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Orbicularis Oculi Myo-Osseous Fixation (MOF): A New Treatment for Benign Essential Blepharospasm and Blepharospasm Associated with Diffuse Facial Dystonia (Meige Syndrome)

Gary Borodic, MD

Mass Eye and Ear Infirmary,, Ophthalmology, Boston, MA, USA

Introduction: This paper describes a novel surgical procedure, myo-osseous fixation (MOF), as an adjunct therapy for patients with reduced or poor response to repeated botulinum toxin for essential blepharospasm and Meige syndrome.

Methods: The small-incision, rapidly healing, rapidly performed technique uses self-drilling titanium screws tightly engaged with a compression wrench. The screws fixate the periorbital orbicularis oculi muscle to bone, creating mechanical resistance to outer portions of orbicularis muscle involved in debilitating involuntary contractions. The principle of the procedure is based on creating a restrictive adherence of this facial muscle to bone, therefore altering its amplitude of contraction and perhaps the directional force vectors and sensation generated by pre-orbital orbicularis contraction. Brow and lid closure movement during spasms is reduced. A plane of loose fibrofatty tissue on the undersurface of the orbicularis oculi muscle over superior lateral and inferior orbit (non origin-insertion points) is demonstrated by surface coil MRI. The functional significance of this layer is to facilitate the low resistance sliding plane important in the function of this sphincter muscle as well as other facial muscles. Tethering the body the pre-orbital portion of this muscle reduces functional contractility during forceful involuntary contractions.

Results: Eleven of the twelve patients treated experienced immediate improvement in function. All noted enhanced effect of subsequent botulinum toxin injections at doses previously ineffective sustained through 2 injections cycles for 6 months in ten of eleven patients. Decreased brow depression during forced frown and brow elevation at rest was apparent in all patients postoperatively. Although the brow elevation effect was reduced after 6 months, reduced brow depression during forced frown still could be easily demonstrated for most patients. Major problems included a nodular bump over the brow, more commonly found when large titanium screws were used, transient headache, and easily removed dislodged screw.

Conclusions: Initial data suggests this procedure appears safe, well tolerated, and useful in managing difficult patients with essential blepharospasm and Meige syndrome. The procedure can be used as an adjunct to botulinum toxin injections and potentially in conjunction with other procedures. Alterations in attachments of the facial muscles to underlying flat bone may be useful in altering muscle function and surface configuration.

References: 1. Gillium WN , Anderson RL Blepharospasm surgery, An anatomic approach. Arch Ophthalmol 1981 99, 1056-622. 2. Chapman KL, Bartley GB, Waller RR, Hodge DO. Follow-up of patients with essential blepharospasm who underwent eyelid protractor myectomy at the Mayo Clinic from 1980 through 1995. Ophthal Plast Reconstr Surg. 1999 Mar15(2):106-10. 3. Jones TW Jr, Waller RR, Samples JR. Myectomy for essential blepharospasm. Mayo Clin Proc. 1985 Oct60(10):663-6. 4. Borodic GE, Cozzolino D. Blepharospasm and its treatment, with emphasis on the use of botulinum toxin. Plast Reconstr Surg. 1989 Mar83(3):546-54.

Author Disclosure: No Disclosures



Figure 1



Figure 2



Figure 3



Figure 4