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Compensatory Swallow Strategies and Rehabilitation Modalities during MBS

Presenter: Debra Tarakofsky, M.S., CCC-SLP

Moderated by:

Amy Hansen, M.A., CCC-SLP, Managing Editor, SpeechPathology.com

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Compensatory Swallow Strategies & Rehabilitation Modalities during MBS

By: Debra Tarakofsky, MS/CCC-SLP

Swallowing Diagnostics, Inc-President

NovaSoutheastern University-Dysphagia Lab Instructor/Developer

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Non Financial Disclosures: I am the owner and a clinician at SDI. We are using videos from patients of SDI which I will refer to throughout this presentation.

Compensatory Swallow Strategies: When, why and how to implement them

- PRESENTER: Debra Tarakofsky, a certified and licensed Speech-Language Pathologist with 20+ years of experience working with the geriatric population, and in acute care hospitals, skilled nursing and assisted living facilities with an adult population.
- President and Clinical Administrator of Swallowing Diagnostics, Inc.(SDI), for 14 years, a mobile provider of modified barium swallow studies in Florida. SDI has performed over 20,000 modified barium swallow studies and is an ASHA approved provider of CEUs.
- I have presented at ASHA, FLASHA numerous skilled nursing facilities and health maintenance organizations on the topics of dysphagia and modified barium swallow studies.
- Responsibilities include conducting modified barium swallow studies, supervising and training other SLPs, implementing standards of performance, marketing and business development.
- I am adjunct instructor at NovaSoutheastern University, and responsible for the development and ongoing modification of their online modified barium swallow study lab for graduate level students.

Learner Outcomes

- Participants will be able to match appropriate compensatory swallow strategies to physiological dysfunction stated.
- Participants will be able to match appropriate compensatory swallow strategies to physiological deficit as viewed on videofluoroscopic images.
- Participants will be able to match appropriate therapy intervention based on physiological deficit of the oropharyngeal swallow.

Muscle Dysfunction - Oral

Muscle Dysfunction	What you see
Reduced mandibular movement	Unable to align teeth, mastication difficulties
Reduced labial tension/ tone	Residues in the anterior sulcus, anterior loss
Reduced buccal tension/tone	Lateral sulcus loss and residue
Reduced lingual shaping: seal of the tongue to the anterior and lateral alveolar surfaces	Tongue Thrust, abnormal bolus hold position, reduced ability to maintain bolus cohesion (spreads), premature posterior loss, lateral and floor of the mouth loss

Logemann, 1993, (pp 75-79); Logemann, 1997, (p. 8)

Muscle Dysfunction – Oral (cont)

Reduced lingual range of motion	Residues on the tongue, struggling lingual motion and bolus spread, disturbed lingual contraction, incomplete tongue-palate contact, decreased ability to form the bolus, unable to masticate effectively
Reduced lingual strength	Residues on hard palate or tongue and increases with viscosity
Reduced lingual coordination	Disturbed lingual contraction, reduced anterior-posterior tongue movement, (i.e. lingual rolling, rocking, pumping), residue floor of mouth or tongue

Logemann, 1993, (pp 75-79); Logemann, 1997, (p. 8)

Muscle Dysfunction - Pharyngeal

Muscle Dysfunction	**What you see**
Reduced velopharyngeal closure	Nasal penetration during the swallow
Unilateral pharyngeal wall weakness	Residues on one side of pharynx: (base of tongue, valleculae, pharyngeal walls and pyriform sinus)
Reduced pharyngeal contraction bilaterally	Coating base of tongue, valleculae, pharyngeal walls and pyriform sinus
Reduced base of tongue contraction	Base of tongue and/or valleculae residue
Reduced laryngeal elevation/excursion with reduced arytenoid tilt	Residues at the entrance of the laryngeal vestibule

Logemann, 1993, (pp 95-103), Logemann, 1997, (p. 8)

Muscle Dysfunction – Pharyngeal (cont)

Generalized weakness throughout the pharynx (base of tongue, pharyngeal wall, laryngeal elevation and excursion)	Residues along all pharyngeal structure
Slow laryngeal elevation/excursion for airway closure	Flash penetration
Reduced airway closure; arytenoids to base of epiglottis and arytenoid anterior tilt	Laryngeal penetration during the swallow, aspiration after the swallow
Reduced vocal fold closure	Aspiration during the swallow
Reduced anterior laryngeal movement or UES dysfunction or UES Stricture	Residues in both pyriform sinuses

Logemann, 1993, (pp 95-103), Logemann, 1997, (p. 8)

Other Abnormalities

Muscle Dysfunction	**What you see**
Cervical osteophytes	Bony outgrowth from cervical vertebrae, Possible pharyngeal wall residue, Pt complaints of sensation in pharynx when swallowing
Pharyngeal pouch/Scar tissue	Localized coating on the pharyngeal wall
Reduced epiglottic inversion	Valleculae residues, reduced airway protection with possible penetration Above horizontal-reduced laryngeal elevation To horizontal only-reduced base of tongue retraction

Logemann, 1993, (pp 91-94); Logemann, 1997, (p. 8)

Treatment for Dysphagia

- **Compensations:** Changes we make to compensate for the deficit.
  - According to Swigert's The Source for Dysphagia (2007), Logemann (1998) states that compensations control the flow of food/liquid, and eliminate pt symptoms without changing physiology of the swallow.
- **Direct Therapy Procedures:** Designed to improve function.
  - In Swigert's The Source for Dysphagia (2007), Logemann(1998) states that therapy is designed to change physiology of the swallow.

(Swigert, 2007, p.103)

Treatment for Dysphagia: Compensations

- 1. **Types of Treatment**
  - **Compensations**

    a. Postural changes (e.g., Chin down, R/L head turn)

    b. Maneuvers (e.g., Mendelsohn Manuever)

    c. Improving oral sensory awareness (texture, size)

    d. Modification of volume and speed of food presentation (e.g., Bolus size, single sip, continuous sip)

    e. Food consistency/diet changes

    f. Intraoral prosthetics (palatal lift)

Treatment for Dysphagia: Direct Therapy

- **Types of Treatment**
  - **Direct Therapy Procedures**
    - Oral motor exercises
      - exercises that increase strength, range of motion and coordination
      - Should address the physiological deficit directly
        - E.g., To improve bolus containment, the pt will improve labial closure by completing labial strengthening exercises at 8/10 accuracy.

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Postures: Chin Down/Chin Tuck**

  a. Increases vallecular space; narrows airway entrance

  b. Pushes epiglottis posteriorly into more protective position over airway

  c. Pushes tongue base backward toward pharyngeal wall

- Used if there is:
  - A delay in triggering the pharyngeal swallow (decreases duration of stage transition)
  - Reduced base of tongue base retraction
  - Reduced laryngeal closure at the entrance
  - Unilateral laryngeal dysfunction

(Logemann, 1997, p. 8)

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Postures: Head Turn or Head Rotation**
  Turning to weaker (damaged) side

  a. Eliminates the damaged side from the bolus path.
  b. Allows the bolus to pass through the intact side.
  c. Pulls cricoid cartilage away from posterior pharyngeal wall, reducing resting pressure in UES
  d. Increases vocal fold closure by increasing extrinsic pressure, and narrows the laryngeal entrance

- Used if there is:
  - Unilateral pharyngeal paresis
  - Cricopharyngeal dysfunction
  - Unilateral laryngeal dysfunction

(Logemann, 1997, p. 8)

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Postures: Head Tilt**
  Tilt the head to the stronger side

  a. Directs bolus down the most intact side.

- Used for problems caused by:
  - Unilateral oral weakness
  - Unilateral pharyngeal weakness (on same side)

(Logemann, 1997, p. 8)

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Postures: Head Back/Chin Up**
  a. Facilitates posterior movement of the bolus by taking advantage of gravity

- Use for patients with:
  - Reduced lip or tongue control
  - Reduced labial closure
  - Reduced posterior propulsion of the bolus

  *Only used for patients with adequate laryngeal closure or who can utilize the supraglottic swallow

(Logemann, 1997, p. 8)

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Postures: Side Lying Down (or Back)**
  a. Eliminates the effects of gravity on pharyngeal residue

  b. May reduce penetration after the swallow from residue by reversing gravitational pull on the residue, effectively keeping it on the pharyngeal wall until subsequent swallows clear it

- Use for patients with:
  - Reduced pharyngeal contraction and residue spread throughout the pharynx

  * Not indicated if residue builds after each swallow or pt has history of reflux

(Logemann, 1997, p. 8)

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Compensations: I<u>mproving oral-sensory awareness</u>**

  a. Downward pressure with spoon on the tongue
  b. Sour, sweet, bitter, cold bolus
  c. Chewing vs non chewable bolus
  d. Straw vs spoon vs cup sipping
  e. Small vs larger volume
  f. Thermal-tactile stimulation
  g. Suck-swallow

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Compensations: I<u>mproving oral-sensory awareness</u>**

  h. External pressure to the cheeck
  i. Place food on the stronger side
  j. Manual Lip/Chin support

  (Swigert, 2007)

- **Compensations: <u>External Materials</u>**

  k. Provale cup, Nosey cup, Safe Straw

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Swallow Maneuvers** : Supraglottic swallow
  - Advise pt to hold their breath, exhale slightly, swallow, cough and reswallow
  - Use for:
    - Reduced or late vocal fold closure
    - Delayed pharyngeal swallow

Treatment for Dysphagia: Matching Treatment to the Disorder

- **Swallow Maneuvers:** Super-Supraglottic Swallow
  - Instruct the pt to hold their breath, exhale slightly, bear down, swallow, cough and re-swallow
  - Use for:
    - Reduced closure of airway

Treatment for Dysphagia: Matching Treatment to the Disorder

- Swallow Maneuvers: Effortful Swallow
  - Instruct the pt to swallow hard, pushing the tongue hard against the palate.
  - Use for:
    - Reduced base of tongue retraction
    - Reduced pharyngeal contraction

Treatment for Dysphagia: Matching Treatment to the Disorder

- Swallow Maneuvers: Menselsohn Maneuver
  - Instruct the pt to swallow and hold the swallow when the larynx is elevated at its maximum position (for 3 seconds if able)
  - Use for:
    - Reduced laryngeal movement
    - Reduced UES opening resulting in pyriform sinus residue
    - Discoordinated swallow

Treatment for Dysphagia: Matching Treatment to the Disorder

- Hierarchy of Introducing Compensatory Treatment
  - Postural changes
  - Increasing sensory input (taste, sensation, volume, temperature)
  - Voluntary maneuvers
  - Bolus viscosity changes

(Logemann, 1998)

Treatment for Dysphagia: Matching Treatment to the Disorder

- Match intervention to patient's disorders
- Most important is understanding the physiology of why you use each.
- The treatment interventions chosen during fluoroscopy are dependent on the pt's presentations.
- Maintain the pt on the least restrictive diet SAFELY.

Treatment for Dysphagia: Matching Treatment to the Disorder

- Management Strategies by deficit
  - Reduced airway closure
    - Chin down
    - Chin down and head turn
    - Supraglottic or Super-supraglottic swallow
    - Chin down and super-supraglottic swallow
    - Thicken liquids and repeat
  - Delayed Pharyngeal Swallow
    - Chin down, thermal stimulation

(Logemann, 1997)

Treatment for Dysphagia: Matching Treatment to the Disorder

- Management Strategies by deficit
  - Reduced vocal fold closure
    - Chin down
    - Head turned to damaged side
    - Chin down and head turned
    - Supraglottic swallow, chin down and head turn
    - Thicken liquids and repeat

(Logemann, 1997)

Treatment for Dysphagia: Matching Treatment to the Disorder

- Management Strategies by deficit
  - Reduced UES opening secondary to reduced hyolaryngeal elevation/excursion
    - Head turn (examine each side)
    - Mendelsohn Maneuver
    - Head turn and Mendelsohn maneuver

(Logemann, 1997)

Treatment for Dysphagia: Matching Treatment to the Disorder

- Management Strategies by deficit
  - Reduced tongue base retraction
    - Chin down
    - Effortful swallow
    - Chin down and effortful swallow

(Logemann, 1997)

EVIDENCE BASED PRACTICE

- EBP is neither the cure-all nor the fear that is often suggested by its framework. Rather, it is a set of tools that will facilitate improved clinical decision-making, and allow us to be better clinicians, investigators, and educators
  (Dollaghan, 2004, April 13)

Lingual Strengthening Exercises

- TYPE: Resistance Exercises and IOPI
  - Robbins et al. (2007) in Archives of PM&R
  - Lazarus (2005) in Perspectives
- HOW TO: Traditional tongue exercises working against resistance
- USE: Deficits of bolus manipulation and clearance
- OUTCOMES: Strength increases significantly with resistive exercises

STAYING UP TO DATE

- LSVT - improvement in oral transit, triggering of the pharyngeal swallow and reduction in oral residue
  - And improved lingual strength and endurance
    - Sharkawi et al. (as cited in Lazarus, 2005)
    - Palmer et al. (as cited in Lazarus, 2005)
- **Exercise Intensity and Duration** - Christine Sapienza

Effortful Swallow

- USE: To reduce residue in the valleculae and on the base of tongue caused by reduced lingual and base of tongue strength, resulting in reduced oral and upper pharyngeal pressure
- HOW TO: The pt is instructed to push their tongue hard against their palate and swallow as hard as they can
- OUTCOMES: "This technique can be used as a compensation during a meal to reduce valleculae residue, and its efficacy can be viewed during the evaluation. It can also be used during therapy to increase BOT strength and improve early onset of pharyngeal pressures."

(Swigert, 2007 p. 135)

- One subject in a study by Garcia et al. (as cited in Swigert, 2007), developed timing issues with nasal backflow.

Masako Manuever

- USE: To increase posterior pharyngeal wall movement by restricting the base of tongue.
- HOW TO: Ask the pt. to protrude his tongue slightly and hold it between his teeth while he swallows (Complete with saliva only)
- OUTCOMES: "Use of the maneuver therapeutically may result in increased bulge of the posterior pharyngeal wall, allowing for increased pressure at the junction of the BOT and pharyngeal wall."

(Swigert 2007, p.130)

Masako Manuever

- Doeltgen et al. (2009) in **Evaluation of manometric measures during tongue-hold swallows** observed:
  - Increased valleculae residues, reduced airway closure times, and increased pharyngeal delay times on fluoroscopy

Viewing Deficits on MBS Oral Phase

- Discuss deficits viewed, physiological cause and discuss possible treatment intervention

Viewing Deficits on MBS
Oral Phase

A

Anterior Sulcus Loss
Secondary to Reduced
Lingual Coordination

Viewing Deficits on MBS
Oral Phase

B

Anterior Labial Loss
Secondary to Decreased
Lingual Coordination-Lingual Thrust

Viewing Deficits on MBS
Oral Phase

C

Anterior Labial Loss

Reduced Labial Seal, Lingual Strength and Range Of Motion

Viewing Deficits on MBS
Oral Phase

D

Anterior Sulcus Loss

Secondary To

Reduced Lingual Coordination

with Intact Labial Tension

Viewing Deficits on MBS
Oral Phase

E

Decreased AP Transit

Oral Hold and Lingual Rocking

Commonly Associated with

Dementia and Apraxia

Viewing Deficits on MBS
Oral Phase

F

Reduced Lingual Strength

Resulting in Lingual Surface Residue

Viewing Deficits on MBS
Oral Phase

G

Loss into Lateral Sulcus

Reduced Lingual Coordination, Possible Impairment of Range Of Motion

Viewing Deficits on MBS
Oral Phase

H

Decreased Lingual Range of Motion

Resulting in Impaired Rotary Chew, Bolus Control, & Cohesion

and Lingual Residue

Viewing Deficits on MBS
Oral Phase

I

Decreased and Prolonged Mastication

Secondary to Reduced Lingual

Strength and Coordination

Viewing Deficits on MBS
Oral Phase

J

Mid and Back Lingual Surface and
Palatal Residue

Secondary to Reduced Lingual Strength

Viewing Deficits on MBS
Oral Phase

K

Increased AP Transit Time with Reduced Bolus Cohesion

Secondary to Reduced Lingual Coordination

Viewing Deficits on MBS
Oral Phase

L

Reduced Lingual Strength and Coordination Resulting in Impaired Lingual-Velar Seal and Residue on the Lingual-Palatal Surface

Viewing Deficits on MBS
Oral Phase

M

Lateral Sulcus Residue

Secondary to Reduced Buccal Tone

Viewing Deficits on MBS
Pharyngeal Phase

N

Reduced Base Of Tongue Retraction
Resulting in Valleculae Residue

Viewing Deficits on MBS
Pharyngeal Phase

O

Reduced Base Of Tongue Retraction and Epiglottic Inversion

Resulting in Valleculae Residue

Viewing Deficits on MBS
Pharyngeal Phase

P

Increased Stage Transition Duration

Viewing Deficits on MBS
Pharyngeal Phase

Q

Pyriform Residue Resulting in Poor
UES Opening

Viewing Deficits on MBS
Pharyngeal Phase

R

Reduced Hyo-Laryngeal
Elevation and Excursion
and Base Of Tongue Retraction
Resulting in Valleculae
and Pyriform Sinus Residue

Viewing Deficits on MBS
Pharyngeal Phase

S

Penetration of Liquid Before the Swallow Secondary To Premature Loss

Viewing Deficits on MBS
Pharyngeal Phase

T

Penetration During The Swallow Secondary to Reduced Airway Closure

Viewing Deficits on MBS
Pharyngeal Phase

U

Penetration Before the Swallow

Secondary To A Swallow Delay

Viewing Deficits on MBS
Pharyngeal Phase

V

Penetration During the Swallow
Secondary to

Relaxation of Airway Closure

Viewing Deficits on MBS Pharyngeal Phase

W

Penetration After the Swallow
Secondary to

Residue from the Pyriforms

Viewing Deficits on MBS Pharyngeal Phase

X

SILENT ASPIRATION

Secondary to Sensory Impairment

Viewing Deficits on MBS
Pharyngeal Phase

Y

Aspiration Before the Swallow
Secondary to Premature Loss

Viewing Deficits on MBS
Pharyngeal Phase

Z

Aspiration After the Swallow from
Residue on the Aryepiglottic Folds

Viewing Compensatory Techniques on MBS

AA

Liquid wash with Dry Swallow

to Decrease Residue

Viewing Compensatory Techniques on MBS

BB

Liquid Alternation To Decrease Residue

Viewing Compensatory Techniques on MBS

CC

Effortful Swallow to Reduce Residue

Viewing Compensatory Techniques on MBS

DD

Chin Down

Viewing Compensatory Techniques on MBS

EE

Left Head Turn

to Eliminate Pharyngeal Residue

Viewing Compensatory Techniques on MBS

FF

Chin Down with Cough Re-Swallow to Eliminate Penetration

(Modified Supraglottic Swallow - used if limited ability to follow commands, or coordination deficit)

Viewing Compensatory Techniques on MBS

GG

3 Second Oral Preparatory Swallow Decreases Penetration

Viewing Compensatory Techniques on MBS

HH

Viscosity Change

to Eliminate Aspiration

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Course Exam – Questions 1-5

Have your Preview Exam or pencil/paper ready for recording your answers to Exam Questions 1-5. You will need to enter those answers into our online system after this course is done. Questions 6-10 may simply be answered online.

Choose the Appropriate Compensatory Technique to Use for the Deficits Presented in each of the following 5 videos:

Exam Question 1 – Video 1

1.

A. Chin Down
B. Supraglottic Swallow
C. Head Turn
D. None of the above

Exam Question 2 – Video 2

2.

A. Left Head Turn
B. Supraglottic Swallow
C. 3 second Oral Preparatory Swallow
D. None of the above

Exam Question 3 – Video 3

3.

a. Liquid Wash After Solid
b. Chin Down
c. Cough/Reswallow
d. None of the above

Exam Question 4 – Video 4

4.

a. Dry Swallow
b. Left Head Turn
c. Chin Down
d. None of the above

Exam Question 5 – Video 5

5.

a. Chin Down
b. Left Head Turn
c. Supraglottic Swallow
d. None of the above