

# Protective, provocative and therapeutic strategies during VFSS

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Courtesy of the Asklepios Stadtklinik Bad Tölz

# Symptom - Biomechanics - Physiology

Symptoms arise from impairments of biomechanics

e.g. anterior leaking is caused by inadequate lip closure

Disorders of biomechanics are in turn the result of a physiological impairment

e.g. inadequate lip closure can result following

- peripheral facial paralysis
- central facial weakness
- sensory impairment as a result of a lesion of the trigeminal nerve
- or, in the case of KHT, a morphological damage, e.g. resection

[Daniels et al. 2019]

# Relevance for therapy planning

## Rehabilitative interventions:

These are methods that are thought to lead to permanent changes in the underlying substrate of swallowing, i.e. the physiology of the swallowing mechanism is changed, when applied over a certain period of time.

### Example:

- Shaker maneuvers (in case of peripheral damage with the goal to strengthen submental musculature to optimize HLE)
- Skill training with the support of sEMG biofeedback and BiSSkiT-Software (in the case of a central damage with the goal to optimize movement planning/ coordination)

[Daniels et al. 2019]

# Compensatory techniques

## Compensatory therapy methods:

Compensatory strategies provide immediate but typically only temporary effect on the efficiency or safety of swallowing by eliminating the patients signs or symptoms. Swallowing typically reverts to the original dysfunctional state if the compensatory strategy is not carried out.

Example:

- Swallowing with chin tuck
- Cyclic swallowing

[Daniels et al. 2019]

# Compensatory techniques

## Signs/ symptoms:

- Insufficient oral bolus formation
- Anterior leaking
- Post-swallow oral residues
- Nasal regurgitation
- Pre-swallow pooling to the level of...
- Insufficient epiglottis-tilting
- Insufficient opening of the PES
- Post-swallow residue in the vallecula, pyriforme sinuses or diffuse
- Aspiration/ penetration

[Daniels et al. 2019]

# Compensatory techniques

- When choosing the appropriate strategy, information from the CSE must be included in order to ensure success/ reliability of the strategy [Martin-Harris et al. 2020]
  - Attention, memory, motor skills, etc. play a central role
- As a general rule, all compensatory strategies must always be evaluated regarding their efficiency/ safety as part of imaging swallowing diagnostics before they are implemented [Carnaby et al., 2006; Smith Hammond & Goldstein, 2006]
  - Just because the patient coughs with liquids and does not cough with chin tuck or thickend liquids, does not guarantee that there is no more aspiration – it can now be silent
- Kuhlemeier et al (2001) found that by implementing compensatory techniques 95% of the patients were capable of swallowing at least something without aspiration

# Compensatory techniques

- Directly increase safety/ efficiency of swallowing and thus allow for early oral intake

## **BUT:**

- Longterm management should focus on rehabilitative techniques to change swallowing physiology
- Compensatory techniques need to be chosen in a way that patients can implement them reliably and SLP can focus on rehabilitative therapy

# Chin tuck

## When to try:

- pre-swallow pooling
- vallecular residue
- intra-swallow penetration/aspiration
- post-swallow residuals in the pyriform sinuses

## Effect:

- reduces laryngeal vestibular opening and facilitates laryngeal elevation by approximation of suprahyoid muscles [Welch et al., 1993; Shanahan et al., 1993]
- Reduces pressure in the PES [McCulloch et al., 2010]

## Contraindication:

If pooling extends to the pyriforme sinus this can increase risk of airway intrusion from bolus flowing from pyriforme sinuses into larynx [Shanahan et al., 1993]

## Instruction:

The patient is asked to lower chin to chest for swallow



# Head turn

## When to try:

- unilateral pharyngeal residue
- post-swallow residue in pyriform sinus

## Effect:

- Head rotation to weaker side is intended to reduce pharyngeal space on that side. It is hoped that the bolus will flow more over the stronger side [Logemann et al., 1989].
- Pharyngeal contraction pressure is increased during swallowing on the side to which the head is turned, and the resting pressure in the PES is reduced [Logemann et al., 1989; Ohmae et al., 1996; Wheeler-Hegland et al., 2009; McCulloch et al., 2010].

## Contraindication:

- None known

## Instruction:

- The patient is asked to turn the head to the weaker side to swallow.

# Cyclic swallowing

## When to try:

- In all pathomechanisms leading to post-deglutitive residues (oral, pharyngeal and/or esophageal)

## Effect:

- Potentially improves the cleaning of residuals.

## Contraindication:

- None known

## Instruction:

- Alternately take solid – mushy / liquid – solid / mushy – liquid.

# Thickend liquids

## Indication:

- Pre-swallow pooling secondary to reduced oral control OR secondary to delayed initiation of pharyngeal swallowing

## Effect:

Oral control is facilitated. Thick liquids have a lower intrapharyngeal velocity.

## Contraindication:

Increased risk of dehydration, urinary tract infections and fever [Robbins et al., 2008].

## Instruction:

Patients must be given clear information regarding the necessary consistency. Basically, there are a few aspects to consider when administering thickened drinks:

- What impact do they have on patients quality of life?
- Counterbalance risk and benefit
- How reliably is the recommended thickening level implemented? Since the rheological properties are extremely diverse, they must be controlled particularly carefully - IDDSI

# Adapted diets

## Indication:

Problems manipulating denser bolus

## Effect:

Facilitates bolus preparation

## Contraindication:

None known – but as with thickened liquids, it is also important to check for patient adherence – potential danger of malnutrition.

## Instruction:

Patients must be given clear information regarding the necessary consistency – again, as much as necessary – as little as possible!

Adjusting the consistencies (food and liquids) should always be the last choice and kept as low as possible.