

# Misconceptions about Botox®

by Dr Patrick Treacy

Botulinum neurotoxin, once called the 'most poisonous poison on the planet' has recently seen a surge in the number of medical conditions that this elegant chemical can treat. In the United Kingdom and Ireland, the pharmaceutical comes in two forms, Botox® and Dysport®. Botox® was the original word patented by Allergan but it has now crept into the common vernacular for both. Recently, this novel compound has extended its application into use in urinary incontinence, voice tremors, prostatic disease and even depression. Despite the increasing uses of the compound many people are still frustrated by the misconceptions surrounding it. There is not a day passes but somebody asks me "is it a toxin?" "Will it give me a glazed look?" "Will it leave me expressionless?"

## Misconception No 1: Botox injections are highly toxic

Nearly every worthwhile drug in medicine is a diluted solution of a toxin. If you had a major cardiac event today and ended up in hospital most of the drugs that would be used to save your life, digoxin, atropine, lignocaine or adrenalin are all chemicals extracted from plants, microbes or animals that are used in a controlled fashion. Some drugs such as digoxin are extracted from the foxglove plant can actually stop your heart beating if they are used in a strong enough strength. If we dilute them they have less effect but could stop your heart from beating uncontrollably and allow it to beat normally. Other drugs such as atropine are extracted from deadly nightshade can block the nerves that slow down your heart and allow it to beat normally again. Roman girls put a diluted form of this compound into their eyes to dilate them and make their suitors feel they were chemically attracted to them. In a similar way, Botox® is a mild dilution of botulinum toxin, which can cause a serious form of food poisoning. The safety of Botox® is also ensured by its selective administration into a certain muscle or a group of muscles, which leaves it largely incapable of action outside the given area. Remember we give new born babies who suffer cerebral palsy or muscle spasms much higher doses every day without evidence of problems. Many physicians would agree that aspirin and antibiotics are potentially more harmful than Botox®. However like any drug, anaphylaxis can occur and Botox® procedures should be performed by trained physicians in proper clinics with adrenaline on standby.

## Misconception No 2: Patients can develop an "addiction" to Botox injections

This misconception was based on a recent UK psychological study, which was apparently based on a survey of clients at eighty-one clinics. The study reached the conclusion that more than forty per cent of patients regularly using Botox® expressed a "compulsive motive" for doing so. However, I personally feel the study was totally unscientific as I stated in a press release at the time. There is no evidence that Botox® has any detrimental side effects, in fact to the contrary it has a built in mechanism to protect the patient by the use of new nerve regeneration. Secondly, by any stretch of the imagination...how could a procedure that a patient requires only twice a year be labelled as addictive? In this study, the authors tried to imply the substance had an addictive quality but forgot to mention that if the patient has the procedure too often they build up antibodies against the pharmaceutical and it stops working. By analogy, this is something akin to an alcoholic having wine turning into water after the second drink...I don't think alcohol addiction would last very long!

## Misconception No 4: Botox® injections distort a facial expression

This is one of the most common misconceptions about Botox® procedures. Many people seem to forget that the resultant expression on a patient's face is really dependent on the skill of the proceduralist and has little to do with the Botox®. This means that the ability of the brow to raise or lower, the ability of the frown to move or not, the ability of the crows feet to disappear or slightly remain is usually dependent on two factors, the amount of Botox® added and to the location to where it is added. Accordingly, facial expressions can be distorted only in case of an overdose or misdirected injection of the drug. By analogy, if your house flooded after installing a new washing machine, surely you would blame the plumber and not the water company. The bottom line is those who want to look five years younger are strongly recommended to use services provided by certified experienced doctors rather than attending home-based charlatans who frequent beauty parlours and salons.

## Misconception No 3: Botox® injections can cure depression

The idea that Botox® can cure depression came from a study in the May 2006 issue of the Journal of Dermatologic Surgery, where Dr. Eric Finzi from the Chevy Chase Cosmetic Center in Maryland claimed to have treated clinically depressed patients with Botox®. This led to further exposure on Good Morning America, where he claimed that by taking away the ability to frown, he was breaking a neurological feedback mechanism to the brain and thereby taking away the ability of his patients to feel depressed. I must say that I was initially heartened to see the study of the treatment of depression with Botox® as many doctors will reveal a similar picture from their patient's own experience. I examined Finzi's paper in the Journal of Dermatologic Surgery and was concerned that this doctor used a very small number of patients, lacked a control group, had no psychiatrist assessing the patients and even allowed the patients to assess themselves.

## Misconception No 5: Botox® injections cause headaches

On the contrary, although Botox can cause headaches in about 2-3% of people, it actually relieves them in the vast majority of patients treated. It has been known for some time that Botox® can help prevent and treat migraine sufferers. To do this, doctors usually inject it into various trigger points that can differ from patient to patient. The duration of action of Botox® in migraine prevention varies from about 10 to 13 weeks and the onset of effect may take a few weeks. Ideally, the medication should not be administered more frequently than every 3-4 months.





### **Misconception No 6: Botox® injections can create new wrinkles**

This misconception started back in 2002 when Dr David Becker, an assistant professor of dermatology at Weill Cornell Medical College in New York, suggested people unconsciously recreate facial expressions in the area where the facial muscles have been paralysed. His work was published in *Cosmetic Dermatology* (2002; 12: 35-36). The doctor noted increased wrinkle prominence and the development of fine lines following botulinum toxin therapy for vertical frown lines. His feeling that paralysis of a set of muscles in one area might lead to recruitment of other nearby muscles to compensate was not shared by Allergan (the maker of Botox®) who immediately repudiated the results. Other doctors around the world including Dr Robert Sinclair, from the Australasian College of Dermatologists, stated that he had also seen the effects of muscle recruitment after Botox® was used in the forehead and frown area. Many other doctors disagreed and in the end Dr. Becker retracted his findings somewhat afraid he was being misquoted. My own impression after treating tens of thousands of patients is that it probably happens to a lot of patients to a very minor extent, but because you can usually easily treat the new muscular activity there is little to worry about. The doctor involved later said "Doctors can minimise the risk of new wrinkles by altering their technique to include potential accessory muscles when rectifying an abnormal expression - so you weaken all muscles, not just the ones responsible for the expression."

### **Misconception No 7: Botox® injections should be administered only to persons above 40**

It is difficult to know where this misconception came from or in reality if it really still exists amongst young people in most developed parts of the world. The feeling possibly exists amongst an older generation who are less exposed to media and peer pressure. So, why is there such a generational difference in attitudes to Botox®? It is really simple... young people now realise that it is a lot easier to tackle a problem at its early stage and if they start early they will not develop wrinkles at all. If you start early then you probably get a better response and require less to continue into your later life.

### **Misconception No 8: Patients are not allowed to lie down for four hours after receiving a Botox® injection**

This is probably a misconception although many doctors still give patients this instruction. The perceived logic comes from the fact that lowering of the eyelid (ptosis) is thought to be caused by migration of toxin through the orbital septum. Patients are thereby instructed to remain in an upright position for 3-4 hours following injection. However, if this was the only reason then patients should really stand on their heads to prevent this type of diffusion. In general I don't tend to give patients this instruction but do tell them to avoid manual manipulation of the area. Active contraction of the muscles under treatment may increase the uptake of toxin and decrease its diffusion.

### **Misconception No 9: Patients are not allowed to fly after receiving a Botox® injection**

This is also probably a misconception although many doctors still give patients this instruction. The perceived logic comes from the fact that different cabin pressures could contribute to causing migration of toxin through the orbital septum. Patients are thereby instructed not to fly following injection. However, cabin pressures are generally the same as the air pressure on the ground. It is the air pressure outside the cabin that is different. In general I treat many patients from overseas and usually don't tend to give patients this instruction but do tell them to avoid manual manipulation of the area. Active contraction of the muscles under treatment may increase the uptake of toxin and decrease its diffusion. If they are flying long haul, I tell them to wait one day.

### **Misconception No 10: Botox® injections are a painful experience**

On the contrary, an injection of Botox® is usually quite painless. The needle that is used to administer Botox® is tiny, in fact it is the same size used by diabetics every day to give insulin. Those who were given Botox® injections compare their sensations to those experienced during an insect bite. Some patients do prefer applying an anaesthetic cream to the face about fifteen minutes before the procedure and this totally eliminates any possibility of pain. There is no pain after injection as Botox® works as a kind of anaesthetic itself.

### **Misconception No 11: Botox® will be less effective if it is used too often**

There is evidence that about 5% of patients injected continually with BOTOX® can develop neutralising antibodies that can cause the injections to stop working. The chances of this happening depend on large doses being injected, repeat or booster injections given within four weeks of treatment. There is a new form of German Botox® coming onto the market, which has a lower potential for neutralising antibody production because of its decreased protein load. Hopefully this will minimise the problem of non-response.

### **Misconception No 12: Botox® injections are dangerous if given during pregnancy**

This is another misconception. From evidence from millions of people all around the world, women who inadvertently were injected during pregnancy thus far have had uneventful deliveries, and to date no foetal abnormalities have been attributed to botulinum toxin. Nonetheless, it is a category C medication, and delay of injections is recommended until pregnancy is complete and breastfeeding has ended.

### **Misconception No 13: There is no effective treatment if a brow or an eyelid drops after Botox® injections and patients have to wait until it wears off.**

This is a misconception to an extent, although any person who has had to sit out four months with a lowered eyelid may think differently. Lowering of the upper brow or eyelid (ptosis) can occur after injection in the frown muscles. This may occur as late as two weeks after injection and is more common in older patients receiving Botox® for the first time. Patients are usually instructed to avoid rubbing the area. Some doctors feel that actively contracting the muscles under treatment may increase the uptake of toxin and decrease its diffusion. Most lowered brows tend to settle after about four weeks. Elevated brows can easily be corrected. It is more difficult to treat eyelid drop, although many patients are responsive to a special adrenergic agonist eyedrop called apraclonidine. This medicine causes specific Müller muscles to contract but it should not be used in patients with documented sensitivity. Phenylephrine (Neo-Synephrine) 2.5% can be used when apraclonidine is not available. Neo-Synephrine is contraindicated in patients with narrow-angle glaucoma and in patients with aneurysms. Use 1-2 drops three times daily until the ptosis resolves. Doctors will try and minimise this happening by placing injections 1 cm above the eyebrow and not crossing the line of the pupil.

### **Misconception No 14: Different types of Botox® last for different periods in patients**

In the United Kingdom and Ireland, the pharmaceutical comes in two differing forms. One is known as Botox® and the other Dysport®. There is anecdotal suspicion amongst many doctors and patients that the UK variety Dysport® lasts six months while the US based formulation Botox® lasts four months. In reality, various clinical studies have shown no difference between the two groups. However, my own experience would tend to favour the patients anecdotal beliefs.

### **Misconception No 15: Patients will always look better after Botox® injections.**

This is a misconception as weakness of the lower eyelid can occur following injection of a muscle in this area called the lateral orbicularis oculi. This weakness then allows the fat pad under the eye to bulge out causing the patient to appear more tired than they were before they had the Botox® injections. This effect will eventually disappear but it will last the four to six months that the Botox® has effect.



**Misconception No 16:  
There are risky side effects from Botox® injections**

This is a total misconception as side effects are uncommon, generally mild, and generally transient. These side effects include nausea, fatigue, malaise, flu-like symptoms, and rashes at sites distant from the injections. The needle used can cause some side effects including bruising, pain, redness, headache and local numbness. The most common bothersome side effect is unwanted weakness in a muscle usually around the eye. Fortunately, this usually resolves in a few weeks and in the worst case scenario may last until the action of the toxin usually disappears in four to six months.

**Misconception No 18:  
Botox® is not yet used to treat back pain**

On the contrary, there are many UK and Irish doctors already using Botox® for this clinical indication. Studies began when researchers from the Walter Reed Army Medical Center in Washington, D.C., studied 31 patients with lower back pain. (Bahman Jabbari: Neurology, 2001). All of the patients had experienced pain for at least six months, with an average of six years, and were taking standard medications, which they continued to take during the study. Patients received either Botox® injections or injections of a saline solution. Three weeks after the injections, 73% of those who received Botox® injections said the amount of pain they experienced had gone down by 50% or more. Two months later, 60% of those who received Botox® said their pain was still decreased by 50% or more.

**Misconception No 17:  
Botox® injections are good for facial lines only**

This is a total misconception that is still held by a few people. In fact many of my patients are surprised to learn that young infants with muscular spasms and cerebral palsy receive higher concentrations of Botox® than they do. They are also surprised to learn that it was actually doctors who were treating muscular spasms that discovered it had an anti-wrinkle effect as a beneficial side effect. In reality Botox® is now used to treat sweating, migraine, incontinence, spasms, strokes, multiple sclerosis, anal fissures, writers cramp, cross eyes, cerebral palsy, prostate disease as well as chronic back and neck pain.

**Misconception No 19:  
Botox® has little effect on underarm sweating**

On the contrary, Botox® has nearly a 100% effect on excessive sweating that can last up to a year. The condition known as hyperhidrosis is caused by the overstimulation of sweat glands by the autonomic nerves. Other sites commonly affected include the palms, soles, back and face. Botox® injections now have been cleared for this use in most western countries and are extremely effective in treating the condition. Although I have been treating patients for underarm sweating since 2001, the earliest publication that I can find relating to the subject is a study at the University of California San Francisco (Derm Surgery 2002). The study involved twelve patients who received injections of Botox® directly in the underarms. Amounts of the medicine used were similar to those used for wrinkles and frown lines. All patients reported decrease of underarm sweating within 48 hours of the treatment. Further follow-up suggested the treatment is effective for five to twelve months.



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