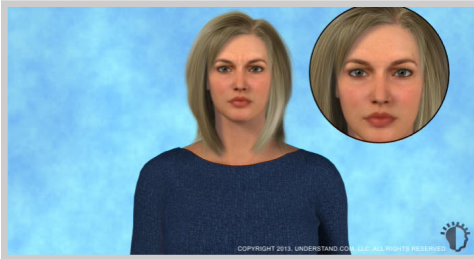




Botulinum Toxin

Botulinum toxin type A injections are one of the most popular minimally-invasive cosmetic procedures performed to treat facial lines and wrinkles, called frown lines, on the forehead. Botulinum toxin is produced by the bacterium *Clostridium botulinum*, which is normally responsible for causing the illness known as botulism. However, in small doses, botulinum toxin type A can be used safely to reduce the appearance of facial lines and wrinkles. The toxin is purified and the formulations are marketed by different companies with names such as onabotulinumtoxin A and abobotulinumtoxin A, etc. In this animation, they will all be referred to generically as botulinum toxin type A. With little downtime and almost immediate results, botulinum toxin type A can help you restore a smoother, more youthful appearance to the face.



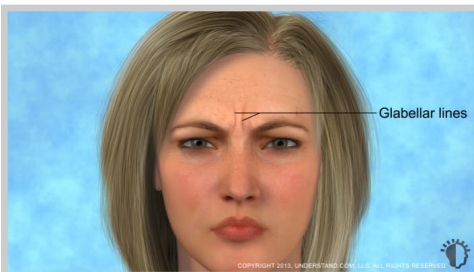


Introduction

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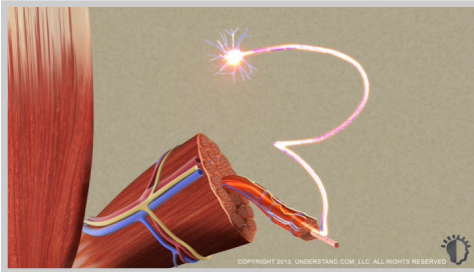
Doctor's Personal Note: A Message From Your Doctor

Thank you for visiting our website and viewing our 3D Animation Library. These animations should assist you in better understanding your condition or procedure. We look forward to answering any additional questions you may have at our next appointment.



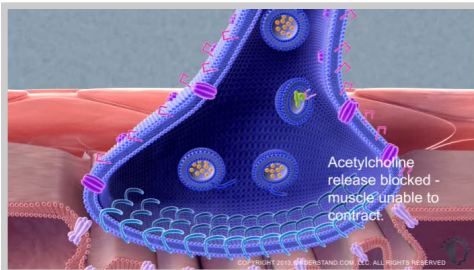
Anatomy

Two sets of muscles, called the corrugators and procerus muscles, lie beneath the skin between your eyebrows. These muscles allow you to squint and to furrow your brow when you frown. Contracting these muscles causes vertical frown lines, called glabellar lines, to appear.



How Frown Lines Form

In addition to factors such as age, sun exposure, and heredity, one of the primary causes of facial lines and wrinkles is repetitive muscle contraction. Nerves release neurotransmitters, which are chemicals that send signals, or impulses to other nerves, muscles, or the brain. Nerve impulses are what trigger muscles to contract, or move. Under normal conditions, a neurotransmitter known as acetylcholine is released by nerve cells. The acetylcholine is encased in fluid filled sacs that bind to the nerve cell membranes. Once bound, the acetylcholine is released and transmits a signal to the muscle, causing it to contract. When this happens in the muscles between your eyebrows, you squint and frown lines are formed. Repeated muscle contraction over many years may cause deep facial lines and wrinkles to form on the skin overlying the muscles.



How Botulinum Toxin Prevents Frown Lines

When botulinum toxin type A is injected into the treatment area, the toxin enters nerve cells and splits a special protein along the nerve membrane that is necessary for the sacs containing acetylcholine to bind properly. As a result, acetylcholine cannot bind to the nerve membrane and is not released. Without the release of acetylcholine, facial muscles have such a greatly reduced ability to contract that any motion they do have is not noticeable. Consequently the brow region has a smooth, less wrinkled appearance.



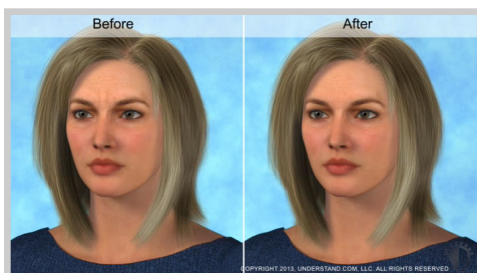
Procedure

Based on your pain sensitivity, your physician may apply a topical anesthetic prior to the procedure to keep you comfortable, however this is often unnecessary. Before administering the injections, your physician will ask you to contract your facial muscles in the desired treatment area in order to determine precise injection sites. Using an ultra-fine needle, your physician will inject small amounts of botulinum toxin type A into the facial muscles along the treatment areas. If an anesthetic has not been administered, you may feel a slight stinging or burning sensation during the procedure. The entire procedure typically takes about 10 minutes.



Recovery

Your physician may advise precautions or restricting strenuous activity for a couple hours after your procedure to lessen your bruising risk, but most normal activities can be resumed immediately. You may notice some redness, minor swelling or bruising, or numbness around the injection sites. However, these and other symptoms are generally minor and should resolve within a few days following the procedure. Although rare, botulinum toxin may spread from an injection site to other areas of the body and cause side-effects, and it may not be appropriate for all patients. When administered correctly, botulinum toxin type A is considered safe for use. Talk to your caregiver or visit the website of the US FDA or your country's regulatory agency for more information.



Results

After your procedure, it may take a week before you notice results. As the muscles in the treatment area are limited in their ability to contract, the appearance of facial lines and wrinkles will decrease. The results from a single procedure last approximately three to four months, after which you can receive subsequent injections to maintain the desired results. Although the results are temporary, botulinum toxin type A can safely and effectively help to restore the smooth, youthful, and well rested appearance you desire.