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Dysphagia after Traumatic Brain Injury: Treatment

Erin O. Mattingly, MA, CCC-SLP, CBIS

Moderated by:
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Dysphagia After Traumatic Brain Injury: Treatment

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- Financial disclosures: None. I have not received any compensation from test, treatment, or application developers or publishers. These recommendations are based off of my clinical experience.
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Learning Outcomes

After this course, participants will be able to:

- Define restorative/rehabilitation treatment and compensatory treatment for dysphagia.
- Describe alternative means of nutrition for survivors of TBI.
- List three factors to consider when beginning dysphagia treatment.

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TBI Etiology

- TBI is "a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head or a penetrating head injury." (Marr & Coronado, 2004)
  - Alteration is defined as "any period of loss of or a decreased LOC, any loss of memory for events immediately before (retrograde amnesia) or after the injury (post traumatic amnesia); neurologic deficits or any alteration in mental state at the time of the injury (confusion, disorientation, slowed thinking, etc.)" (Menon, Schwab, Wright, & Maas, 2010)

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TBI Epidemiology

- An estimated 10 million people worldwide experience a TBI annually. (Zhou et al., 2013)
- An estimated 2.8 million people sustain a TBI annually in the U.S. (Taylor, Bell, Breiding, & Xu, 2017)
- TBI is a contributing factor to a third (30%) of all injury-related deaths in the United States. (Taylor, Bell, Breiding, & Xu, 2017)

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TBI Epidemiology

- Children aged 0–4 years, adolescents aged 15–19 years, and adults aged 75 years and older are among the most likely to have a TBI-related emergency department visit or to be hospitalized for a TBI (Faul & Coronado, 2015)
- Estimated Average Percentage of Annual TBI by External Cause in the United States (Taylor, Bell, Breiding, & Xu, 2017)
  - Falls – 47%
  - Struck By/Against – 15%
  - Motor Vehicle – 14%
  - Assault – 9%

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TBI Epidemiology

- Leading causes of non-fatal TBI in the United States:
  - Falls (35%)
  - Motor vehicle-related injuries (17%),
  - and strikes or blows to the head from or against an object (17%), such as in sports injuries (Faul & Coronado, 2015)
- Majority of TBI in United States is mild in nature (concussion) and mild TBI rarely results in dysphagia

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Dysphagia

- Problems involving the oral cavity, pharynx, esophagus, or gastroesophageal junction (ASHA Dysphagia Practice Portal)
- Can result in dehydration, malnutrition, aspiration pneumonia, other lung disease processes, and possibly death

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Dysphagia following TBI

- Incidence of dysphagia is as high as 93% in patients admitted to rehabilitation for TBI (Hansen, Engberg, & Larsen, 2008)
- Complex and multifactorial in nature
  - Neurological impairment
  - Cognitive communication impairment
  - Behavioral impairment

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Dysphagia following TBI

- Dysphagia caused by neurological impairment impacting the three phases of the swallow (oral preparatory, oral, and pharyngeal)
- Other items impacting swallow post-TBI :
  - Medication (e.g., sedation, pain, etc.)
  - Ventilation
  - Physical injury (e.g., head/neck, etc.)
- What else can impact swallowing post-TBI?

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Impact of Cognitive Communication and Behavioral Deficits on Swallowing

- Attention and arousal
- Memory
- Executive functioning
- Behavior and agitation

CONTINUED

Impact of Cognitive Communication and Behavioral Deficits on Swallowing

- Inattention, may not see food in front of them, highly distractible may forget to eat or eat impulsively
- Low arousal may cause swallow trigger delay
- May forget appropriate consistency if on thickened liquids or forget compensatory strategies such as slowed rate, etc.

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Impact of Cognitive Communication and Behavioral Deficits on Swallowing

- Executive dysfunction may result in planning and organizing problems, may not apply/carryover strategies to “real life” eating situations
- Behavior/agitation: outbursts may create higher risk for aspiration and choking or inadequate oral intake

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Assessment of Dysphagia

- All assessment should begin with:
  - Patient history
  - Oral motor examination
    - Cranial nerve involvement (e.g., CN VII- facial nerve)
    - Dentition
  - Cognitive-communication screen
  - Observation of function
- Instrumental
- Non-instrumental

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Primary Goals of Dysphagia Intervention (ASHA; Adult Dysphagia Practice Portal)

- "Safely support adequate nutrition and hydration and return to safe and efficient oral intake
- Determine the optimum feeding methods/technique to maximize swallowing safety and feeding efficiency;
- Minimize the risk of pulmonary complications;
- Reduce patient and caregiver burden while maximizing the patient's quality of life; and
- Develop treatment plans to improve safety and efficiency of the swallow."

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Treatment of Dysphagia

- Clinical (non-instrumental) and/or instrumental assessment should *always* occur prior to initiating treatment
- Rehabilitative/Restorative
  - Restoration of function
- Compensatory
  - Strategies, diet modification, etc.
  - Goal is not to restore function, but prevent aspiration or signs/symptoms of dysphagia (Vose, Nonnenmacher, Singer, & González-Fernández, 2014)
- Both

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Rehabilitative/Restorative Exercise

- Exercises that impact "swallowing physiology and bolus flow" (Vose, Nonnenmacher, Singer, & González-Fernández, 2014)
- Tongue hold
  - For decreased contact between tongue base and pharyngeal wall
- Shaker exercise
  - For decreased UES opening and weakness of suprahyoid muscles (Shaker et al., 1997)

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Compensatory Strategies

- Diet changes
  - Thickened liquids (thin, nectar, honey)
  - Puree (Level I)
  - Mechanical soft (Level II)
    - Cooked, ground, soft
  - Mechanically advanced (Level III)
    - Cooked, chopped, softened
  - Regular/solid (Level IV)

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Compensatory Strategies

- Chin tuck
  - Decreased airway protection due to delayed swallow and/or reduced tongue base retraction (Logemann, 1998)
- Head turn
  - Unilateral pharyngeal or laryngeal weakness (Logemann, Kahrilas, Kobara, Vakil, 1989)
- Head tilt
  - Unilateral oral weakness (Logemann, 1998)

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Compensatory Strategies

- Positioning and Posture
  - Prone/supine/upright/side lying
  - Abdominal binder for diaphragmatic support
  - Stander
  - In bed, head in bed as close to 90 as possible
  - Head facing forward if possible
    - Ineffective positioning can result in unwanted head tilt/turn

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Compensatory & Rehabilitative

- Supraglottic swallow
  - Reduced airway protection
- Supra-supraglottic swallow
  - Reduced airway closure (Martin, Logemann, Shaker, Dodds, 1993)
- Effortful swallow
  - Vallecular and/or pyriform sinus residue and reduced airway closure (Kahrilas, Logemann, Krugler, & Flanagan, 1991)

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Compensatory & Rehabilitative

- Mendelsohn maneuver
  - Decreased hyolaryngeal excursion and/or decreased duration of UES opening (Kahrilas, Logemann, Krugler, & Flanagan, 1991)

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Dysphagia Treatment

- Best swallowing treatment is…

SWALLOWING!

CONTINUED

Dysphagia Treatment

- Oral motor exercises
  - Also known as:
    - Oral sensory-motor treatment
    - Non-speech oral movements/exercises
    - Others
  - "to improve swallowing physiology, pulmonary health, functional swallowing outcomes, or drooling/secretion management" (Lazarus, Clark, Arvedson, Schooling, & Fymark, 2011)

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Dysphagia Treatment

- Oral motor exercises
  - "No evidence was identified relating to any form of restorative exercises in dysphagic patients post-TBI." (Scottish Intercollegiate Guidelines Network, 2013)
  - "Few efficacy studies have been conducted on the use of OSMT to improve swallowing in adults. Based on the results of this review, there is insufficient evidence to draw any conclusions on the utility of OSMT in dysphagia treatment." (Lazarus, Clark, Arvedson, Schooling, & Fymark, 2011)
  - "Evidence for the clinical value of NSOMs appears to be stronger for swallowing disorders and obstructive sleep apnea syndrome, but the evidence base is best regarded as nascent." (Kent, 2015)

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Dysphagia Treatment

- Oral motor exercises
  - Need additional research and studies producing a higher level of evidence.
  - Should include:
    - "experimental design,
    - calculable effect size, blinding of examiners, reliable and valid interventions, outcome measures, and
    - adequate information that is replicable" (Lazarus, Clark, Arvedson, Schooling, & Fymark, 2011)

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Oral Care and Hygiene

- Evidence supports that poor oral hygiene is a risk factor for aspiration pneumonia (Terpenning, Taylor, Lopatin, Kerr, Dominguez, & Loesche, 2001)
- Oral care and hygiene programs are critical in the hospital setting for prevention of infection and pneumonia and lead to improved clinical outcomes
  - Toothbrush and paste is shown to be most effective
  - Sponges are not as effective
  - Best oral rinse not determined but research does mention clorhexidine in rinse or gel form as antimicrobial (Berry, Davidson, Masters, & Rolls, 2007; Yagmur, 2016)

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Oral Care and Hygiene

- Because there are not always standardized oral care protocols, important to educate staff about importance
- Implement an oral care protocol (frequency (e.g., Q2, Q4, etc.), use suction, brush with toothpaste, oral rinse, etc.)

CONTINUED

Frazier Free Water Protocol

- A means of increasing hydration and quality of life
- Based on patient noncompliance with thickening liquids as well as research supporting safety of water when aspirated
  - Human body is made up of 60% water and when small amounts are aspirated, water is quickly absorbed into the lungs and tissue
  - Water has a neutral pH
- Oral hygiene is a must prior to consuming water in order to decrease bacteria; aggressive care 3-4 x daily (Reber & Council, 2018)

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Frazier Free Water Protocol

- Patient on thickened liquids or NPO allowed to have thin liquids but no other type of thins
  - Positioning strategies should be used if appropriate
  - Meds should not be given with thins
  - If excessive coughing or signs of aspiration, not appropriate
  - On oral diet, thin liquids between meals but not during (if on thickened liquids)
    - Unrestricted before meals and 30 minutes after
- Family and staff education is a must
  - Post in room

CONTINUED

Disordered Consciousness

- RLAS I-III or medically induced coma
  - Can you even evaluate?
  - How do you evaluate?
  - Do you try to feed?
    - Most regular, consistent feedings begin at RLAS IV

CONTINUED

Disordered Consciousness

- Alternative means of nutrition
  - Nasogastric Tube (evidence shows NLT 14 days)
  - Percutaneous Gastronomy Tube (PEG)/G-tube
  - IV nutrition (TPN)
- Benefit of oral feeding trials in patients with impaired cognitive status
  - Stimulation
  - Reflexive bite, chew, etc.
  - Response can be indicator of emerging, progressing status

CONTINUED

Family Education and Training

- Oral care
- Compensatory strategies
  - Positioning
  - Diet modifications

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Case Study: Oral Care and Family Education

- 23 year old, Caucasian male, unrestrained driver, status post motor vehicle accident: car versus tree. Patient was unconscious at the scene and presented as a GCS 8 upon arrival to the emergency room. CT revealed large left subdural hematoma in addition to substantial subarachnoid hemorrhage. Left frontal craniotomy was performed and patient was mechanically ventilated via oral intubation while stabilized in ICU. Patient presents to your inpatient unit with left frontal skull defect, breathing room air, as an RLAS V.

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Case Study

- Where do you start?
- What type of assessment will you use?
- What are some cognitive-communication and behavioral deficits you may observe?
- Where do you start treatment?
- What do you teach the family?

CONTINUED

Summary/Question and Answer

- Dysphagia in TBI is complex and multifactorial
- Cognitive-communication and behavioral influence
- Compensatory vs. Restorative/Rehabilitative Strategies
- Oral Care and Hygiene
- Family Education

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