



## SLP and Parkinson's Disease (PD)

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### Abstract

PD is one of the most common non-curable neurological disorders. It is a progressive disorder that affects movement and develops gradually, starting with a little noticeable tremor in just one hand. In early stages of PD, face may show little or no expression, arms may not swing on walking. Speech may become soft or slurred and over time symptoms worsen as the condition progresses.

**Keywords:** Parkinson's disease; Causes; Diagnosis

### Pathology of Parkinson's Disease

In PD, certain nerve cells in brain gradually break down or die. Many of PD symptoms are due to a loss of neurons producing (dopamine) in brain causing abnormal brain activity [1-7].

### Risk factors for Parkinson's disease

**Age:** Begins in middle or late life, and risk increases with age. It is usually developed around age 60 or older.

**Heredity:** Increases the chances to develop the disease.

**Sex:** Men>women.

**Exposure to toxins:** Herbicides and pesticides increase risk.

### Causes of Parkinson's disease

Genes, environmental triggers, presence of Lewy bodies and Alpha-synuclein.

### Clinical picture of Parkinson's disease

- Tremor (at rest) and slowed movement (bradykinesia).
- Impaired posture or balance problems and sleep disorders.
- Rigid muscles and Loss of automatic movements.
- Speech changes: May speak softly, quickly, slur or hesitate before talking. Speech may be monotonous rather than with usual inflections.
- Swallowing problems: As the condition progresses, swallowing difficulties may develop.
- Voice disorders: may be softer, breathy, or hoarse. Voice tone may become monotonous, lacking the normal ups and downs.
- Writing changes, difficult thinking and depression.
- Smell dysfunction, Fatigue, Pain, Sexual dysfunction.
- Bladder problems, Constipation, Blood pressure changes.

### Alarming signs of Parkinson's disease

- Loss of appetite or refusal to eat or unexplained weight loss.
- Choking or repeated food clearance.
- Swallowed food backs up and enters the nose.
- Difficult chewing, coughing during or after swallowing and pain in throat or chest.
- Frequent throat clearing, a hoarse voice or sore throat.
- Hesitated swallowing or food may stick in throat after swallowing. Difficult medication swallowing.
- Dehydration or recurring chest infections or drooling.
- Change in voice quality and a gurgled voice after swallowing
- Reflux or heartburn or a need to sip water often to swallow food and taking a long time to finish a meal.
- Aspiration pneumonia or upper respiratory infection.
- Diagnosis of Parkinson's disease :
- Clinical evaluation:
- Taking a medical history and assessment of mental ability.
- Management of saliva and sensation in mouth.
- Examine mouth structure and function (lips, tongue, jaw and cheeks).
- Assess function of larynx, cough function and chewing ability.
- Test quality and timing of the conscious swallowing reflexes and testing reflexive swallow with various food and liquid consistencies.

### Instrumental evaluation

- Video fluoroscopy swallowing study (VFSS)
- Fiber optic endoscopic evaluation of swallowing (FEES).
- Flexible laryngoscopy for voice disorders.

### Treatment of Parkinson's disease

**Medications:** Dopamine agonists, MAO-B inhibitors and anticholinergics. Life style and home remedies are given below

- **Healthy eating:** A balanced diet, such as omega-3 fatty acids.
- **Exercise:** To increase muscle strength, flexibility and balance.
- **Avoiding falls:** Distribute weight between both feet, and don't lean. Avoid carrying things on walking and avoid walking backward.
- **Daily living activities:** As dressing, eating, bathing and writing.
- **Alternative medicine:** Music or art therapy, yoga, pet therapy and massage.
- **Psychological support:** Depression is common and antidepressants alleviate symptoms.
- **Surgical procedures:** Deep brain stimulation (DBS): with advanced cases.
- **Alternative feeding methods:** Nasogastric feeding and Gastrostomy feeding.
- **Preventive measures of Parkinson's disease:** Caffeine, green tea and regular aerobic exercise may reduce risk.

### Role of SLP in speech disorders in PD

- **Motivate the communication:** Calm environment with reduced noise.

- Speak slowly and use short phrases.
- Look at the person face to face while you are talking.
- Over-articulate speech by prolonging vowels and exaggerating consonants.
- Comfortable posture and position will provide support during long and stressful conversations.
- Exercises demonstrated to strengthen weakening muscles may be counter-productive, so ask for consultation.
- Take periods of vocal rest before conversations or phone calls.
- Use an amplifier in low voice or soft speech.
- Use an alternative air source when you are on a respirator.
- If you are able to write without difficulty, use a paper and a pen to write what you say.
- If writing is difficult, use an alphabet board to point or scan to the first letter of the words that are spoken.
- Spell words loudly or on an alphabet board if they are not intelligible.
- Establish topic before speech and use telegraphic speech.
- Non-verbal communication; augmentative and alternative communication (AAC)
- Effective use of expressions and gestures may decrease speech pressure.

### Role of SLP in voice disorders in PD

SLP can teach several techniques to strengthen voice, such as; Lee Silverman Voice Treatment (LSVT)

- **Warm-up:** While sitting up straight, the patient says “ah” in a loud, clear voice for as long as possible, stopping if the voice becomes scratchy.

- **Vocal stretches:** take a deep breath, and then start at a low pitch and glides up as high as possible saying an “Ah” or “Ee” sound. LSVT LOUD exercises are practiced in 16 sessions/month.

### Benefits of LSVT LOUD exercises are:

- Improving voice quality and loudness.
- Improving articulation and intelligibility of speech.
- Increasing the inflection (modulation of voice tone).

### Voice aerobics

Voice Aerobics is a new exercise program for people with speech changes due to PD, strokes, or any neurological disorders to support posture and vocal functions.

### Voice choral singing therapy (VCST)

This increases respiratory volume and reduce vocal fatigue.

### Role of SLP in swallowing problems in PD

Eat strategies

### Drinking techniques

- Take regular sips of water while eating and take a break between mouthfuls to empty mouth fully.

- Fill the glass when you drink to prevent tilting head backwards causing choke. Or use a special cup designed to drink without tilting head backwards (talk tools).

Eating instructions:

- Eat smaller portions, more meals and frequent snacks.
- Use a teaspoon instead of a dessert spoon to improve small mouthfuls and never eat when you are tired.
- Sit upright for 10 minutes before eating, while eating and for 30 minutes afterwards to improve eating and swallowing.
- Relax and enjoy meal. If you are relaxed your throat is likely to be relaxed also to make swallowing easier.
- Relax throat muscles by yawning before and during eating.
- Chin tuck down to chest to make swallowing easier.
- Avoid any distractions at mealtimes as turning watching TV.
- Check carefully your teeth before eating.
- Brush teeth for 3 times/day and check for any residues in sides of mouth.
- It is important that all who surround you to understand problems with eating to support you and give more time.
- Swallowing difficulties and Parkinson's medication: If there is any problem in swallowing medication, try to swallow with apple sauce or yogurt. You should talk to doctor to prescribe medication in a form that is easier to take.

### Diet modification

- Choose moist soft foods that are easier to eat, as soups, well-cooked meats in sauces, mashed vegetables, custards, jelly, pureed fruit, yoghurt, ice cream and mashed banana.
- Foods with good smell and flavour are easier to swallow.
- Thick drinks as milk shakes and smoothies may be easier to control and swallow than thin drinks.
- A semi-solid diet will make swallowing easier.
- Avoid these foods
- Foods that stick to the roof of the mouth, such as biscuits.
- Dairy products (increase mucous levels) and mixed consistencies.
- Dry, crumbly or hard foods which are harder to swallow.

### Areas of difficulty

Drooling, dry mouth, tongue, facial muscles, teeth, gums and oesophagus.

### Swallow exercises

Shaker Exercise, Hyoid Lift Maneuver, Mendelsohn Maneuver, Effortful Swallow, Supraglottic Swallow, Super Supraglottic Swallow Maneuver.

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