

Surgical Myectomy for Blepharospasm

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Botulinum toxin (BoNT) was FDA approved for the treatment of strabismus, hemifacial spasm, and essential blepharospasm in 1989. It is very effective in weakening the eyelid protractors to control spasms and allow better eyelid opening. It is the first line of defense for essential blepharospasm. Patients should not consider surgery or any other treatment until they have tried and failed on BoNT. However, BoNT has not worked for some patients, and in the past, there were concerns about developing antibodies. Since then, newer formulations of BoNT have considerably less antigens so cases of failure due to antibodies, may not exist anymore for blepharospasm.

Even when BoNT is working, some patients may need additional control. Some of the failures may be due to apraxia of eyelid opening, eyelid deformities, or photophobia. BoNT may worsen photophobia because when the eyes are open more, more light is let in. That is when other strategies like scleral lenses or glasses tinted with FL41 may help.

In apraxia, when there is a spasm, the eyelid comes down but the patient has to expend a lot of energy, including using the forehead, to open the eyes. There may be a lag of several seconds before the eyes will open again. All that effort weakens the closing muscles and since BoNT is meant to weaken the closing muscles, that may not be the definitive answer in those cases.

The eyelid deformities that may result from struggling to keep the eyes open are also not fixed with BoNT, but with surgery.

PROCEDURES TRIED OVER TIME:

Selective Neurectomy- is an aggressive procedure in which Reynolds, in 1967, selectively severed all facial nerve branches except those of the platysma. This resulted in facial paralysis except for the branches that go down into the neck and then, over time, those branches in the neck would sprout, and the lower face would become reinnervated. Hopefully, they could have regained some of their facial animations. Attempts by other surgeons showed improvement, but the success rate is low. Selective neurectomy may be effective in cases where everything else, including BoNT and myectomy, have failed.

Protractor Myectomy- In the 1950s, Dr. Fox's treatment consisted in carefully excising the orbital and preseptal orbicularis muscle. In 1963, Dr. Callahan suggested that you actually get denervation of the orbicularis just by excising the lateral portions of the orbicularis because that is how the nerves are coming in, feeding, and supplying the remaining orbicularis muscle.

In the mid-seventies before BoNT, many patients, including Mattie Lou Koster, went to Dr. Richard Anderson because he had started doing the protractor myectomy, and they didn't have any other treatment options. He would attempt to remove as much of the eyelid protractor muscles as possible- not just the orbicularis, corrugator and procerus muscle portions, but also the pretarsal portions going all the way down to the eyelashes trying to strip out all those muscles. There were good results, and patients who had been unable to open their eyes were able to do so.

However, as with any surgical procedure, there are issues, some of which were due to the amount of muscle that was removed. There were significant changes to the eyelid appearance. Excavation of the fullness around the temples, around the eyelids, resulted in hollow areas, bleeding complications, as well as the disruption of structures such as the lymphatic channels.

This procedure is aimed at patients who are not getting optimal results with the botulinum toxin, not so they won't need their injections. Only enough muscle is removed to allow the injections

to work better in the remaining muscle. From a surgical perspective, this procedure probably results in a decent or good success rate.

Limited Upper Eyelid Myectomy- is done as an adjunct to BoNT injections. It is performed through an eyelid crease incision through which the surgeon removes as much of the pretarsal and preseptal muscles as possible, as well as some of the orbital orbicularis muscle. Concurrent to that, surgeons are also able to correct other problems such as excess skin, eyelid malpositions such as entropion (eyelid is rolled inward), and ptosis. In injecting patients with BoNT, it is also critical to get the pretarsal orbicularis muscle to get effective treatment.

There is still swelling and bruising but without that excavation of the orbital region, results are better. The amount and frequency of botulinum toxin injections decrease. There are also fewer complications than in a full myectomy.

Over the years, the myectomy procedure has been proven effective by many investigators and authors. Using the Blepharospasm Disability Index, which checks for the extent of impaired function due to blepharospasm, after myectomy there is an improvement in the score of the performance of activities of daily living.

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