A Preliminary Videofluoroscopic Investigation of Swallowing Physiology and Function in People Living with Severe Dementia

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Purpose: Dysphagia is a common symptom experienced by people living with dementia (PwD), particularly for those with advanced disease progression. However, we lack understanding of the discrete changes in swallowing physiology seen in this subset of the population, leading to questions surrounding optimal management approaches during late stages of the disease. This prospective study sought to describe the pathophysiology of dysphagia in PwD presenting with severe cognitive impairment using videofluoroscopy swallowing studies (VFs).

Learning Objective:
- Identify the pathophysiologic swallowing mechanisms in people living with severe dementia.

Characterizing effortful swallows from healthy community dwelling adults across the lifespan using HRCA signals and MBSImP scores

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Purpose: There is high demand for inexpensive, non-invasive, portable tools that can accurately measure swallow function and determine appropriate treatment plans for patients with dysphagia. High-resolution cervical auscultation (HRCA) is a non-invasive sensor-based technology that uses acoustic and vibratory signals combined with advanced signal processing and machine learning techniques to quantify swallowing physiology. HRCA has determined swallowing safety (penetration-aspiration scale), annotated swallow kinematic events (e.g. hyoid bone displacement, laryngeal vestibule closure, duration of upper esophageal sphincter opening), and differentiated between swallows from healthy people and swallows from various patient populations with a high degree of accuracy. This study aimed to determine 1. Whether HRCA can differentiate between non-effortful and effortful swallows; 2. Whether there are differences in MBSImP components (#9, #11, #14) between non-effortful and effortful swallows. We hypothesized that HRCA would classify non-effortful and effortful swallows with a high degree of accuracy and that there would be differences in MBSImP scores between swallows.

Learning Objective:
- Discuss the potential use of HRCA as a biofeedback method in dysphagia treatment.

Comparison of Lingual Pressure Generation Capacity in Amyotrophic Lateral Sclerosis, Parkinson Disease and Healthy Aging

AUTHORS (LAST NAME, FIRST NAME): Gandhi, Pooja3, 1; Plowman, Emily K.2; Steele, Catriona M.3, 1
**Purpose**: The tongue plays a key role in bolus propulsion in swallowing, with reduced tongue pressures thought to represent a risk for impaired swallowing safety and efficiency. Measures of maximum anterior isometric pressure (“MAIP”) and regular effort saliva swallows (“RESS”) can be used to quantify tongue strength and lingual functional reserve (“LFR”, i.e., MAIP-RESS). We aimed to profile and compare lingual pressure generation capacity in patients with Amyotrophic Lateral Sclerosis (ALS), Parkinson Disease (PD) and in healthy adults over the age of 60. We hypothesized that both patient cohorts would demonstrate reduced MAIP and RESS compared to the healthy control group, with the greatest reductions expected in the ALS cohort.

**Learning Objective:**
- Discuss profiles of lingual pressure generation capacities in patients with Amyotrophic Lateral Sclerosis (ALS), Parkinson Disease (PD) and in healthy adults in order to better understand if tongue pressure measures serve as biomarkers of swallowing impairment.

**Comparison of patient reported and caregiver reported swallowing-related quality-of-life in Parkinson’s disease**

**AUTHORS (LAST NAME, FIRST NAME):** Zimmerman, Allison S.1; Garand, Kendrea L.1; Estis, Julie1; Shune, Samantha2; Smith, Kimberly1

**Purpose**: To identify if differences existed between patient- and caregiver-reported swallowing-related quality-of-life in patients with Parkinson’s disease (PD). To identify potential factors influencing differences between patient and caregiver scores.

**Learning Objective:**
- Describe differences in swallowing-related quality-of-life scores reported between patients with Parkinson’s disease and their caregivers.
- Identify one factor that influences caregiver-reported swallowing-related quality-of-life.

**Distinct Surgical and Endotracheal Risk Factors are Associated with Aspiration and Vocal Fold Paralysis in Cardiovascular Surgery Patients.**

**AUTHORS (LAST NAME, FIRST NAME):** Plowman, Emily K.1, 2; Anderson, Amber3, 2; Dallal York, Justine3, 2; DiBiase, Lauren3, 2; Eckart Iszler, Julia4, 2; Lawrence, Shelby4, 2; Jeng, Eric5; Chheda, Neil6

**Purpose**: Risk factors for aspiration and vocal fold mobility impairment (VFMI) in cardiovascular surgical patients are currently unclear. This knowledge gap has hindered implementation of triaged postoperative care pathways and development of preventative best practices guidelines. We therefore examined risk factors associated with aspiration and VFMI in postoperative cardiovascular patients.

**Learning Objective:**
- Identify factors associated with aspiration in cardiac surgical patients.

**Dysphagia in Lung Transplant Recipients: Prevalence, Risk Factors and Health-Related Outcomes.**
AUTHORS (LAST NAME, FIRST NAME): Dallal York, Justine1, 5; Colsky, Jennifer2; Croft, Kayla3; Segalewitz, Tara3; Machuca, Tiago4; DiBiase, Lauren1, 5; Anderson, Amber1, 5; Plowman, Emily K.6, 5

Purpose: Although lung transplantation (LT) remains the definitive therapy for end-stage respiratory disease, current 5-year survival rates of ~56%1-3 highlight the need for improved postoperative care.4 Given the high risk for postoperative dysphagia, we aimed to determine the prevalence, risk factors and associated outcomes of dysphagia in postoperative LT patients.

Learning Objective:
- Discuss the high prevalence, risk factors, and poor patient outcomes associated with postextubation dysphagia after lung transplantation.

Examining the Influence of Respiratory-Swallow Coordination on Penetration-Aspiration in Parkinson’s Disease

AUTHORS (LAST NAME, FIRST NAME): Curtis, James A.1; Kiefer, Brianna1; Troche, Michelle S.1

Purpose: Respiratory-swallow coordination (RSC) is thought to be critical for safe and efficient swallowing. Suboptimal RSC has been reported in Parkinson’s disease (PD) and is characterized, in part, by prolonged respiratory pauses, and by swallows without the exhale-swallow-exhale pattern. The aims of this study were: (1) to examine if RSC changes as a function of swallowing tasks in PD: and (2) to assess the influence of suboptimal RSC on penetration-aspiration in PD.

Learning Objective:
- Describe how respiratory-swallow coordination (RSC) changes as a function of swallowing tasks in Parkinson's disease;
- Describe what types of RSC behaviors increase the likelihood of penetration-aspiration in Parkinson's disease.

Lingual Pressure Impairment Thresholds for Unsafe and Inefficient Swallowing in ALS

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Purpose: Reduced lingual strength is reported in people with ALS (pALS) that is associated with unsafe and inefficient swallowing. In limb motor and autonomic systems, critical reserve depletion thresholds have been identified that once reached give rise to impairment in subserving functions. It is currently unclear if a critical depletion threshold exists for lingual strength and swallowing function. We therefore aimed to identify lingual pressure depletion thresholds (LDT) for impairments in swallowing safety and efficiency in pALS.

Learning Objective:
- Demonstrate an understanding of functional reserve depletion thresholds for swallowing impairment in individuals with ALS.
Sarcopenia and dysphagia risk in Parkinson’s Disease

AUTHORS (LAST NAME, FIRST NAME): Capitelli Dornellas, Ana Luisa1; Pereira da Costa Christianini, Flávia1; Lima, Daniella1; Conessa Ortega, Natalia1; Ponsoni, Adriana1; Guimarães, Rachel1; Mourão, Lucia1

Purpose: Sarcopenia is a condition in aging subjects exacerbated by motor impairment and loss of functional mobility in Parkinson’s Disease (PD). Dysphagia, often present in PD, is also worsened by sarcopenia. Therefore, it is crucial to investigate the association between dysphagia and sarcopenia risk in PD patients through distinct risk assessment instruments and to determine their correlation with sociodemographical and clinical variables.

Learning Objective:
- Define how sarcopenia impacts swallowing in the PD population.

Scoring the Penetration-Aspiration Scale (PAS) in Two Conditions: A Reliability Study

AUTHORS (LAST NAME, FIRST NAME): Alkhawaiter, Munirah1; Davidson, Kate3; Hopkins-Rossabi, Theresa1; Martin-Harris, Bonnie1, 2

Purpose: The Penetration-Aspiration Scale (PAS) is a widely applied metric for identifying the presence and severity of airway invasion during swallowing, yet variability exists in the scoring conditions used by raters across clinical laboratories. The impact of scoring conditions on PAS reliability has not been investigated and may impact conclusions drawn from study results. This project examined differences in PAS rater reliability and score accuracy between two scoring conditions in student and clinician raters.

Learning Objective:
- Identify variability in Penetration-Aspiration Scale (PAS) scoring conditions used in research studies
- Discuss the potential impact of PAS scoring condition on reliability and accuracy
- Describe the importance of transparency in PAS scoring methods.

Swallowing Impairment Profiles in Individuals with ALS.

AUTHORS (LAST NAME, FIRST NAME): DiBiase, Lauren1, 5; Dallal York, Justine1, 5; Lawrence, Shelby2, 5; Croft, Kayla2, 5; Segalewitz, Tara2, 5; Mackey, Shauna2, 5; Vernon, Grace2, 5; Boesing, Krista2, 5; Leonard, Kelly2, 5; Anderson, Amber1, 5; Herndon, Nicole E.3, 2; Plowman, Emily K.4, 5

Purpose: Although it is well-known that people with ALS (pALS) develop dysphagia, underlying pathophysiologic impairment profiles have not been comprehensively studied. We therefore aimed to: 1) delineate oropharyngeal swallowing impairment profiles and 2) examine relationships between age, disease duration, and ALS onset-type with swallowing impairment in a large group of pALS.

Learning Objective:
- Identify primary physiologic impairment of oropharyngeal dysphagia in ALS.
- Discuss the frequency of most common forms of impairment for oropharyngeal dysphagia in ALS.
Swallowing Pathophysiology in Individuals with ALS

AUTHORS (LAST NAME, FIRST NAME): Tabor-Gray, Lauren1; Robison, Raele2; Plowman, Emily K.3

Purpose: Dysphagia is reported to occur in 85% of people with ALS (pALS), with unsafe swallowing characterized by impairments in airway kinematics and timing (Waito, 2020). We aimed to compare temporal and kinematic physiologic metrics of swallowing in pALS to established normative reference values and examine relationships between swallowing physiology and safety.

Learning Objective:
- Describe physiologic mechanisms contributing to dysphagia in pALS.

Within-subject Changes to Swallowing Metrics after Anterior Cervical Discectomy and Fusion Surgery

AUTHORS (LAST NAME, FIRST NAME): Molfenter, Sonja M.1; Carambot, Nicole2; Frempong-Boadu, Anthony2; Balou, Matina3

Purpose: The reported incidence of dysphagia post-ACDF varies widely (6.5 to 71%) which is in part attributable to differences and inadequacies in the methods for capturing dysphagia. Many studies employ non-validated questionnaires about swallowing, fail to capture pre-surgical swallowing function, and/or do not standardize the time post-surgery for measurement. The purpose of this study was to prospectively establish within-subject changes to swallowing function as the result of ACDF at our institution using validated patient-reported outcome (PRO) and diet scale metrics.

Learning Objective:
- Describe the impact of acdf surgery on patient reported outcome measures of swallowing function.
- Describe the impact of acdf surgery on diet tolerance.