

Perceiving Parkinson's

Enteric Dysfunction In Parkinson's (Day 49)

Parkinson's is a disease of neurons, not just brain - the enteric nervous system is also heavily affected. The involvement of this nervous system may occur years or even decades before the motor symptoms appear; as we now know, enteric dysfunction is a **core feature** of Parkinson's.

The **enteric nervous system** consists of about 500 million neurons buried within the wall of the gut; it controls the functions of the entire gut, from esophagus to colon, and can operate independently of the brain and spinal cord. In Parkinson's, **more than 90%** of the dopamine neurons in the enteric nervous system are wiped out resulting in four main enteric non-motor symptoms - difficulty swallowing, drooling, postprandial bloating, and constipation.

Difficulty Swallowing

Difficulty swallowing is rarely a major complaint in Parkinson's, but it is often slightly impaired and many people are not aware of it. The bradykinesia that occurs in the limbs may occur in the **jaw** such that increased chewing time is required, the **tongue** may perform inefficient movements that prevent food and liquids from being swallowed, and the muscles of the **throat** and **esophagus** may not contract properly. Furthermore, the protective **cough reflex** can be impaired resulting in aspiration, a situation where food and liquid enter the trachea (to the lungs) instead of the esophagus (to the stomach); if the cough reflex is severely impaired, there may be no cough at all, resulting in silent aspiration.



In aspiration, food and liquid enter the trachea instead of the esophagus.

Difficulty swallowing is challenging to **manage** in Parkinson's:

(1) Levodopa does not fix swallowing outright, but it does improve arm control and may benefit certain aspects of swallowing, so **optimizing levodopa cover** is critical; to ensure that the person is in the "on" state when swallowing, they should **take levodopa one or two hours before eating**.

(2) Further strategies include **slower eating, smaller bites, and frequent sips of water.**

(3) Beyond this, a **speech pathologist** can provide instruction on a modified diet, range of motion exercises for the tongue and other muscles, and swallowing techniques that aid swallowing and prevent aspiration such as the **chin-tuck strategy** (eating upright with the chin tucked into the chest), the **Mendelsohn maneuver** (holding up the Adam's apple while swallowing), the **supraglottic swallow** (inhaling, swallowing, then a cough), and a **double swallow** (swallowing twice followed by a cough).

Drooling

Drooling may occur in Parkinson's, but it is secondary to **impaired swallowing** rather than an increase in saliva production. Normally, saliva is swallowed without even thinking about it, but the impaired swallowing that occurs in Parkinson's results in saliva pooling in the mouth.

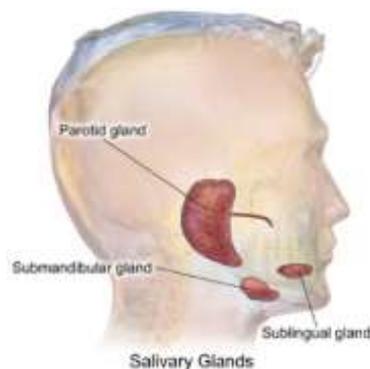
Drooling can be **managed** in Parkinson's:

(1) The first strategy is to **optimize levodopa cover** as above.

(2) It may be helpful to **carry a cloth, sit upright when swallowing, and make a conscious effort to continuously swallow.**

(3) The anticholinergic medication **glycopyrrolate** is useful so long as the person tolerates its potential side-effects of slowed urination and constipation.

(4) That said, the easiest and most effective treatment for drooling is to have a neurologist inject botulinum toxin, or **botox**, into the salivary glands once every three months.



The best treatment for drooling is to inject botox into the parotid gland (the big gland).

Postprandial Bloating

Postprandial bloating, defined as abdominal discomfort after eating, reflects **poor stomach emptying.** This enteric symptom is rarely a serious problem in Parkinson's.

Postprandial bloating can be **managed** in Parkinson's:

- (1) Drink **lots of fluids** with meals to expand the stomach and stimulate emptying.
- (2) Postprandial bloating may be made worse by anticholinergics (amitriptyline, nortriptyline) and narcotics (codeine, oxycodone), so **avoid anticholinergics and narcotics** unless they are necessary.
- (3) The antiemetic medication **domperidone** can be effective at alleviating poor stomach emptying.

Constipation

Constipation, defined as bowel movements that are infrequent or hard to pass, occurs in **up to 80%** of people with Parkinson's and reflects **impaired colon contractility**. Normally, the colon undergoes a series of wave-like contractions to move digested contents along. In Parkinson's, these contractions are inefficient and digested contents move slowly - if the constipation is severe enough, the digested contents may get impacted or "stuck" resulting in an inability to pass bowel movements at all.

Constipation requires a comprehensive **management** approach in Parkinson's:

- (1) The single best way to manage constipation is to drink **ten glasses of water per day**, with one glass defined as 8 ounces or 250 milliliters.
- (2) Next, **avoid anticholinergics and narcotics** unless they are necessary.
- (3) Further strategies to reduce constipation include **exercise, increased fruit and vegetable intake, and drinking prune juice heated in a microwave**.
- (4) If that fails, try a **fiber supplement** such as Metamucil, Mucilax, or Psyllium Husk with water.
- (5) If that fails, try an **oral laxative** such as Milk of Magnesia, Miralax, Movicol, Dulcolax, or Senokot.
- (6) In severe constipation with impacted stool, a cleansing **enema** is required to clean out the colon.

Enteric dysfunction is virtually universal in people with Parkinson's. If you suffer from difficulty swallowing, drooling, postprandial bloating, or constipation, **try the strategies outlined above**.

Matt (Neurologist, Waikato Hospital).

References

- (1) Ahlskog. 2015. The New Parkinson's Disease Treatment Book. Oxford University Press.
- (2) Tjaden. 2008. Speech and Swallowing in Parkinson's Disease. Topics in Geriatrics Rehabilitation 24(2), 115-126.
- (3) Sveinbjornsdottir. 2016. The clinical symptoms of Parkinson's disease. Journal of Neurochemistry 139(Suppl. 1), 318-324.