

Cancer Association of South Africa (CANSA)



CANSA Fact Sheet On the Use of Botox by Cancer Survivors

Introduction

Botox is a drug made from a neurotoxin produced by the bacterium *Clostridium botulinum* called botulinum toxin. It is used medically to treat certain muscular conditions and cosmetically remove wrinkles by temporarily paralysing muscles.

[Picture Credit: Before and After 1]



Botulinum toxin causes the disease botulism; however, it is also used commercially in medicine, cosmetics, and research. There are seven types of botulinum toxin, named type A–G. Type A and B are capable of causing disease in humans, and are also used commercially and medically. Types C–G are less common; types E and F can cause disease in humans, while the other types cause disease in other animals. Botulinum toxin types A and B are used in medicine to treat various muscle spasms and diseases characterised by overactive muscle.

Botulinum toxin is sold commercially under the names:

- Botox, Vistabel, Botox cosmetic (OnabotulinumtoxinA or botulinum toxin type A)
- Dysport (AbobotulinumtoxinA or botulinum toxin type A)
- Bocouture, Xeomin (IncobotulinumtoxinA or botulinum toxin type A)
- Myobloc (RimabotulinumtoxinB or botulinum toxin type B).

BOTOX[®] Cosmetic is the only FDA-approved treatment to temporarily improve the appearance of both moderate to severe frown lines between the brows and crow's feet in adults.

[Picture Credit: Before and After 2]

In cosmetic applications, botulinum toxin is considered safe and effective for reduction of facial wrinkles, especially in the uppermost third of the face. Injection of



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botulinum toxin into the muscles under facial wrinkles causes relaxation of those muscles, resulting in the smoothing of the overlying skin. Smoothing of wrinkles is usually visible three days after treatment and is maximally visible two weeks following injection. The treated muscles gradually regain function, and generally return to their former appearance three to four months after treatment. Muscles can be treated repeatedly to maintain the smoothed appearance.

Indications for the Use of Botox

BOTOX[®] is a prescription medicine that is injected into muscles and used:

- to treat overactive bladder symptoms such as a strong need to urinate with leaking or wetting accidents (urge urinary incontinence), a strong need to urinate right away (urgency), and urinating often (frequency) in adults 18 years and older when another type of medicine (anticholinergic) does not work well enough or cannot be taken
- to treat leakage of urine (incontinence) in adults 18 years and older with overactive bladder due to neurologic disease who still have leakage or cannot tolerate the side effects after trying an anticholinergic medication
- to prevent headaches in adults with chronic migraine who have 15 or more days each month with headache lasting 4 or more hours each day in people 18 years or older
- to treat increased muscle stiffness in elbow, wrist, finger, thumb, ankle, and toe muscles in people 18 years and older with upper and lower limb spasticity
- to treat the abnormal head position and neck pain that happens with cervical dystonia (CD) in people 16 years and older
- to treat certain types of eye muscle problems (strabismus) or abnormal spasm of the eyelids (blepharospasm) in people 12 years and older

BOTOX[®] is also injected into the skin to treat the symptoms of severe underarm sweating (severe primary axillary hyperhidrosis) when medicines used on the skin (topical) do not work well enough in people 18 years and older.

BOTOX[®] Cosmetic is a prescription medicine that is injected into muscles and used to improve the look of moderate to severe frown lines between the eyebrows (glabellar lines) in adults for a short period of time (temporary).

BOTOX[®] Cosmetic is a prescription medicine that is injected into the area around the side of the eyes to improve the look of moderate to severe crow's feet lines in adults for a short period of time (temporary).

Before Going for Botox Treatment

If considering Botox injections, one must be certain about why one wants to have the injections. The injections are expensive and have their limitations.

Cost - while some practitioners charge a flat rate with regard to the Botox cost, others will break the price down into the units used. The Botox cost per unit in South Africa is around **R1 200**. The amounts of

injections required will depend on how much one needs to have done. A consultation with the medical doctor or cosmetic dentist will help determine this.

The cost of Botox injections varies greatly, depending on where one is in South Africa and the professional who is performing the administration. The amount of injections that one receives at one time as well as the practitioner's qualifications will also be reflected in the Botox cost

Practitioners pay for each vial, which unfortunately becomes ineffective after only a few hours after it has been opened. Beyond this time, the vial must be discarded. The Botox cost will be less if one shares the expense of the vial with some friends. So, get the friends together at the practitioner's consulting rooms and have a Botox Party!

Limitations of Botox include:

- The effect is not permanent.
- There is no guarantee the desired effect will be achieved.
- The ageing process will still happen elsewhere – for example, Botox will not fix sagging eyelids.

Disadvantages of Botox - unfortunately, after one has gotten the wonderful result that one was hoping for, it will dissipate. The results are temporary and only last for 3 to 6 months.

Because Botox is a toxin, albeit in dilute form, adverse reactions are possible. These include:

- Nausea
- Headaches
- Tingling
- Bruising
- Swelling at injection sites

Safety – one should take time to find a reputable practitioner who is properly qualified and practises in a clean, safe and appropriate environment. Ask the practitioner what one should do if something were to go wrong.

It is crucial to consider if one is a possible candidate for Botox treatment. People who could not be considered for Botox injections include those who:

- Are taking medications for blood thinning. This would increase bleeding, bruising or blood accumulation at the injection sites
- Have a history of botulism poisoning. These people are vulnerable to recurrence of poisoning at a lower dose
- Are pregnant
- Are Lactating (nursing infants)

Botulinum toxin is a prescription-only medicine that should only be prescribed and given by an appropriately trained healthcare professional, such as a doctor or dentist. Legally, the prescriber can delegate the administration of the injections to another person, but they remain responsible for ensuring it is given safely.

Women should not have botulinum injections if pregnant or breastfeeding, since the effects on the foetus or baby are not known.

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Botox Use by Cancer Survivors

According to Dr Ronald Shelton, MD (a Manhattan Dermatologic Surgeon) chemotherapy is not a contraindication to undergo Botox and fillers treatment. It is, however, good to discuss this with one's oncologist prior to going for Botox treatment. If the oncologist agrees, then it can be done.

Some individuals might have very intense chemotherapy that may interfere with their defences against infection and then possibly a slightly greater risk of infection would occur from having fillers, but this still would be rare.

It is important for those who are having chemotherapy, to maintain as optimistic a view as possible and feeling better about themselves during the treatment – this may help their immune system cope. They should not feel guilty having an aesthetic treatment during such an important treatment as chemotherapy, but feel rather, that the aesthetic treatment is an adjunct to treating their whole person and helping them progress through and complete the chemotherapy and increasing their odds of getting a remission.

According to researchers of the Dermatology Unit “Daniele Innocenzi”, Department of Medical-Surgical Sciences and Biotechnologies, Sapienza University of Rome, and the Department of Clinical Internal, Anaesthesiologic and Cardiovascular Sciences, Sapienza University of Rome, in cancer patients, fillers can be used to correct volume loss that can occur in the upper third of the face as consequence of the disease, or to improve the aesthetic result of post-surgery scars. Moreover, the use of fillers is approved in cancer patients to prevent skin toxicity, secondary to some therapies such as radiotherapy, and have also been implied as a reconstructive technique, particularly for breast cancer. Although generally safe, filler injections can sometimes cause adverse events which can be distinguished as reactions at the site of injection or an inflammatory, vascular reaction. Injection site reactions include erythema, oedema, pain and bruising. Filler injections can cause both immediate localised reactions, or systemic hypersensitivity reactions (fever and urticaria) and delayed hypersensitivity reactions with the formation of granulomatous bodies. As a result of penetration into the skin barrier, fillers may be associated with an increased risk of infection; reactivation of herpes simplex infections have frequently been described and can be prevented by prophylactic antiviral therapy. Among bacterial infections, the most frequent are those caused by *Staphylococci* and *Streptococci* such as cellulitis and abscesses. Moreover, even after a long time, the formation of biofilms is possible and can predispose patients to bacterial infections, nodule formation and granulomatous reactions.

In the treatment of cancer patients, it is necessary to adopt the same precautions we use for other patients whilst paying particular attention to the presence of immune suppression, the persistence of skin complications, and interactions with existing therapies. Given the increased risk of infections in these patients, it will be necessary to ensure maximum asepsis.

The main contraindication to filler injections is represented by patients without a good general condition, for example: have ongoing infections, are not immunocompetent, are undergoing treatment and have not received approval from their oncologist. Particular attention should be paid to patients who underwent therapies with bisphosphonates, avoiding injections into the bone compartment given the high risk of osteonecrosis.

Therefore, it is very important that oncologists and dermatologists are aware of these reactions when evaluating the onset of nodules in patients undergoing immunotherapy.

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Botox and cancer pain - a group of researchers studied the effect of onabotulinumtoxinA in seven cancer patients who suffered from severe focal pain (visual analog scale >5) at the site of local surgery or radiotherapy or both. OnabotulinumtoxinA (20-100 units) was injected into the focal pain areas (skin or muscle or both). Five of seven patients were followed beyond 1 year (1.5-5 years) with repeat treatment.

All seven patients reported a significant improvement in pain (mean drop in visual analog scale score of 5.1). They described their response on the patient global assessment as satisfactory (two patients) or very satisfactory (five patients).

Six of seven patients found the pain relief associated with significant improvement in quality of life. One patient developed weakness of jaw muscles after bilateral masseter injection that was not observed during second injection (reduced dose). Improvements with treatment persisted with repeat injections during long-term follow-up (five patients).

Local treatment with onabotulinumtoxin A can significantly reduce pain and improve quality of life in cancer patients suffering from pain in the area of surgery and radiation and was well tolerated in cancer patients.

Botox and nerve pain in cancer patients - neuropathy, a type of pain caused by nerve damage, is not a uniform condition but instead may appear in different forms. Botox might offer effective relief for two forms of neuropathy, a new animal study finds. In fact, botulinum toxin produced a lasting reduction of pain in mice suffering from either physical or chemotherapy-related nerve injury.

Cancer patients often experience a pain known as chemotherapy-induced peripheral neuropathy. The peripheral nerves carry sensations (feeling) to the brain and control the movement of our arms and legs. They also control the bladder and bowel. The chemotherapy drugs cisplatin, carboplatin, and oxaliplatin, though, may damage these nerves. Symptoms may include either shooting pain or a loss of feeling in the hands and feet. Sometimes what should be cold to the touch will cause a burning sensation instead.

For many cancer patients, the symptoms disappear over time. Others, unfortunately, are not so lucky. Past research has shown Botox can treat some forms of chronic pain.

Botox and cancer cell growth – another study has shown that cancer growth could be suppressed by eliminating the signals sent by nerves that are linked to cancer stem cells. The approach thus treated the cancer. The use of Botox made the treatment cheap, safe and efficient. The researchers have tested the procedure on mice and will soon start testing on humans.

The nervous system is crucial in regulating many organs. Researchers from the Norwegian University of Science and Technology (NTNU), Columbia University and MIT, along with researchers from Japan and Germany have now shown that the vagal nerve contributes to the growth of gastric tumours, so that stopping the nerve signal to the tumour will stop its growth.

“This study shows that nerves control cancer stem cells,” say NTNU Professor Duan Chen and Columbia Professor Timothy Wang, the co-corresponding authors of the study published in *Science Translational Medicine*.

“We found that by removing the effect of the nerve, the stem cells in the cancer tumour are suppressed, leading to cancer treatment and prevention,” Chen says.

This study found that nerves promote tumour growth through the release of a neurotransmitter.

Botox and prostate cancer - Botulinum toxin type A (BTA) intraprostatic (into the prostate gland) injection induces an improvement of urinary symptoms related to benign prostatic hypertrophy (BPH). Infra-clinical prostate cancer (PCa) foci and pre-neoplastic lesions occur concomitantly with BPH in a significant number of patients. The objective of this study was to address whether BTA influences the growth of prostate tumours.

BTA significantly reduced LNCaP cell proliferation and increased apoptosis in a dose-dependent manner but did not affect PC-3. The SV2 receptor was present in both cell lines at a ratio of 4:1 (LNCaP/PC-3). One unit of BTA resulted in a significantly lower growth rate and slower PSA progression over 28 days compared to controls. The tumours were morphologically similar. There were significantly more apoptotic cells compared to controls.

BTA inhibits the growth of LNCaP human PCa cells in vitro and in vivo. These findings indicate that intra-prostatic BTA injections to treat BPH are unlikely to promote the growth of co-existing infra-clinical PCa foci in men. A potential inhibitory effect of BTA on the growth of human PCa should be further studied.

Medical Disclaimer

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Before and After 1

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Before and After 2

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