



**Traditional treatments work (more often than not) wonderfully for keeping your dopamine levels up; but what about options to fill in the gaps that exercise and medication aren't able to help with? One such treatment that has been very helpful for assisting in certain aspects of Parkinson disease is botulinum neurotoxin/botulinum toxin (BoNT).**

In Canada botulinum neurotoxin is more commonly known by its brand names – Botox® (the most common) is one; but there are also others Dysport®, Nuceiva™ and Xeomin®. While BoNT is more common for treating non-motor symptoms in Parkinson's (see below), we have included it in this issue for its success in treating dystonia that can occur with Parkinson's.

Popular for its cosmetic use, this treatment has emerged as a promising tool for alleviating some of the challenging symptoms of Parkinson disease including addressing specific motor complications and enhancing the quality of life for those living with the complexities of Parkinson's.

Botulinum neurotoxin is a substance produced from a bacterium called clostridium botulinum, an extremely powerful neurotoxic protein. In fact, it is one of the most potent and dangerous toxins known to science. So why on earth would humans go anywhere near it?

How can something so toxic be helpful? This is where the astonishing dedication and work of scientific researchers comes in. Clostridium botulinum was discovered in 1895; it would take another 25 years to isolate the BoNT and an additional 69 years to be approved to use medically (for eye issues). From the 90s to today, additional approved cosmetic and medical uses have grown including the well-known treatment for facial wrinkles, to chronic migraines, incontinence, excessive sweating, and more. With such a wide range of use you can see how, in controlled doses, BoNT can be quite effective as a treatment option. In general, BoNT injections works by targeting and blocking signals from our nerve to our muscles causing them to relax. This is why BoNT can be quite helpful in treating conditions where muscles are too tight or overactive. Botulinum neurotoxin is administered as an injection, which allows for precise targeting allowing for symptom relief often without affecting the surrounding muscles. This ensures you get the best relief without overly effecting your other abilities/movements.

The following are some common uses of BoNT as it relates to Parkinson's:

## Dystonia

Dystonia is a neurological movement symptom that is characterized by involuntary muscle contractions that cause repetitive or twisting movements, abnormal postures, or both. These muscle contractions can be constant or every once in a while; and may affect one part of the body or many. People with Parkinson's (especially in Young Onset) may experience twisting of one's feet, neck, or limbs that may cause pain or discomfort. BoNT injections can provide targeted relief to areas effected by Dystonia by blocking signals being sent by our brain telling the muscles to contract involuntarily. Without these signals the muscles will relax, offering relief from the impacts of Dystonia.

## Overactive Bladder and Urinary Incontinence

An overactive bladder and urinary incontinence are commonly reported issues in Parkinson's. Problems with frequency, urgency, or unintended loss of urine leave one feeling self-conscious and/or stressed. There are a host of treatment options your doctor may try first (change to daily habits, pelvic exercises, medications, etc); if these do not achieve the intended results BoNT may be something that is considered. This treatment works by stopping the bladder wall from contracting (squeezing) too much, which reduces both the frequency and urgency, as well as reducing urinary incontinence.

## Sialorrhea (Excessive Drooling)

Sialorrhea, or excessive drooling, is a common and often distressing symptom in Parkinson disease. It occurs primarily due to impaired swallowing reflexes rather than overproduction of saliva, leading to saliva pooling in the mouth and unintentional drooling. This can cause significant discomfort, embarrassment, and even lead to complications like skin irritation. An effective treatment for excessive drooling in Parkinson's, BoNT works by targeting the saliva glands, reducing the amount of saliva produced and in turn reduce the amount of pooling saliva in one's mouth.

## Blepharospasm (Involuntary eye contractions/spasms)

Blepharospasm is a condition where one has involuntary, repetitive contractions or spasms of the eyelid muscles, often causing blinking, twitching, or even forced closure of the eyes. Similar to how you react to something coming toward your face and shut your eyes instinctively. In Parkinson's, involuntary eye contractions can significantly impact daily activities by impairing vision, causing discomfort, and making safe movement harder. Once again, a BoNT injection will block the signal from the brain that causes these muscles to constrict. And, with some precision a doctor can target specific a muscle that will stop the involuntary movement and leave the normal functioning of one's eyelids unaffected.

While BoNT is a valuable treatment for various symptoms of Parkinson's disease, it does come with some potential downsides and risks. The biggest downside is that the effects of BoNT are temporary, typically lasting between three (3) to four (4) months. After this period, the symptoms that BoNT injections help control start to gradually return as the areas treated start to regain their normal function. The temporary nature this treatment option means that people will need to undergo repeat injections to continue to gain the relief for their symptoms. Alongside this upkeep, BoNT can cause temporary muscle weakness near the injection site, which might temporarily impact the regular function of nearby muscles. Finally, it has to be injected with a needle, and I don't think many of us like needles! Though because of the delivery method (injection), after treatment one might see bruising, soreness, or swelling around the injection site. These are often temporary and will fade after some time, if not see your doctor to receive additional support.

Botulinum neurotoxin offers us a different way to manage a diverse number of possible symptoms related to Parkinson's and has much better uses than touching up celebrities' features! If this is a treatment that you think might be of benefit, please discuss it with your healthcare team to see if it is right for you.