

## Botulinum Toxin For Acne Management

Botulinum neurotoxin intradermal injection is a common aesthetic dermatology procedure used to improve facial skin tone, texture, fine wrinkles, and enlarged pores.

Botulinum neurotoxin type A is also used in practise to reduce facial skin oiliness. There is mounting evidence that acetylcholine plays specific roles in sebum production, raising the possibility that botulinum neurotoxin type A may reduce sebum production by interfering with cholinergic transmission between sebaceous glands and autonomic nerve terminals.

Botulinum neurotoxins can also inhibit several pathogenetic components of acne development, implying that they can be used as a safe and effective treatment modality for acne and other skin disorders caused by sebaceous gland overactivity. This review will look at the current evidence for treating facial seborrhea.

### Pathogenesis of Acne

Acne vulgaris is a multifactorial chronic inflammatory disorder of the pilosebaceous unit.

Four major factors are known to be involved in the pathogenesis of acne:

- (1) increased sebum production with altered lipid composition,
- (2) metagenomic modifications of the bacterial microbiome leading to the *Cutibacterium acnes* (formerly *Propionibacterium acnes*) biofilm formation,

(3) abnormal keratinization of the infundibulum and the resulting comedogenesis, and

(4) inflammatory cytokine secretion and the infiltration of inflammatory cells into the perifollicular dermis

Research results:

- A report by Shah was one of the early clinical trials that demonstrated a favorable result of BoNTA in reducing sebum production and pore size. In this retrospective study, twenty subjects with facial seborrhea and enlarged pores were treated using intradermal injection of onabotulinumtoxinA (Botox; Allergan, CA, USA) to the “T-zone” of the face and photographically evaluated one month after treatment.
- A recent study by Park et al included 20 patients treated with incobotulinumtoxinA to improve facial skin laxity, sebum secretion, and facial pores. Sebum secretion decreased at one week, and the results were sustained through 12 weeks. All outcomes showed maximum improvement after four weeks. Their findings suggest that not only onabotulinumtoxinA but also incobotulinumtoxinA inhibits sebum production in facial seborrhea.

Besides a decrease in the sebum secretion, the BoNTA-treated subjects frequently report the associated improvement in the general texture of the skin, highlighted by the “pores shrinkage”

Botulinum toxin A, a naturally derived protein, can in fact be used to help control excessive sweating or what is known as hyperhidrosis and this in turn, can have a positive impact on pores as well as help to reduce the amount of oil the skin produces.

Botox injections used as a means of treating acne or subsequently helping to prevent acne are confined to adult acne cases. Teens are not the best candidates. In order to properly assess whether or not you are a candidate for using Botox to treat your acne issues

These injections will block the acetylcholine in the skin's dermis. Acetylcholine is linked to the skin's oil production. And oil of course turns the skin into a breeding ground for the bacteria that can cause acne outbreaks. With this procedure, patients are experiencing fewer flare ups and healthier, less oily skin.

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Chinese and Italian researchers studied 42 females receiving intramuscular botulinum toxin A injections for forehead rhytides, looking for sebum regulation and gradient surrounding injection sites. They compared two injection doses — two and four units — administered in five standard injection sites, and measured sebum production at baseline and post-treatment.

## Indications:

- Males or females.
- General good health
- Willingness to have clinical examinations and photographs of the face and back.
- Diagnosis of recalcitrant acne

## Contraindication:

- Females who had begun treatment with estrogens or birth control pills for 12 weeks or less prior to baseline.
- infection or inflammation at the proposed site of injections and bleeding disorders.
- Individuals with uncontrolled metabolic disease such as diabetes, hypertension, hyperthyroidism, or hypothyroidism
- Pregnant, nursing, or planning to become pregnant within the next six (6) months
- h/o allergy or sensitivity to *botulinum* toxin A.
- history of poor cooperation, non-compliance with treatment
- Myasthenia Gravis or Eaton Lambert Disease.
- Patient under antibiotic use within the last 1.5 months.
- Individuals who were receiving aminoglycosides, anticholinesterases, magnesium sulfate and other drugs or products that interfere with neuromuscular transmission.
- Individuals who have had treatments with or exposure to *botulinum* toxin A.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8626011/#:~:text=Botulinum%20neurotoxins%20can%20also%20inhibit,to%20overactivity%20of%20sebaceous%20glands.>

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