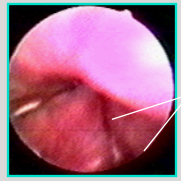
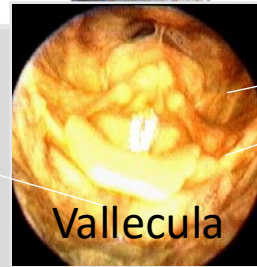
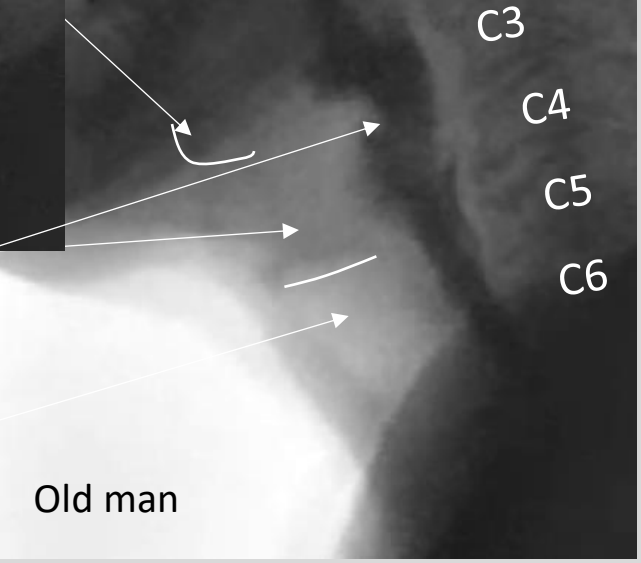
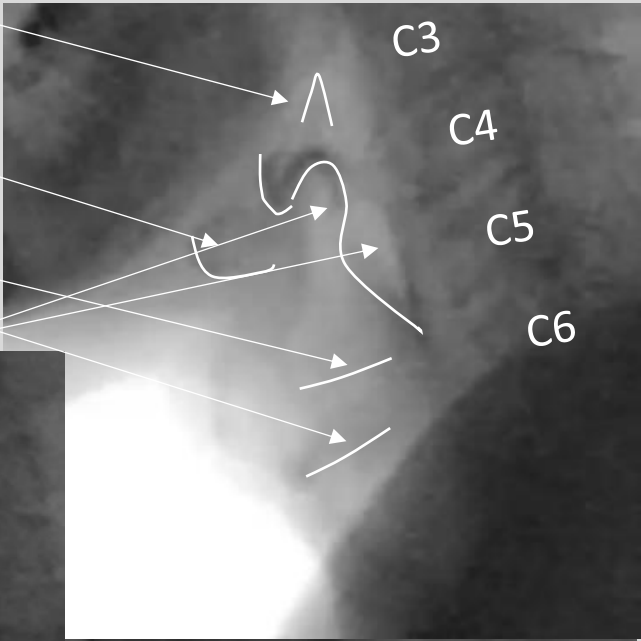
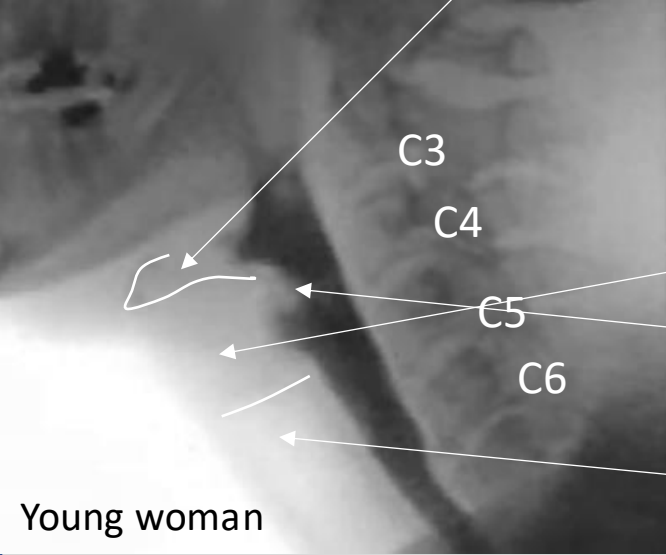
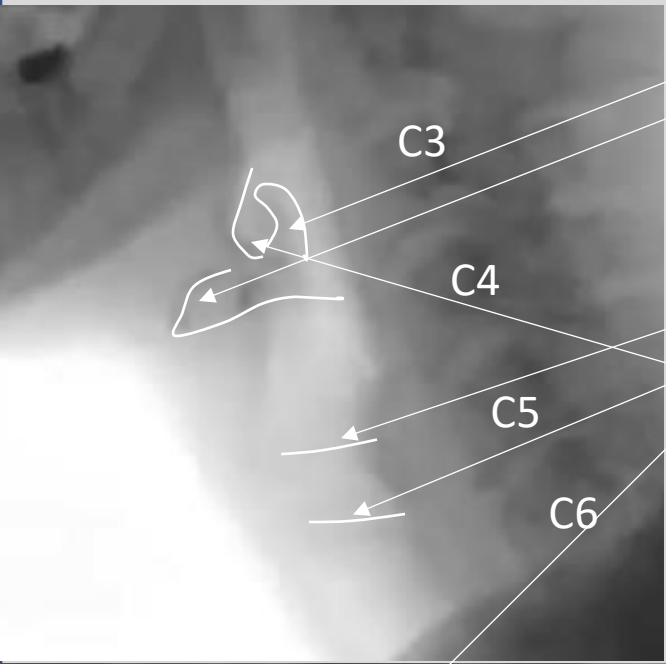
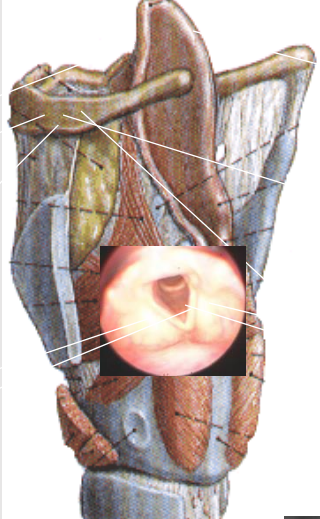
Laryngeal
structures

Young woman



Old man

Pharyngo-laryngeal structures



Laryngeal soft tissue condensation

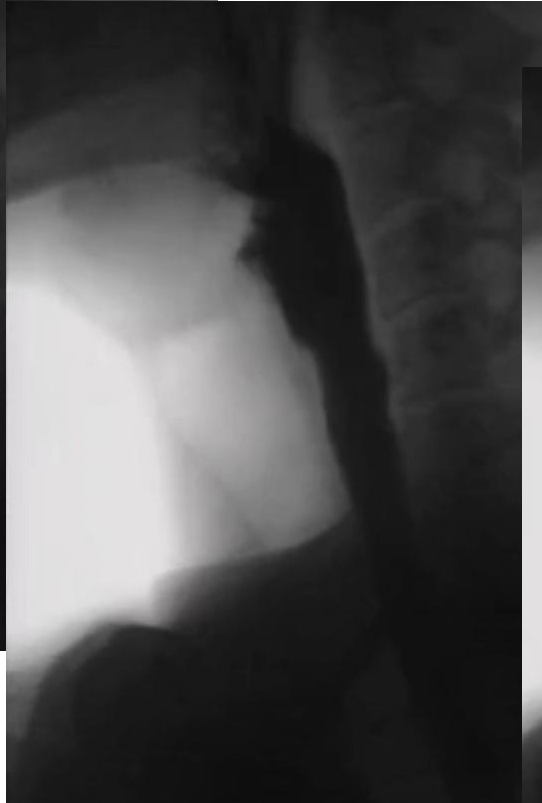
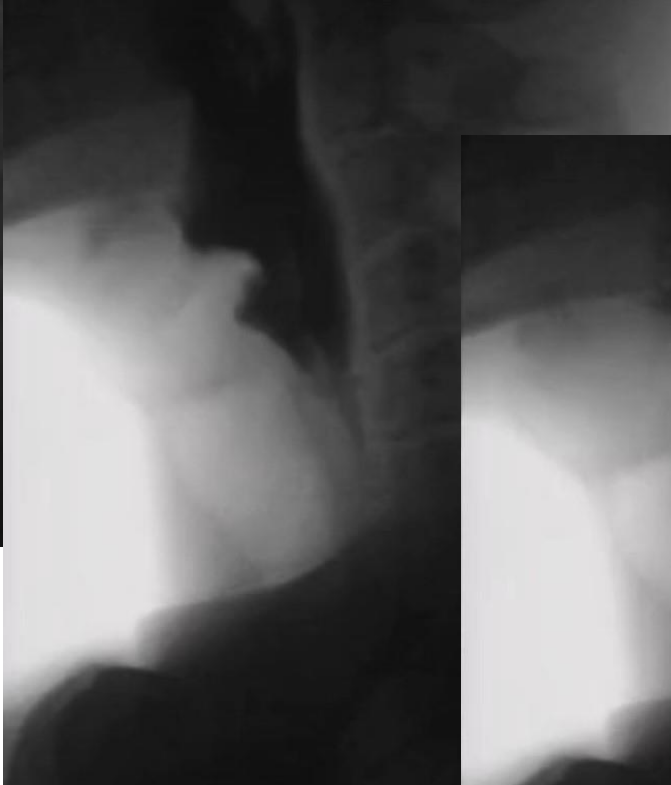
Epiglottis inversion

Subglottic space

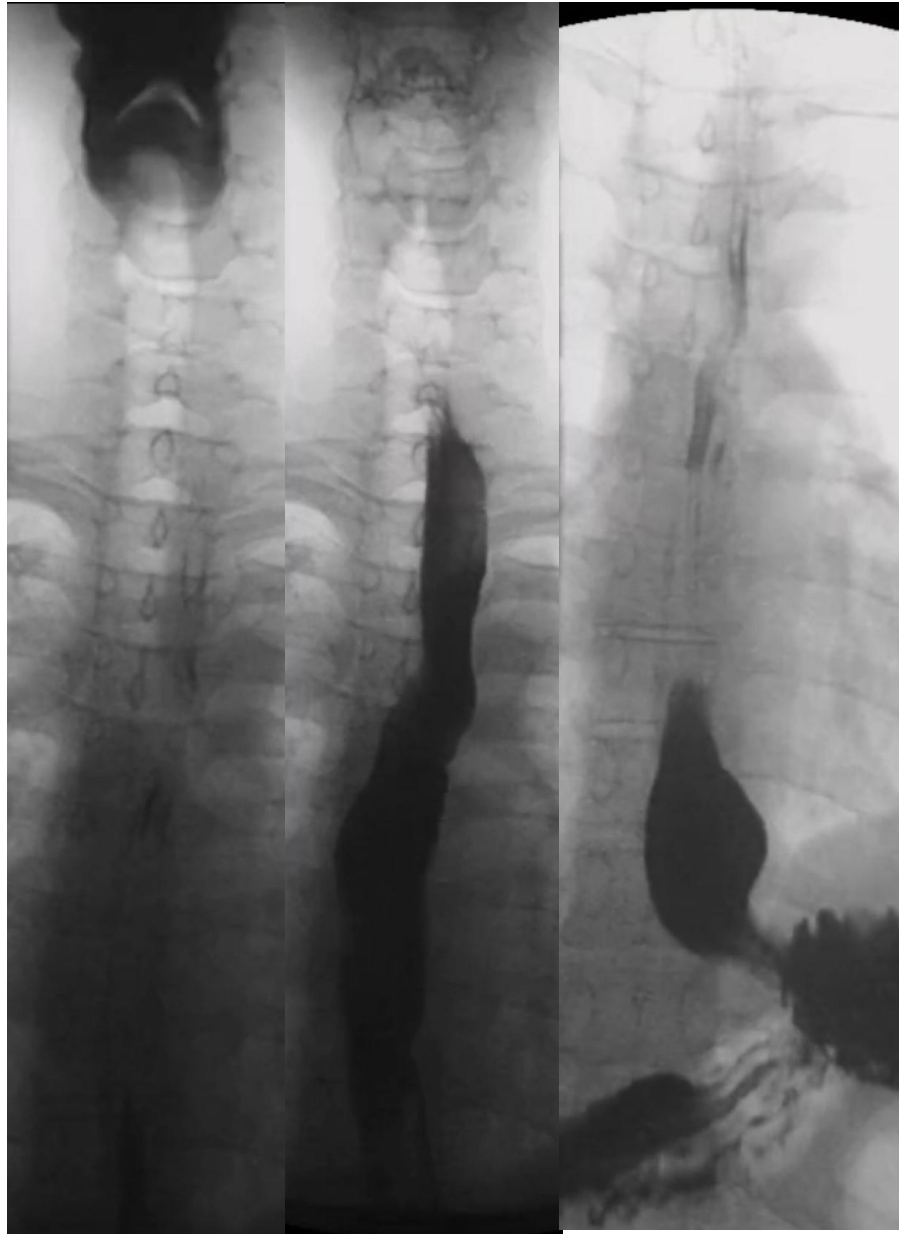
Old man

Young woman

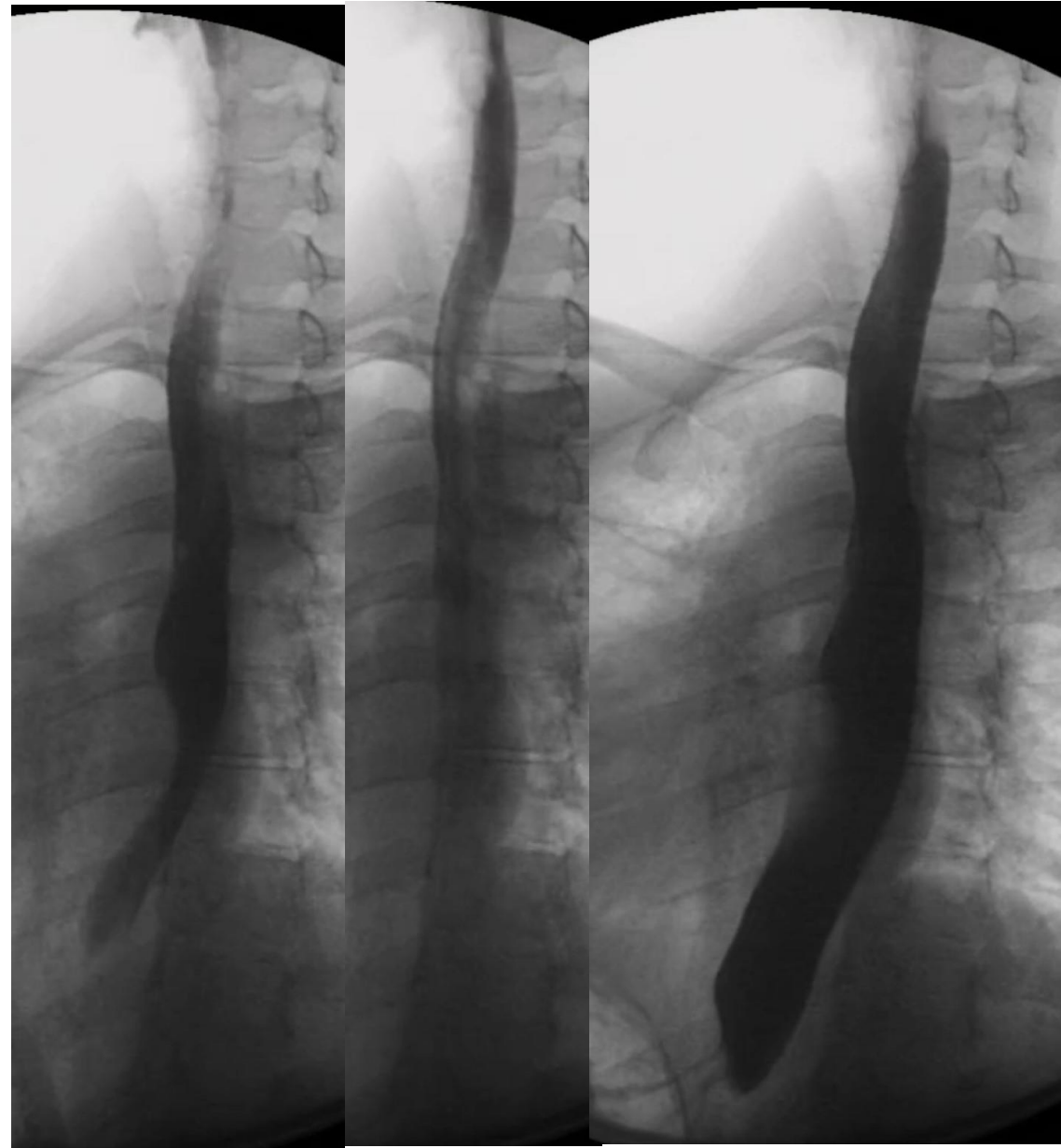
PE- Segment



Esophagus supine



Esophagus prone



Neurological aspects

- Analysing Videofluoroscopy
- Anatomical landmarks
- Neurological aspects
- Biomechanics of swallowing

Oral, pharyngeal phase → oropharyngeal phase

« Classic »

- Oral phase

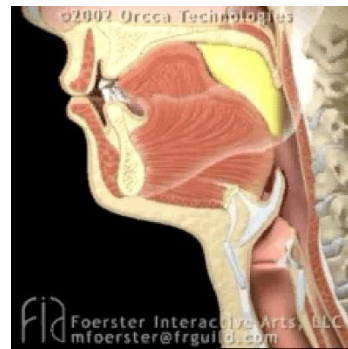
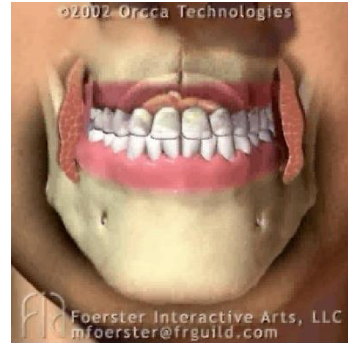
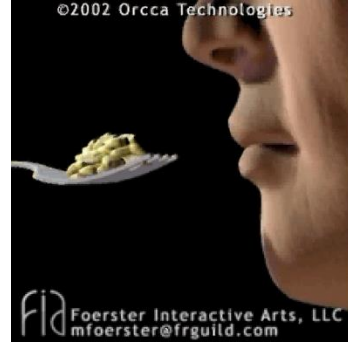
(Take or put food or liquids in the mouth)

Preparing the food in the mouth to make it available

Carry prepared food in the mouth or liquid in the pharynx

- Pharyngeal phase

Pass the bolus from the pharynx to the esophagus without entering the larynx



Oral, pharyngeal phase → oropharyngeal phase

- Oral phase

(Take or put food or liquids in the mouth)

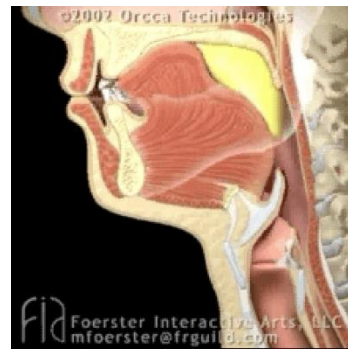
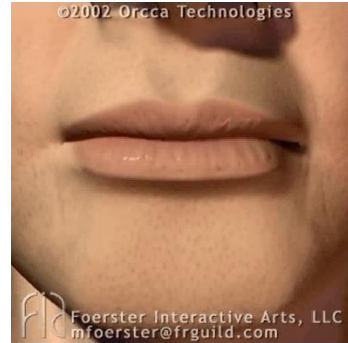
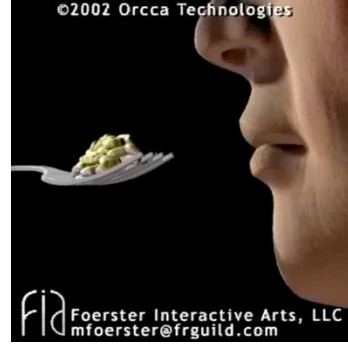
→ A lot of variation

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Oral, pharyngeal phase → oropharyngeal phase

- Oral phase

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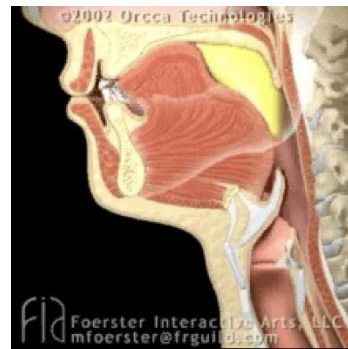
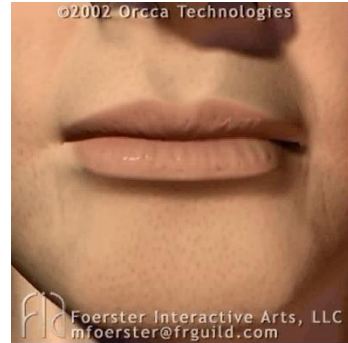
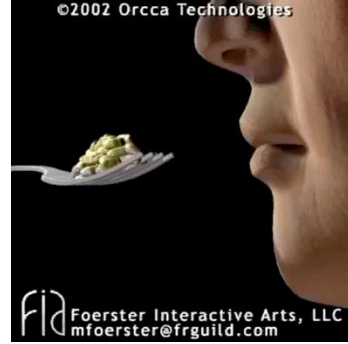
Preparing the food in the mouth to make it available

Carry prepared food in the mouth or liquid in the pharynx

Limit between oral cavity and pharynx/onset of pharyngeal swallowing time/initiation of pharyngeal phase

- Pharyngeal phase

Pass the bolus from the pharynx to the esophagus without entering the larynx



Oral, pharyngeal phase → oropharyngeal phase

- **Oral phase**

(Take or put food or liquids in the mouth)

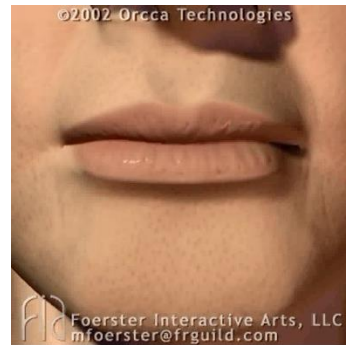
Preparing the food in the mouth to make it available

- **Oropharyngeal phase**

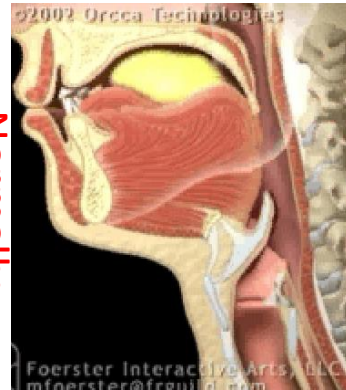
Carry prepared food in the mouth or liquid in the pharynx

Pass the bolus from the pharynx to the esophagus without entering the larynx

Normally interruptible



Normally
uninterruptable but
could be adapted by
sensory inputs



COMPORTEMENT
VOLONTAIRE

Contrôle conscient
Peut être interrompu
Modulable
Peut être supprimer par la volonté

Inclus des processus
automatiques

REFLÉXE
SOMATIQUE

ne peut pas être interrompu
Modulable à un moindre degré
Difficile à supprimer par la volonté

REFLÉXE
AUTONOME

ne peut pas être interrompu
Très peu Modulable (informations de proximité)
Ne peut pas être à supprimer par la volonté

Cavité buccale

Oropharynx

Hypopharynx

Oesophage

Dépendante la substance
déglutie et la modalité de
pénétration dans la cavité
buccale

Fermeture de la fente
orale

Contrôle intrabuccal du
bolus

Fermeture vélo-linguale
Propulsion oral

Ouverture de
l'isthme oro-pharyngé

Fermeture vélo-pharyngée
Fermeture laryngée

Propulsion pharyngée

Projection antérieur du
larynx

Ouverture du sphincter
supérieur de l'oesophage

Phase oesophagienne

Péristaltisme
œsophagienne

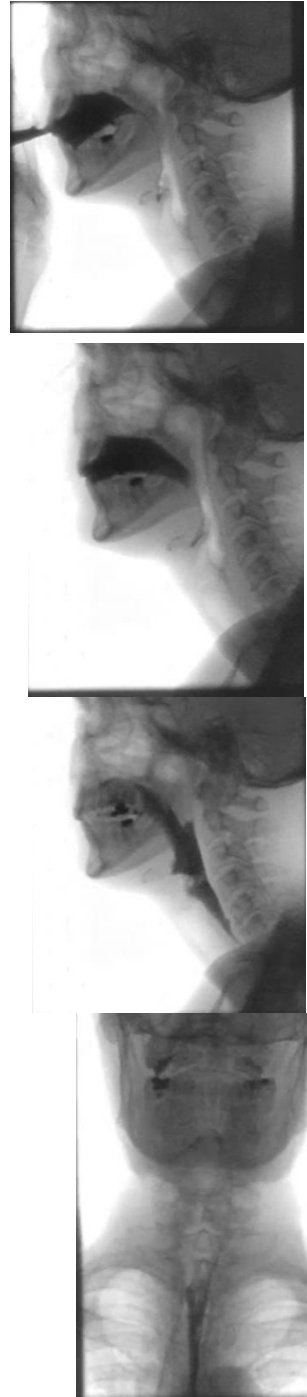
Ouverture du Sphincter
inférieur de l'oesophage

Phase préparatoire

Phase orale

Phase pharyngée

Phase oesophagienne



Variability with
« intake »

Variability with
the density

Variability with
volume and...

Adaptation to
volume, density...

Biomechanics of swallowing

- Analysing Videofluoroscopy
- Anatomical landmarks
- Neurological aspects
- Biomechanics of swallowing



Liquid from the glass



Liquid from the glass OroPharyngeal Time





Liquid from the glass
OroPharyngeal Time
Slow 3x





3cc Thick liquid from a tablespoon





OroPharyngeal Time
Slow 2x

Conclusion

So much events to look at !