Management of Voice, Speech and Swallowing Issues in PD

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About Me

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Today’s Learning Objectives

- Talk about normal communication and swallowing function
- Talk about signs and symptoms of abnormal communication and swallowing function
- Talk about why progressive changes happen in these domains for persons with PD
- Talk about the role of a SLP in evaluation and treatment
- Talk about common management and treatment options
The WHY?

- Why are speech and swallowing function so important?
- The average person swallows about 900 times per day
  - 1x per minute while awake
  - 3x per hour while sleeping
  - Even more during a meal!!!!
- Most professionals spend 50-80% of their day communicating, 2/3rd in that for actual talking
Swallowing is a complex event involving ~50 pairs of muscles and many sensory and motor cranial nerves. It’s mostly an automatic process, but both the cortical and brainstem regions of our brain provide neural input. The muscles in our head and neck execute the motor plans for swallowing once signals are sent from the brain via cranial nerves.
Normal Swallowing (cont.)

- So how does it work?
- We break swallowing down into roughly 3 phases or stages
  - Oral (*aka mouth*)
  - Pharyngeal (*aka throat*)
  - Esophageal (*aka esophagus or food pipe*)
- They are interdependent of one another
- This highly sequenced event can last ~1 second in a healthy adult
Normal Communication

- Communication is also a complex event that involves multiple brain networks and ~100 muscles.
- Requires many different processes, from putting thoughts into words, forming a comprehensible sentence, and then physical production of voice and speech.
Normal Communication

- To simplify things….
  - Voice is sound production
  - Speech is the modified “final product”

- Voice production depends on
  - An air pressure system
  - A vibratory system
  - A resonatory system

- Speech production depends on
  - Movement of the palate, tongue, lips, teeth, etc. to shape each sound
Normal Communication

How does it work?

- Diaphragm contracts and expand vertically to lift the rib cage and inflate the lungs
- When it’s time to speak, air is forcibly thrusted upwards to the larynx until high pressures cause the vocal folds to blow open/closed
- High speed movement of air through the vocal folds causes sound vibration
- This sound wave is then resonated upwards into the throat, mouth and nasal tracts
- We position the velum, tongue, jaw, lips, teeth against other parts of vocal tract to shape sound
WHAT HAPPENS WHEN THINGS GO WRONG?
Abnormal Swallowing

Better Question: What happens when things don’t go perfectly right?!

- Swallowing events require so many things to be perfect
  - Good awareness of what the person is eating/drinking
  - Good posture and alertness
  - Good strength, tone and range-of-motion in all the muscle groups
  - Good timing and coordination of muscle movement

**Result: it’s really EASY for something to be “off”**

- **Dysphagia** is the medical term most widely used to refer to any kind of swallowing difficulty, abnormality, or discomfort.
Persons with PD have these primary motor impairments:
- Bradykinesia (small movement)
- Rigidity (stiff movement)
- Akinesia (lack of movement)
- Dyskinesia (extra abnormal movements)

They can impact the swallow and speech muscles the same way they impact the muscles in our arms, legs, trunk, etc.
- E.g. Lung movement for speech breathing
- E.g. Pharyngeal movement for bolus clearance
Signs and Symptoms

**Oral Stage**

- Chewing is slow and/or effortful
- Food, liquid or saliva pools out the front of the mouth
- Fast, impulsive eating or drinking (e.g. over-stuffing, “chugging”)
- Holding food in the mouth for prolonged periods before swallowing
- “Pocketing” food or liquid in the cheek cavities
- Prolonged mealtimes

**Pharyngeal + Esophageal**

- Increased effort to start a swallow
- Coughing
- Throat clearing
- Wet voice after swallowing
- Feeling like something is sticking in the throat
- Choking sensation
- Having to swallow multiple times to get something down
Consequences

- Vary from patient to patient
  - Onset
  - Frequency
  - Severity

- Includes things like:
  - Dehydration and malnutrition
  - Unintentional weight loss
  - Pneumonia or other pulmonary complications
  - Death
  - Increased health care costs
  - Disinterest or reduced enjoyment in meals
  - Embarrassment
  - Social isolation
  - Overall reduced quality of life
Abnormal Communication

Terminology:

- **Dysphonia**: medical term that refers specifically to disorders of the voice only
- **Dysarthria**: medical term that refers to dysfunction at one or many levels of the speech mechanism (e.g. respiratory, laryngeal, articulatory, rate, resonatory, prosody, etc).
- Patients with PD typically have a “hypokinetic dysarthria”

Signs

- Vocal intensity (volume) is low
- Vocal quality is breathy, weak and hoarse
- Speed becomes fast and indistinguishable
- Articulation becomes small and blurred
- Prosody is monotone
- May occasionally stutter
Consequences

- Vary from patient to patient
  - Onset
  - Frequency
  - Severity

- Includes things like:
  - Vocal discomfort or pain
  - Miscommunications
  - Early retirement or forced unemployment
  - Disinterest or reduced enjoyment in social gatherings/functions
  - Embarrassment
  - Depression
  - Social isolation and social anxiety
  - Overall reduced quality of life
SO WHAT CAN WE DO?
Role of The SLP

- Speech-Language Pathologists have a wide scope of practice
  - Speech production and fluency
  - Language and cognition
  - Voice and resonance
  - Feeding and swallowing
  - Auditory rehabilitation

- We see people across the lifespan

- Many SLPs are trained to be generalists, but some are more specialized in working with neurologic conditions

- Physicians can refer a patient to see an SLP for communication and swallowing problems, just like they refer for PT and OT
Role of the SLP for Swallowing

Step 1: Evaluation

- SLPs have 3 different types of evaluations they can conduct with a patient

- Each evaluation type has its own positive and negative features

- Certain factors may determine which type(s) a patient receives
  - Clinician’s preference
  - Facility and equipment limitations
  - Nature and severity of the patient’s dysphagia symptoms
  - Medical fragility of patient
Role of the SLP Treatment

Step 2: Treatment

- Once the SLP knows the physiological reason *why*, treatment can begin
- Treatment recommendations are usually broken down into 3 areas

- Dietary Modifications
- Behavioral Adaptations + Strategies
- Therapeutic Exercises

- Unfortunately, there’s no specific medication(s) or surgery that can fix the whole problem
Dietary Modifications

- Based on the evaluation....

- Certain consistencies of food and/or liquid may need to be altered, avoided, or eliminated from diet

- Commercial thickening products can be mixed into liquids
  - Sometimes labeled as “nectar thick” or “honey thick”
  - Can be powder or gel-based
  - Don’t need a prescription
  - Examples: SimplyThick, ThickIt, Thick & Easy

- Decisions about feeding tube placement are discussed on an individual basis
Change how you eat + drink

- Small sips/bites
- Slowing down pace of eating
- Alternating liquids/solids
- Taking pills 1x time

Change your posture

- Always be seated upright
- Maintain a neutral chin
- Avoid tilting head back
- Chin tuck or head turns can be used as effective maneuvers for some
Therapeutic Exercise

- Swallowing exercises can be helpful early in the course of disease
  - Not everyone is a candidate

- Exercises are NOT “one size fits all”
  - SLPs base them on the different types of physiologic impairments that they see (e.g. tongue versus throat muscles)

- The exercise program also can vary
  - Intensity
  - Frequency
  - Duration

- Outcomes are not always visible; goal is sometimes to maintain rather than improve

- Maintenance is required for upkeep
Medical Dysphagia Interventions from Physician

- **Drooling**
  - A neurologist or ENT can provide Botox injections to the salivary glands in severe cases of drooling
  - Must be done every 3-4x months for continued benefit
  - There are also medications that can be taken daily to prevent secretion production
  - Neither are a perfect fix!

- **Vocal Fold Immobility**
  - If there is paresis or paralysis in the vocal folds, ENTs can recommend injections or surgical interventions to improve closure
Role of the SLP for Communication

Step 1: Evaluation

- SLPs need to hear you talk!
  - Examination of the oral mechanism and testing cranial nerve function
  - Complete speech and non-speech tasks to see how each mechanism is functioning
    - Julie to give examples
  - IF needed, Pt may need to undergo a laryngoscopy to look at laryngeal function for things like:
    - Incomplete glottal closure
    - Muscle tension
    - Cysts or nodules
Role of the SLP Treatment

Step 2: Treatment

- Once the SLP knows which speech mechanisms are impaired, treatment can begin.

- Treatment recommendations are usually broken down into 2 areas:
  - Behavioral Adaptations + Strategies
  - Therapeutic Exercises

- Again, there’s no specific medication(s) or surgery that can fix the whole problem.
Behavioral Adaptations + Strategies

Change how you talk

- Maintain an upright posture when talking
- Deep breath before every sentence
- Pace yourself to one word at a time
- Keep mouth open and over-exaggerate each sound
- Always say a topic sentence first so people know the context
- Directly face the person you’re talking to
- Plan important conversations for when you’re at your best

Change how they listen

- Turn off background noise
- Ask closed questions (e.g. yes-no, multiple choice)
- Repeat portions that you did understand
- Give constructive and supportive feedback
Therapeutic Exercise

- Speech exercises can be started early on and maintained throughout the disease span

- Like with swallowing, the exercise programs also can vary
  - Intensity
  - Frequency
  - Duration

- Maintenance is **REQUIRED** for upkeep (“USE IT OR LOSE IT”)

- Several different programs out there:
  - Lee Silverman Voice Therapy (“LSVT LOUD”)
  - Parkinson’s Voice Project (“SpeakOut”)
  - Respiratory Muscle Strength Training programs (EMST + IMST)

- Most patients do best with a combination of strength training and behavioral training
Medical Dysphonia Interventions from Physician

- As with dysphagia, ENT can utilize injectables to help with laryngeal pathologies impacting the voice such as:
  - Vocal bowing and tissue loss
  - Incomplete glottal close during phonation
  - Extra muscle tension in the laryngeal structures

- Best outcomes are achieved when ENT procedures are paired with therapy exercises from SLP.
Assistive Technology

- When voice and speech production become arduous, technology can always step in to help

- Low tech options
  - Letter boards
  - Picture boards

- High tech options
  - Speech generating apps on iPhone, iPad, computer
  - Personal amplification devices (e.g. microphones)
  - SpeechVive device ™
Impairments to communication and swallowing are frequent and disabling symptoms for persons with PD

Most all persons with PD will experience symptoms of dysphonia, dysarthria, or dysphagia at some point in their disease

The onset time, progression and severity of these symptoms varies from patient to patient

The SLP plays an important role in the management of progressive communication and swallowing disorders

Evaluation + treatment options vary depending on the facility location/resources, clinician preferences, and individual circumstances

THERE IS HOPE!!!
Resources

- American Speech-Language-Hearing Association (ASHA):
  https://www.asha.org/practice-portal/clinical-topics/adult-dysphagia/
  https://www.asha.org/public/speech/disorders/dysarthria/

- National Foundation for Swallowing Disorders:
  https://swallowingdisorderfoundation.com/

- American Board of Swallowing and Swallowing Disorders:
  https://www.swallowingdisorders.org/
  - *Use their “Find a Specialist” feature!

- Dysphagia Research Society: https://www.dysphagiaresearch.org/

- International Dysphagia Diet Standardization Initiative (IDDSI):
  https://iddsi.org/Resources/Patient-Handouts

- Parkinson’s Foundation https://www.parkinson.org/speech-swallowing-library