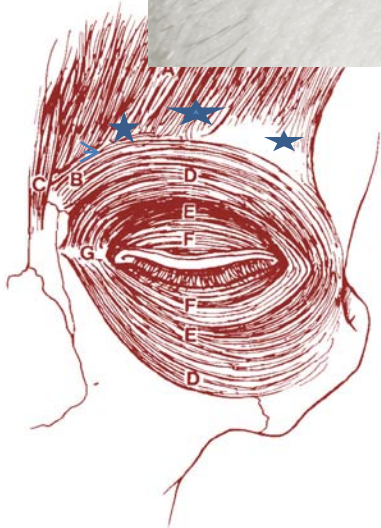
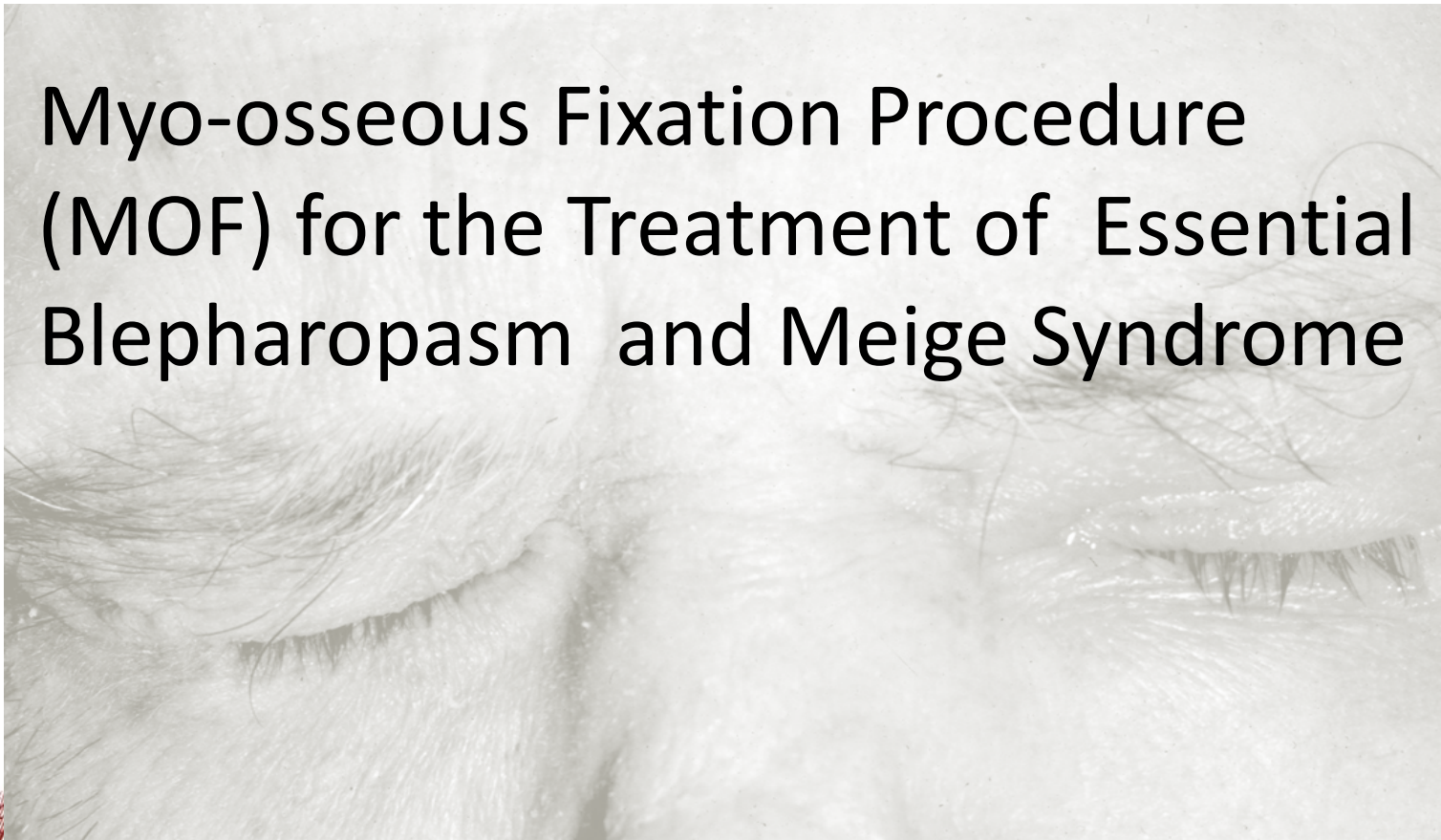


Myo-osseous Fixation Procedure (MOF) for the Treatment of Essential Blepharospasm and Meige Syndrome

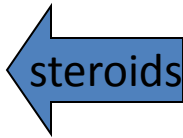
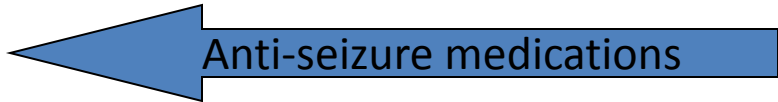
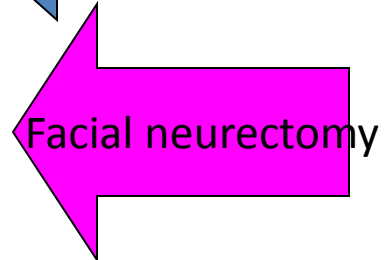
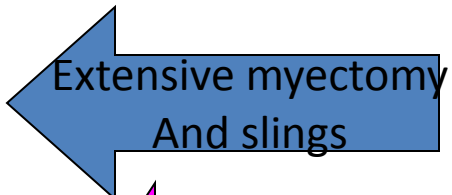
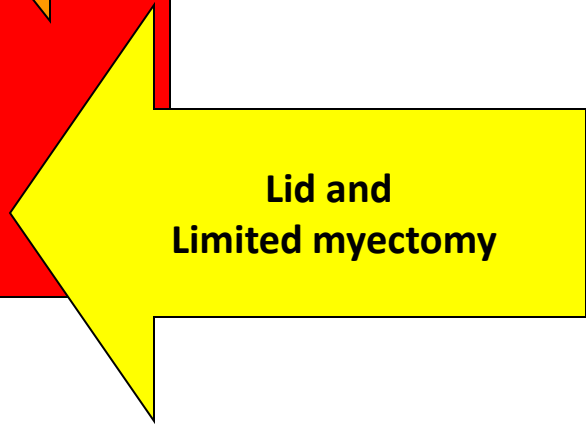
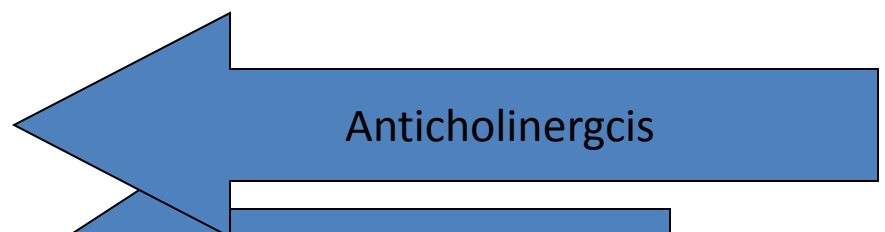
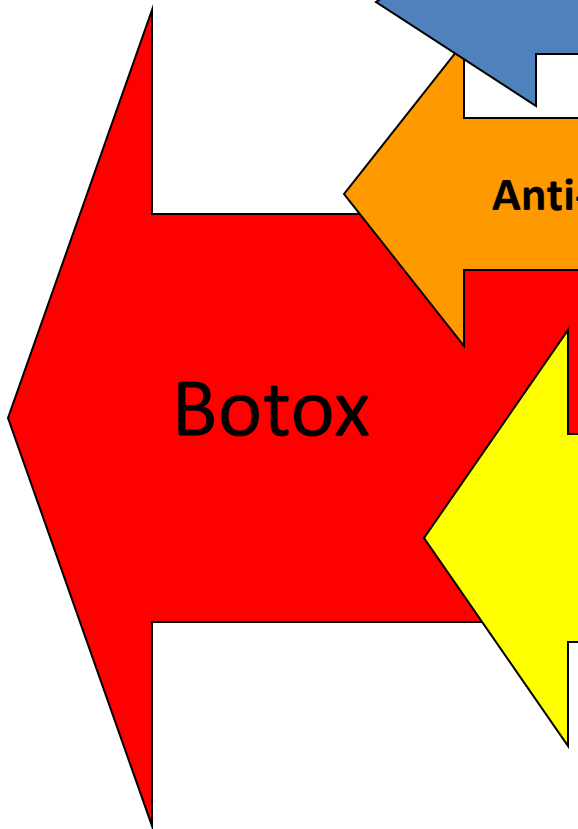


Gary E Borodic, MD

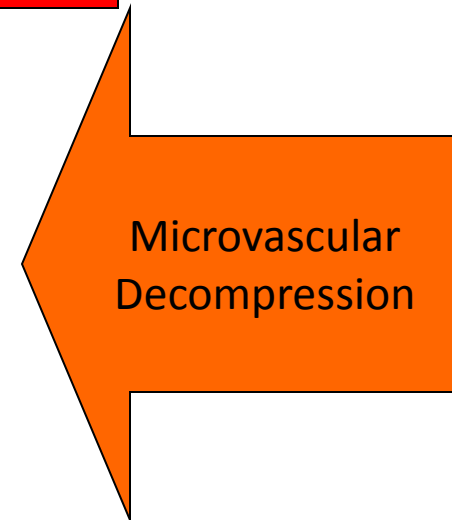
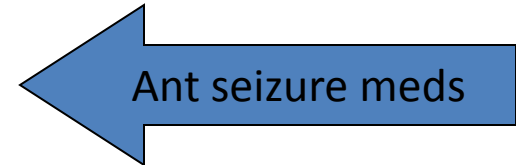
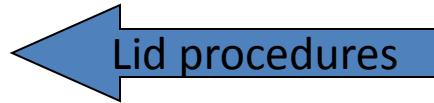
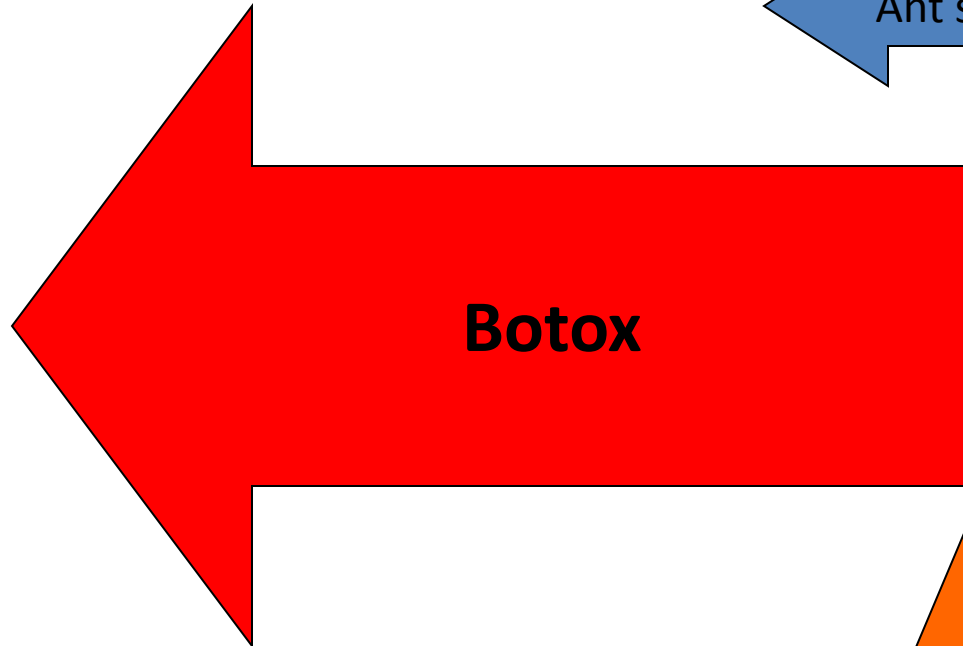
Senior Surgeon, Massachusetts Eye and Ear
Infirmary

Assistant Professor of Ophthalmology
Harvard Medical School

**B
E
B**

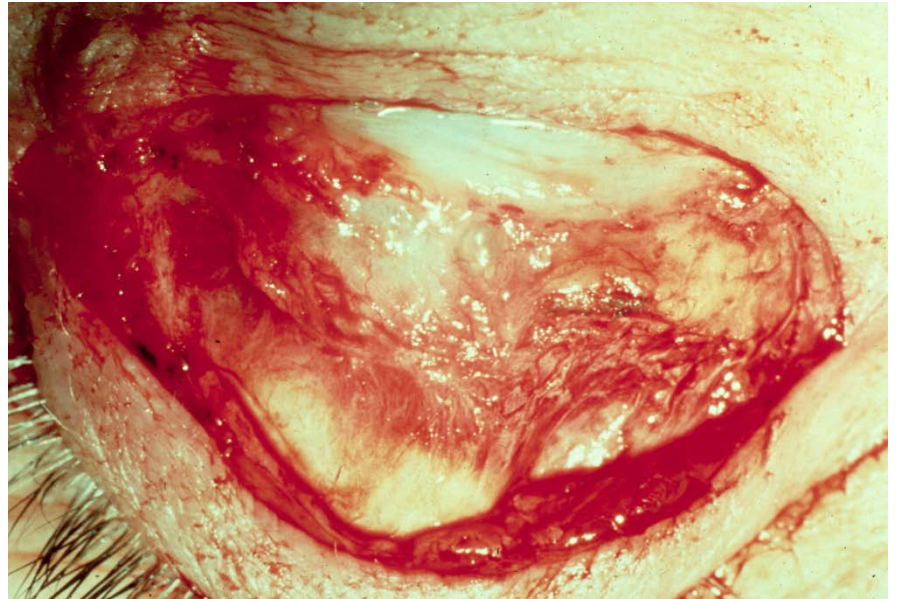


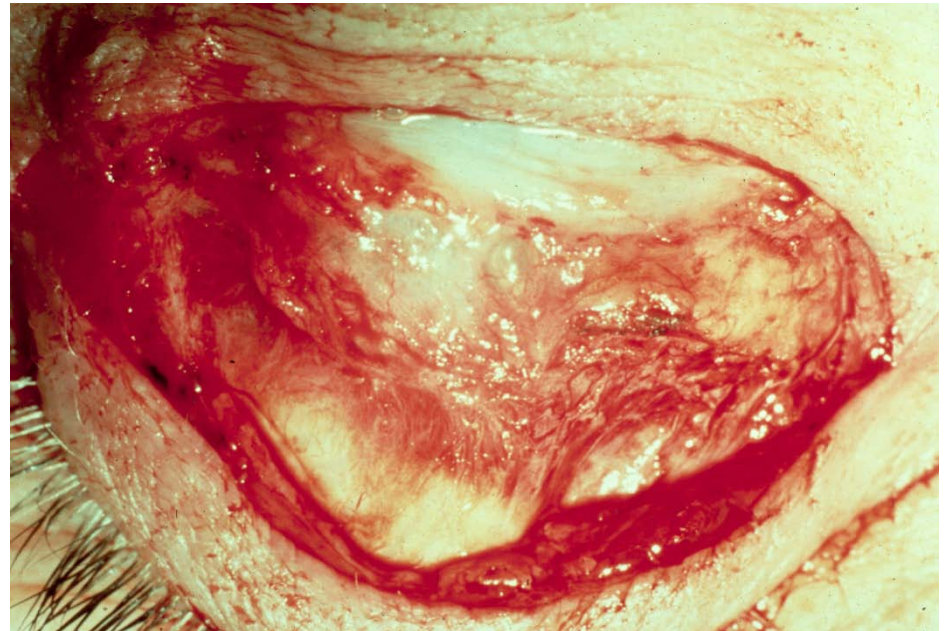
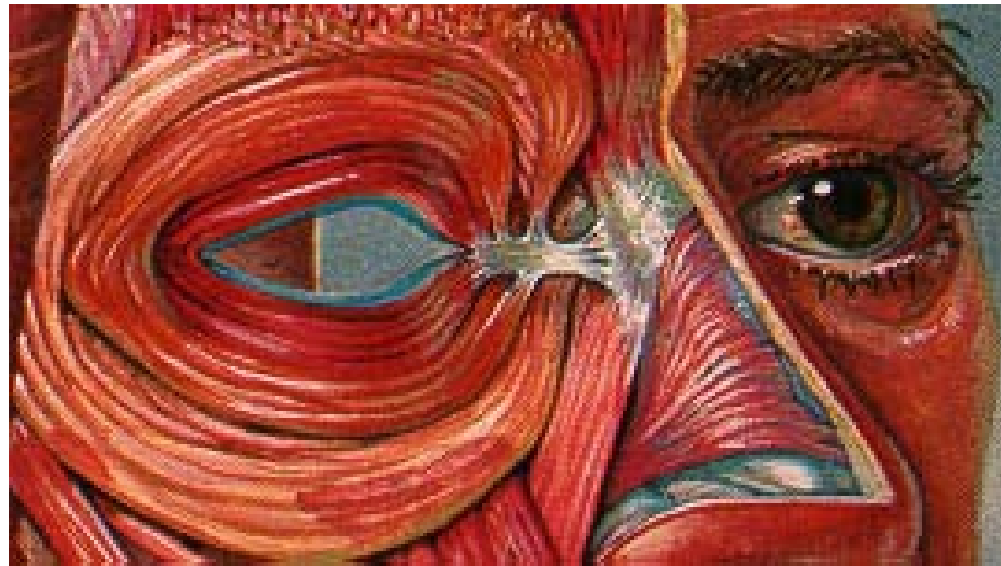
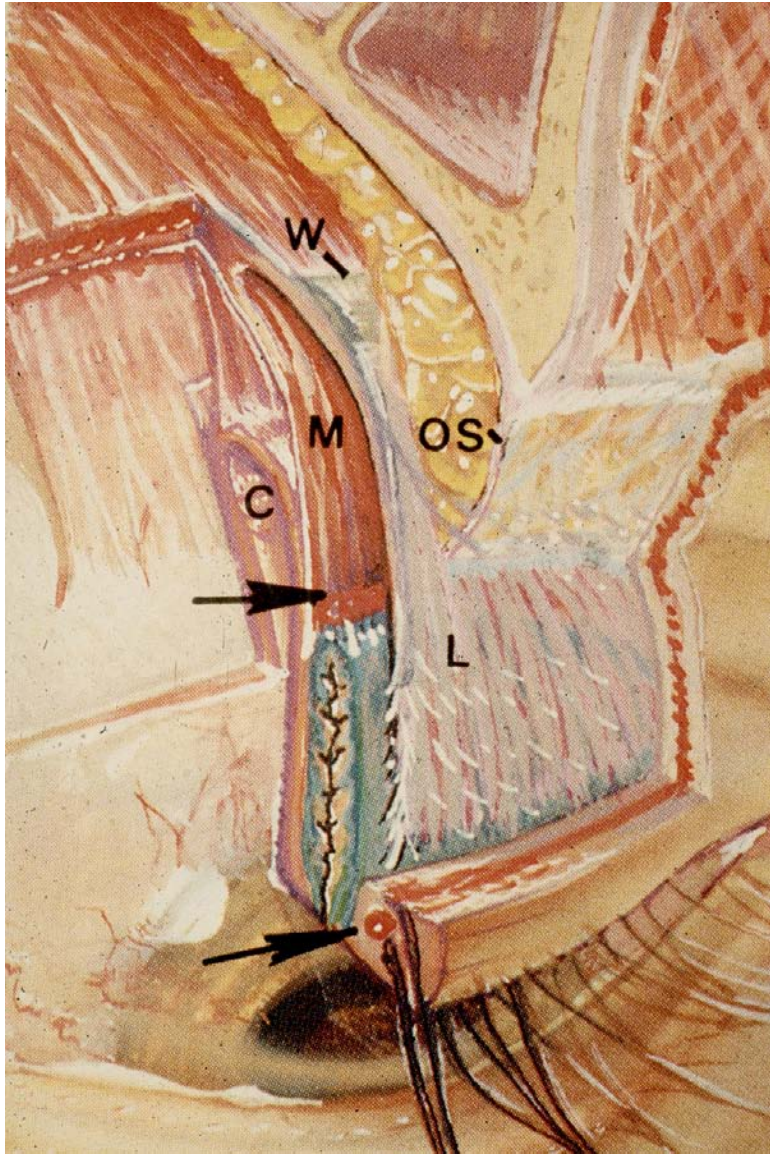
Hemifacial
spasm



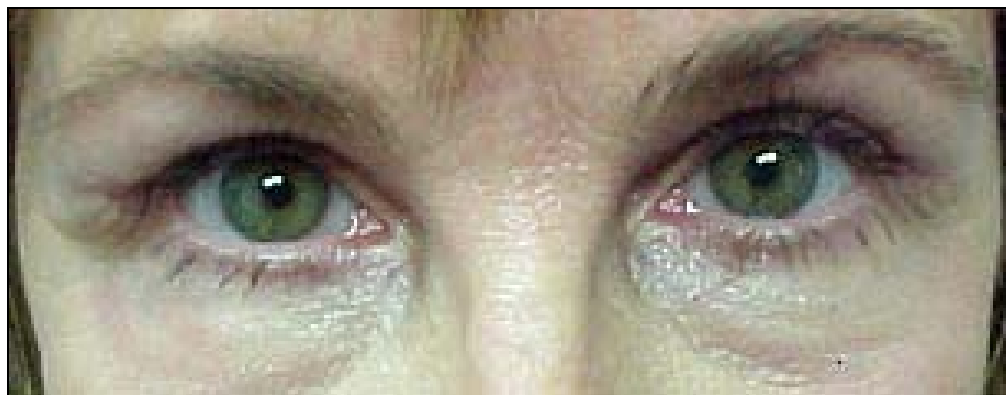
Eyelid Surgery

- Limited Myectomy
- Excessive lid fold is removed
- Muscle closing eyelid is stripped.
- Eyelid retractor is advanced



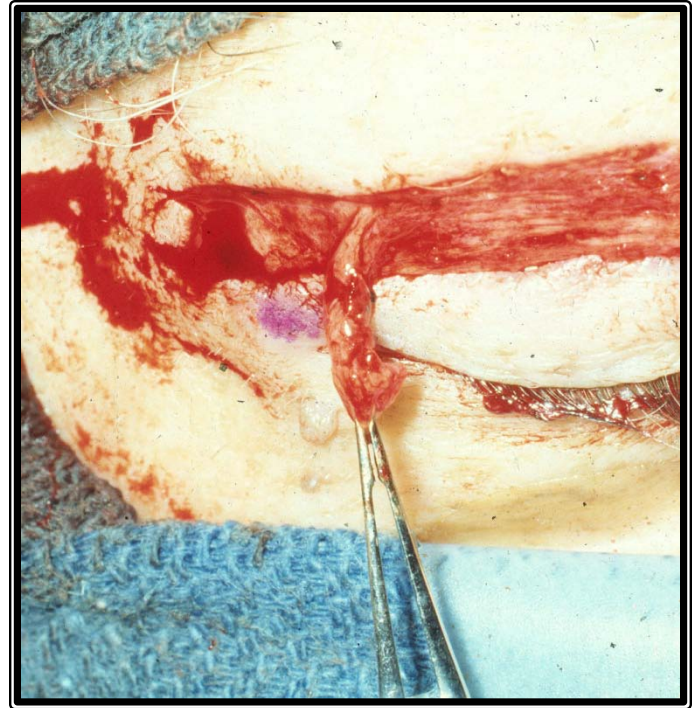


Procedure has similar to cosmetic blepharoplasty- however more muscle is removed



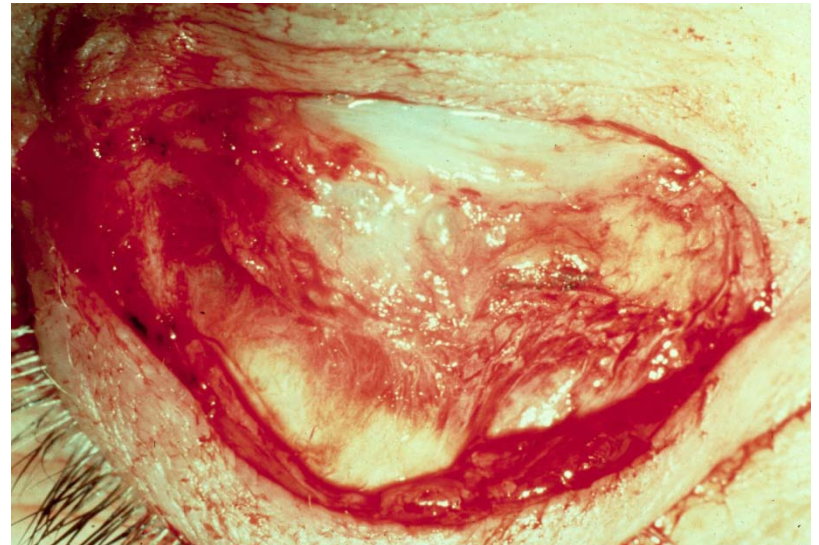
Eyelid Surgery

- Limited Myectomy
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Eyelid Surgery

- Limited Myectomy
- Excessive lid fold is removed
- Muscle closing eyelid is stripped.
- Eyelid retractor is advanced



Eyelid Surgery

- Initial response rate >70 %
- Sustained response rate about 50%
- Over major myectomy, not disfiguring







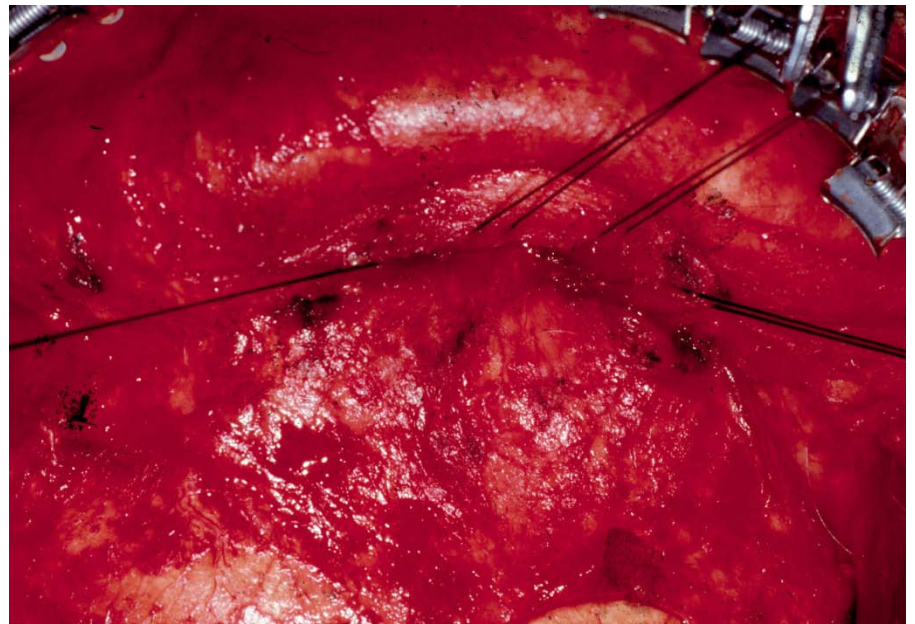
Major Myectomy

- Removal of most of orbicularis oculi through brow lift (direct or indirect) with eyelid tightening



Major Myectomy

- Removal of most of orbicularis oculi through brow lift (direct or indirect) with eyelid tightening



Major Myectomy

- Negatives
- Disfiguring
- Often patients need continued Botox injections
- Does not address cause of the problem



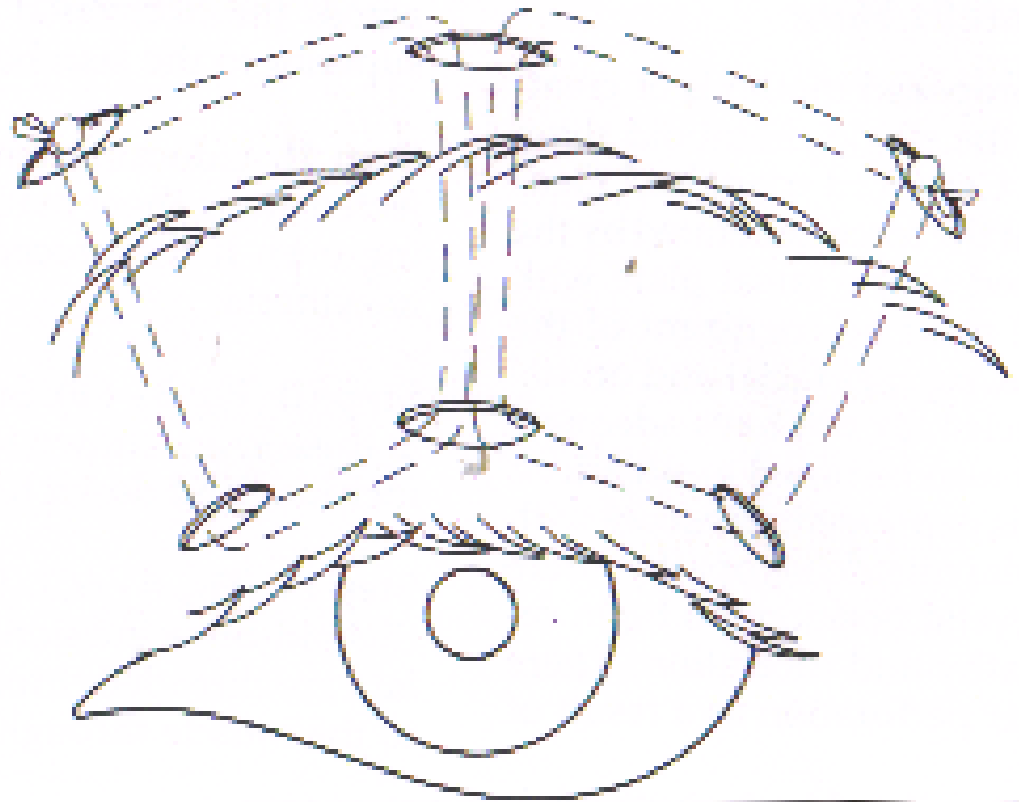
Facial neurectomy (Reynolds Operation)

- Upper branch or entire facial nerve is transected
- Used as last resort type procedure
- Lower face often wakened
- Regeneration of facial nerve occurs



Sling Operation

- Pulley attached to frontalis muscle to eyelids open

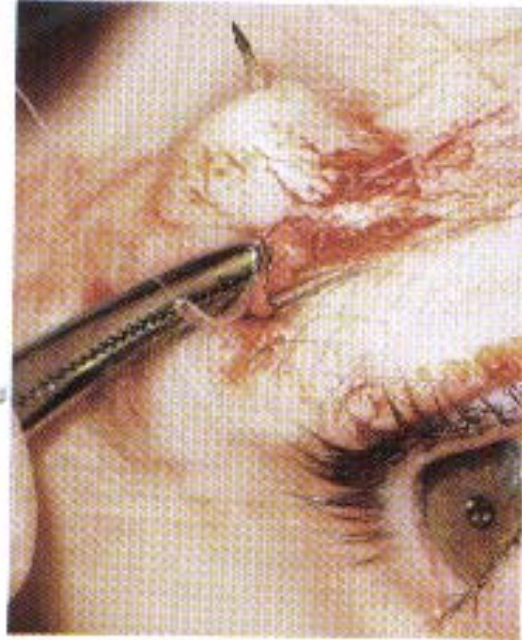




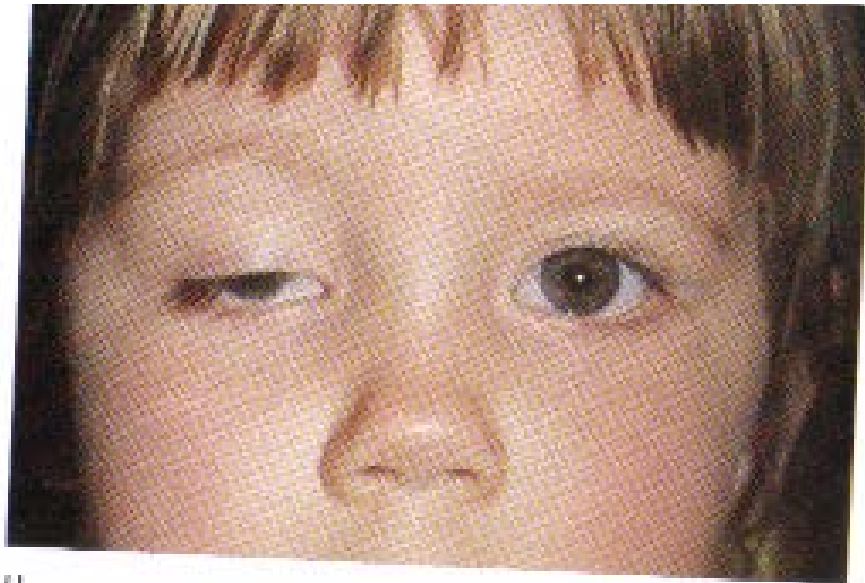
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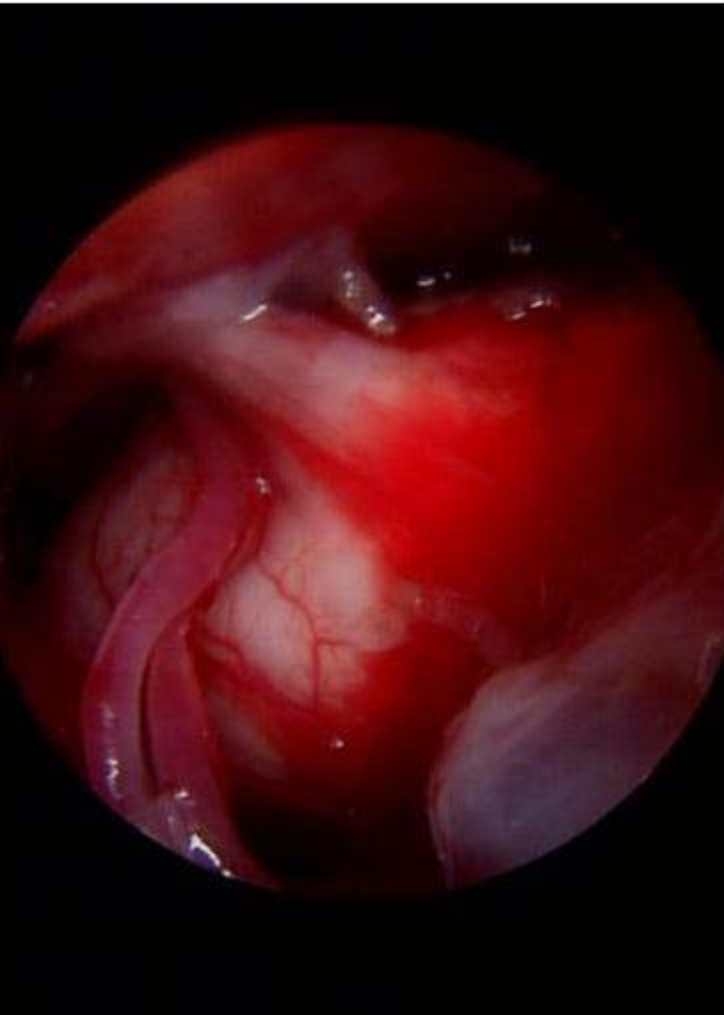
U



V

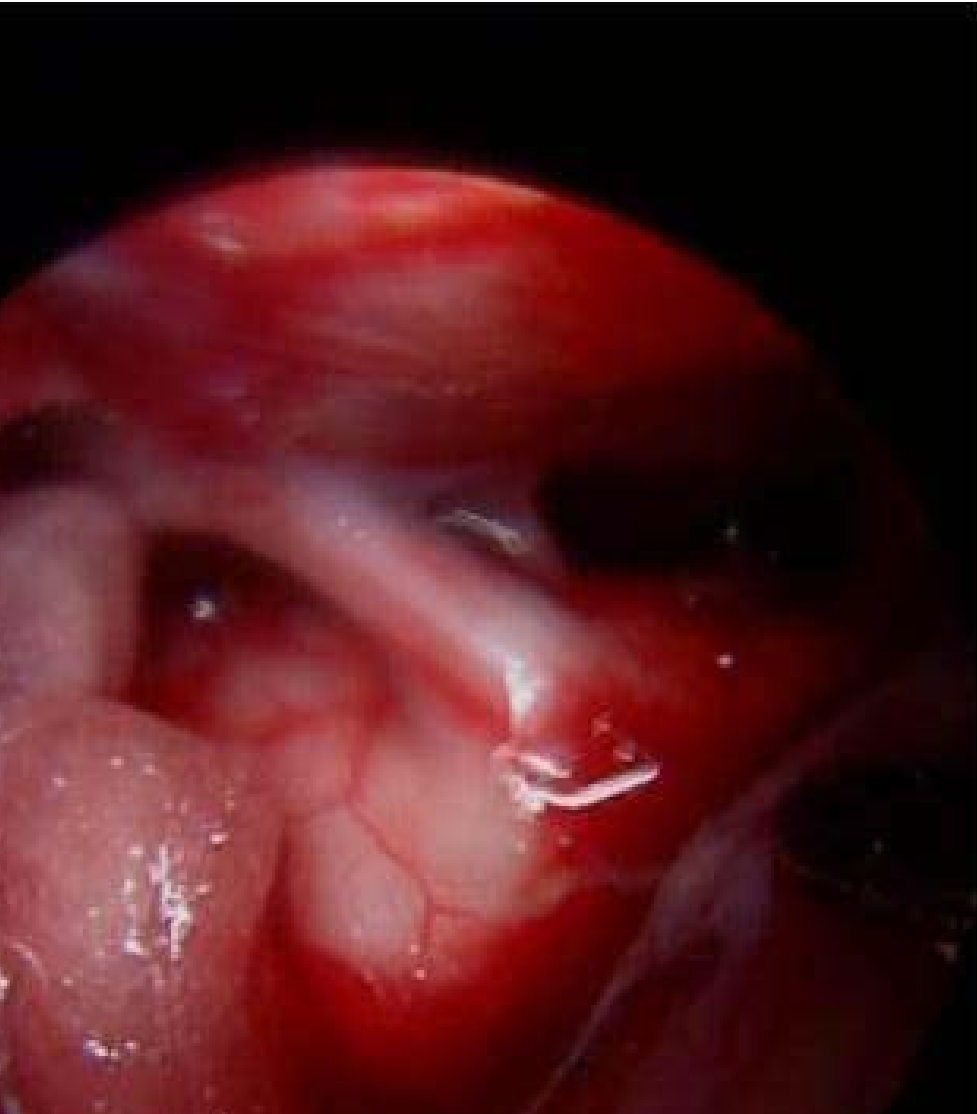
FIGURE 5-5 Continued T. *flexion* (U) and *extension* (V).

Hemifacial Spasm



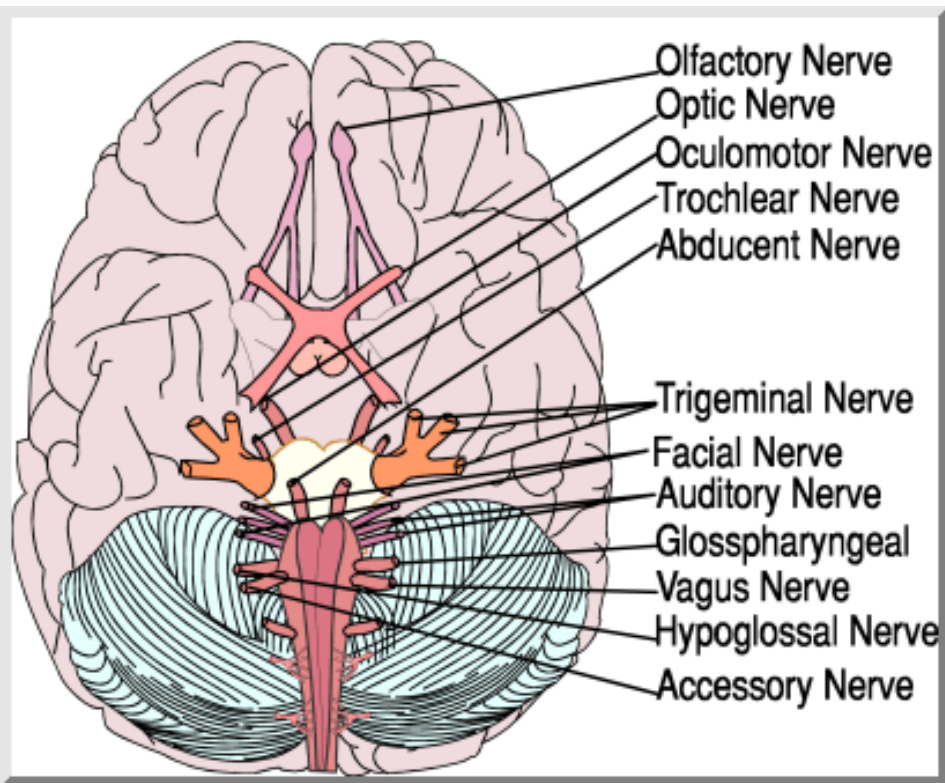
- Cause (many cases) aberrant tortuous vessels at the cerebro-pontine angle
- Irrigative focus on the trunk of the facial nerve
- Some cases may be due to brainstem pathology

Hemifacial Spasm



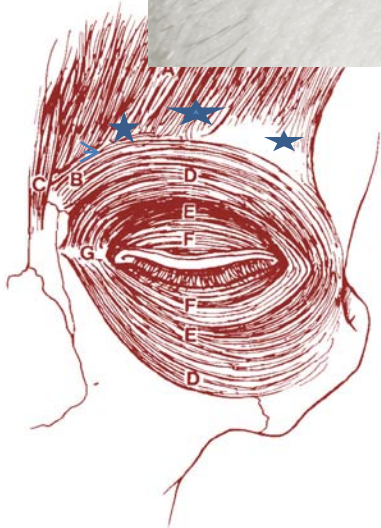
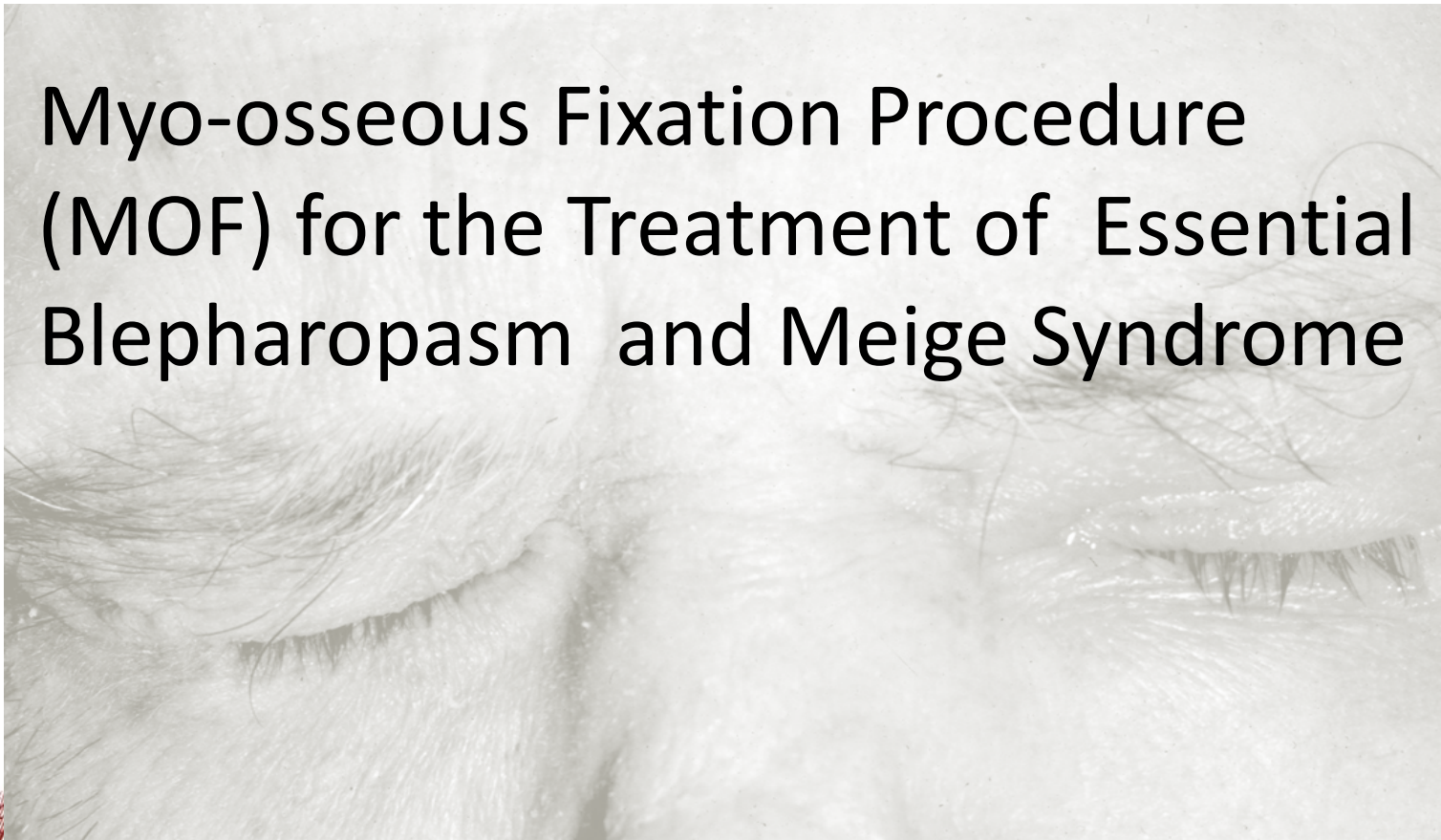
- Decompressing the facial nerve with surgical insulator

Hemifacial Spasm- Microvascular Decompression



- Complication
- Auditory nerve damage- 8%
- Lack of effect (long term follow up needed)
- Stroke
- Intracranial hemorrhage

Myo-osseous Fixation Procedure (MOF) for the Treatment of Essential Blepharospasm and Meige Syndrome



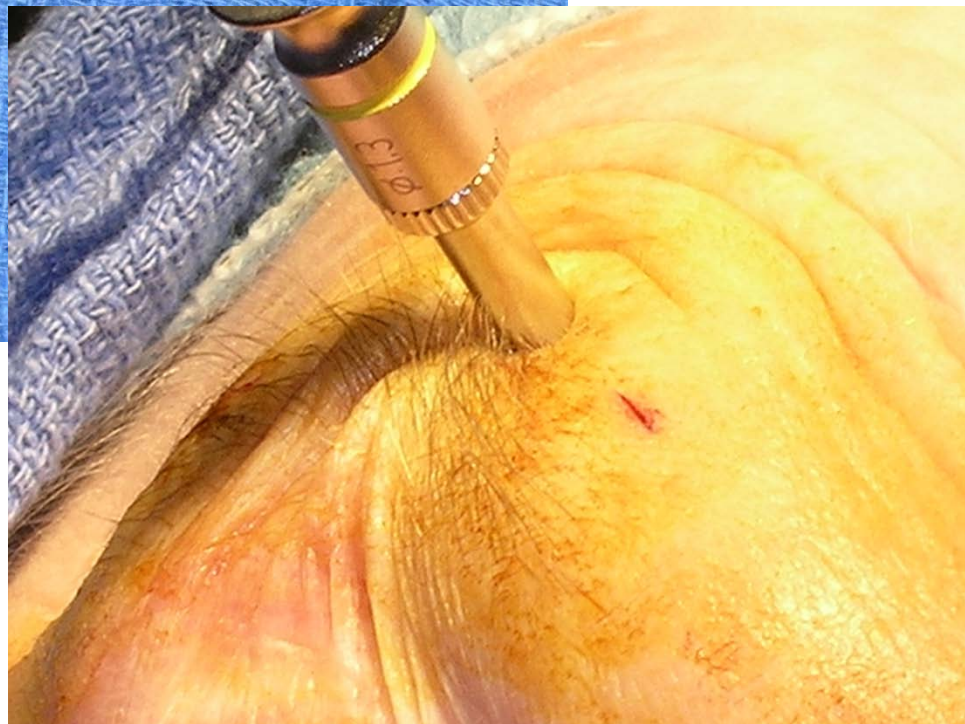
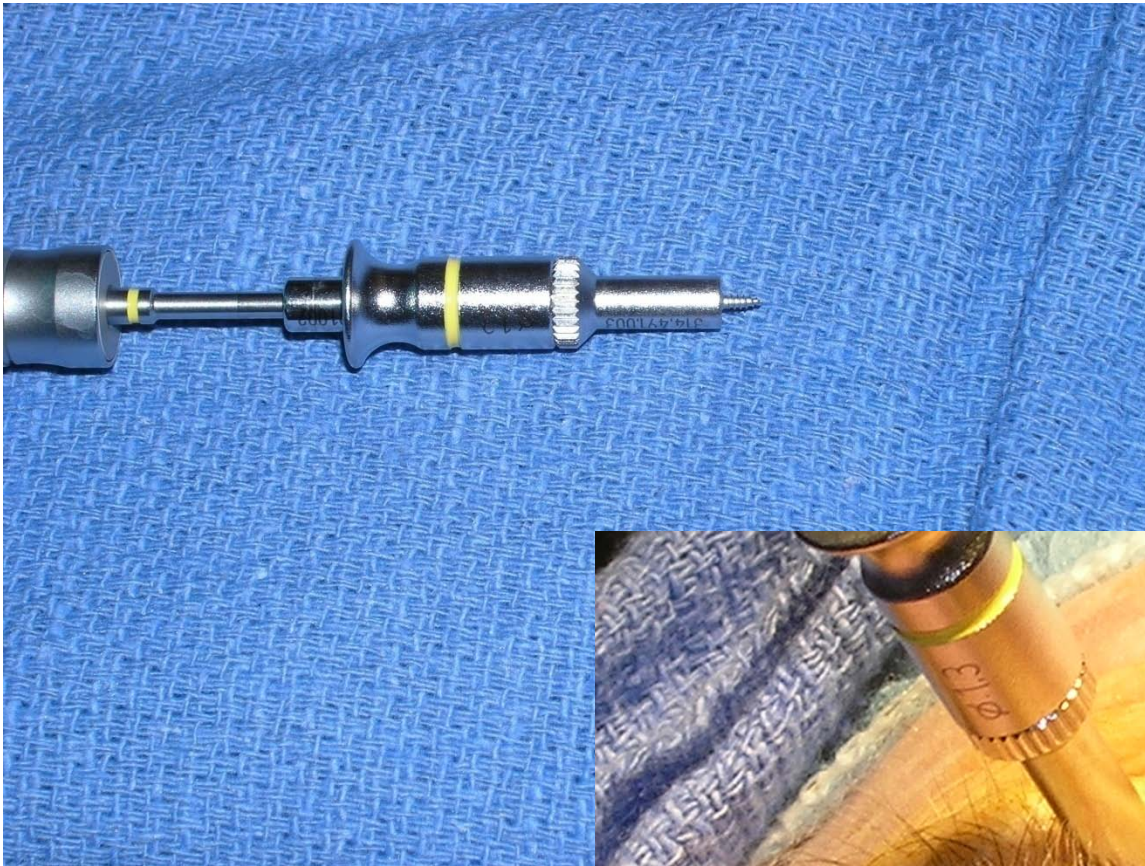
Gary E Borodic, MD

Senior Surgeon, Massachusetts Eye and Ear
Infirmary

Assistant Professor of Ophthalmology
Harvard Medical School

Geste Anagonistique-Sensory Motor trick



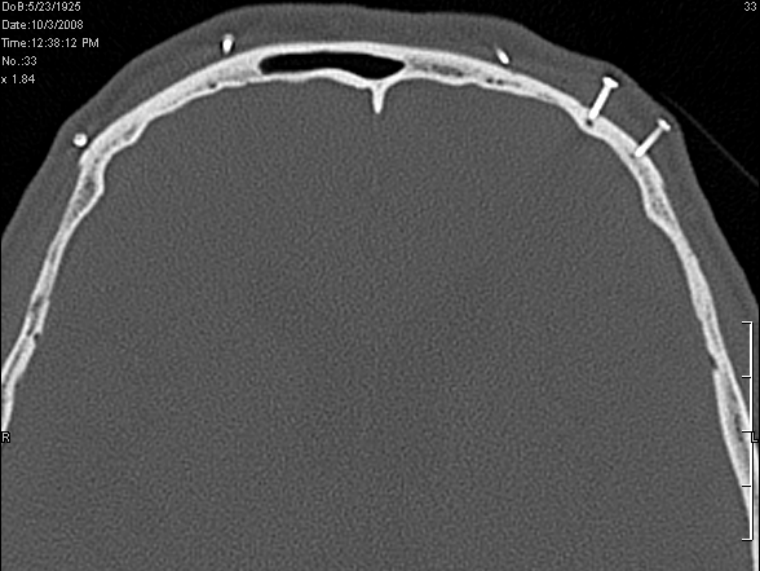




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Date: 10/3/2008
Time: 12:38:12 PM
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x 1.84

A

Inst: Massachusetts Eye and Ear Infirmary
Model: Sensation 40
33



The Components of the MOF Procedure

- Digital Elevation and Brow Fixation
Mechanical
- *Sensation* stimulation with suppression of movements- *reflex suppression*

Myo-osseous Fixation

- Theory, Design and Mechanism of Procedure
- Place among existing procedures
- Advantages and limitations
- The mechanics and demonstration of the procedure
- Early experience with 1 year follow ups

“Geste Antagonistique”- Sensory Trick



Case examples







3/30/06



Post-Op
4/07/08



4/07/08



4/07/08



10/13/08



11/24/08



11/24/08



11/24/08





8/27/08



Two Months post op

2/02/09



Eight Months post op

12-5-07

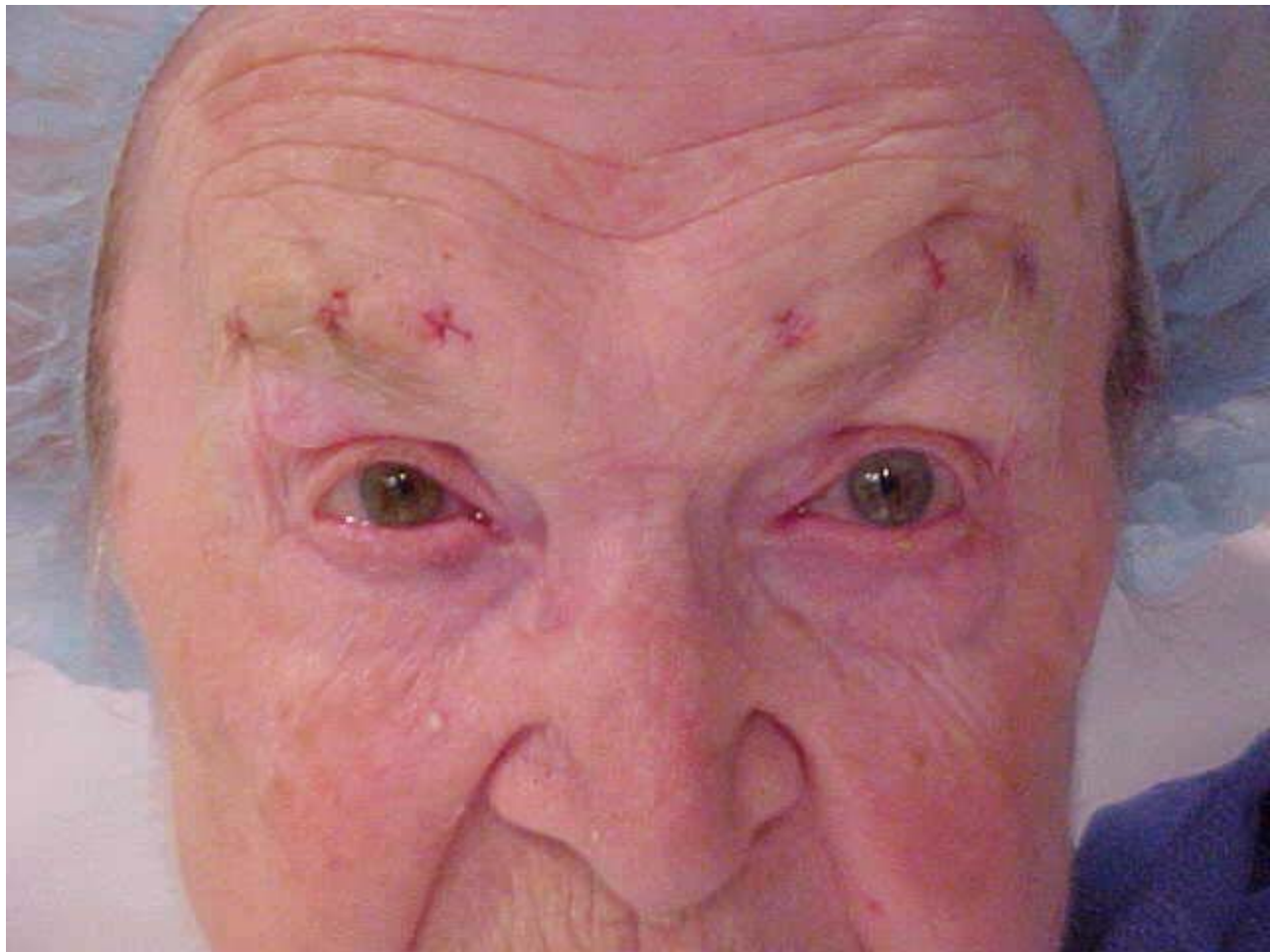




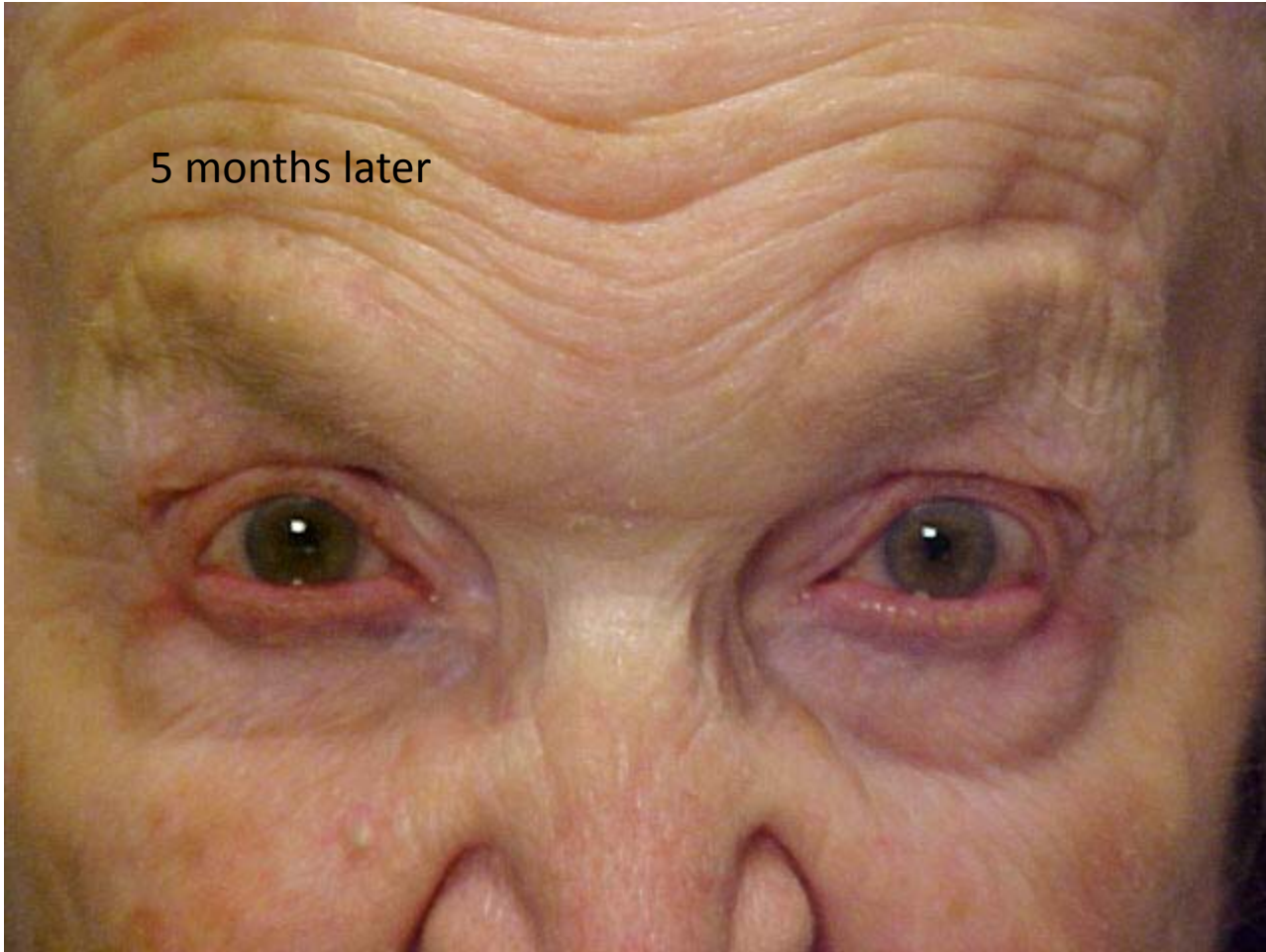
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5 months later









7 months later



Mechanics

- Basic Anatomy
- Surgical Anatomy
- New anatomic observations as to structure and function of facial fat and possible application to facial movement disease

Basic Anatomy Important to Blepharopasm

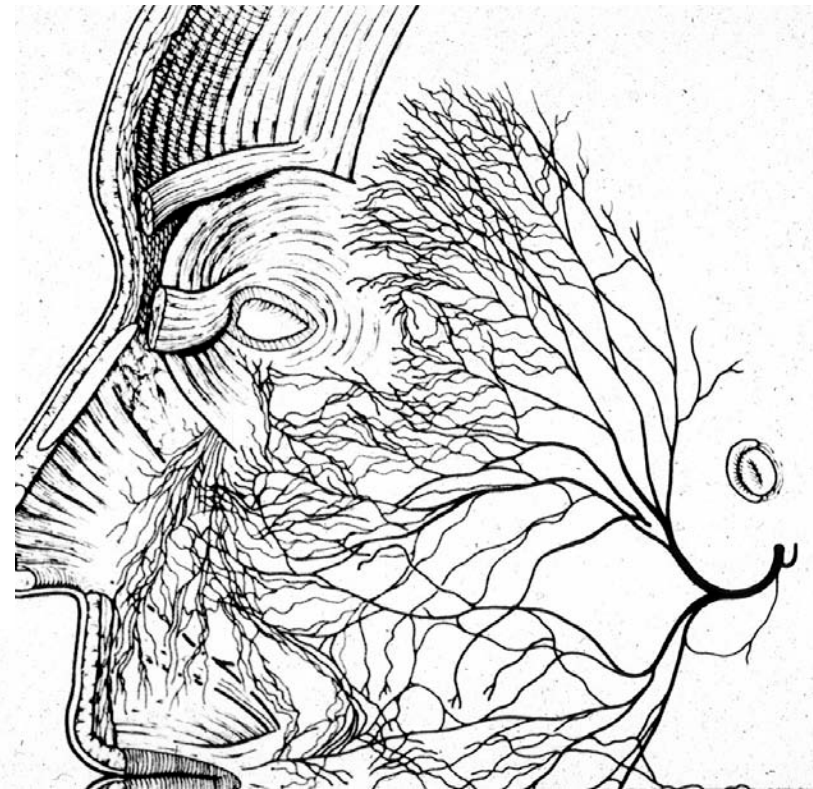
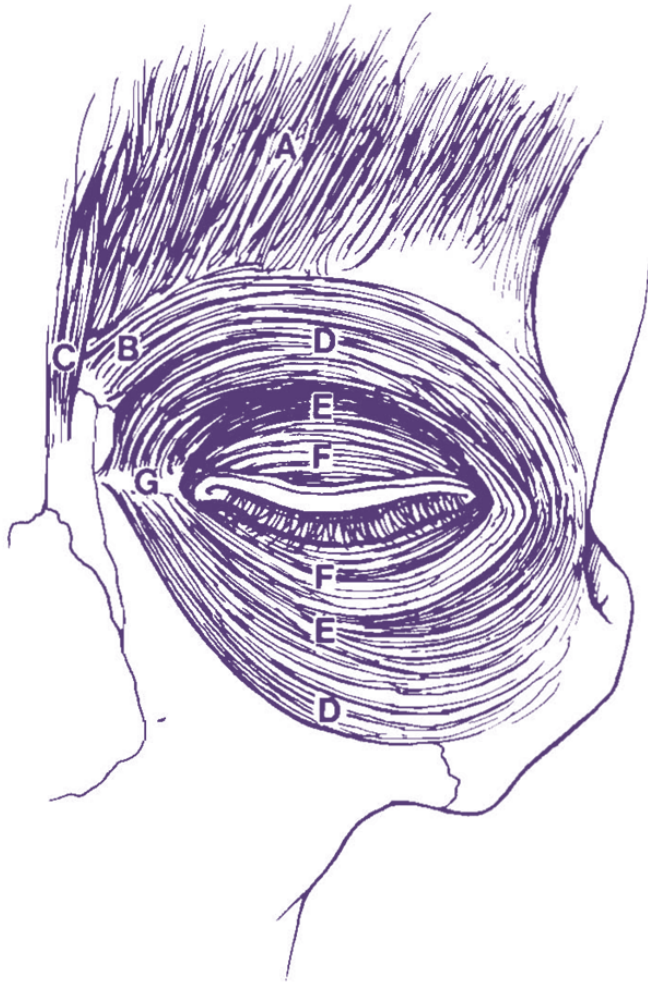
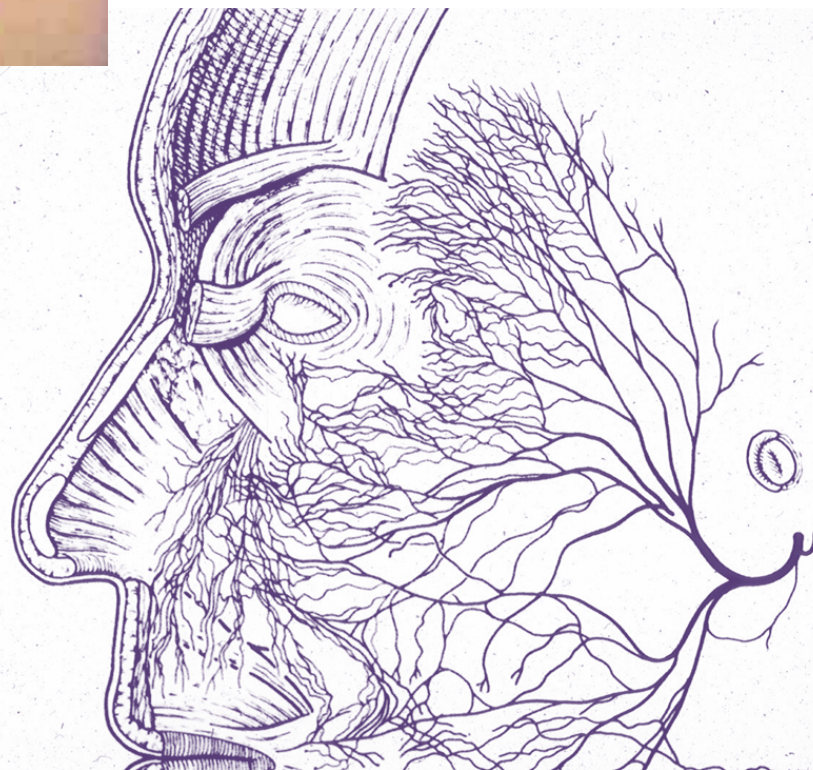
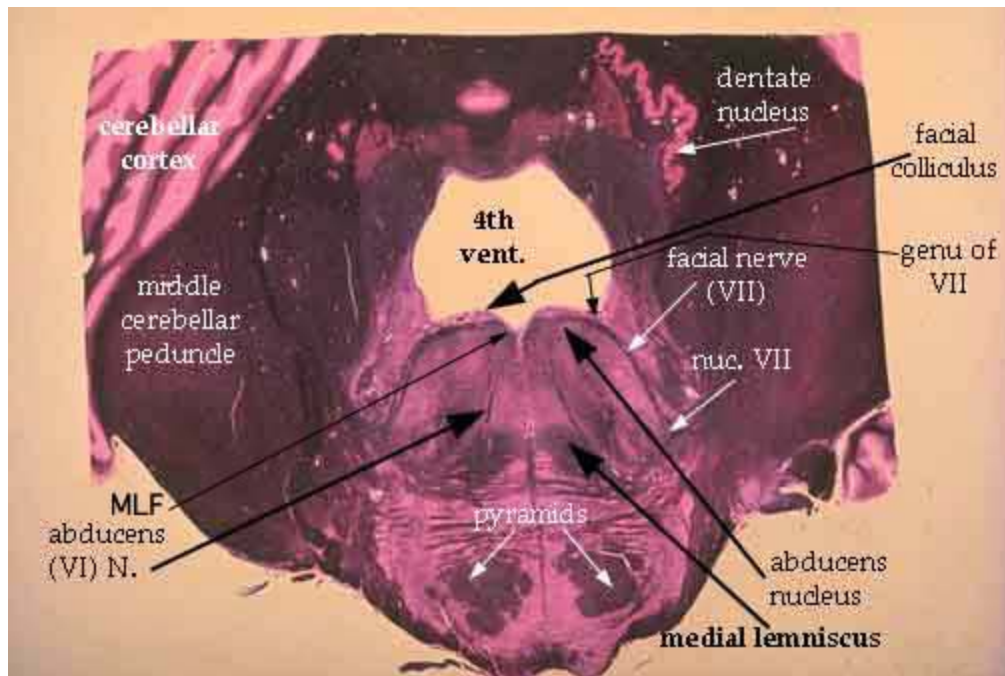
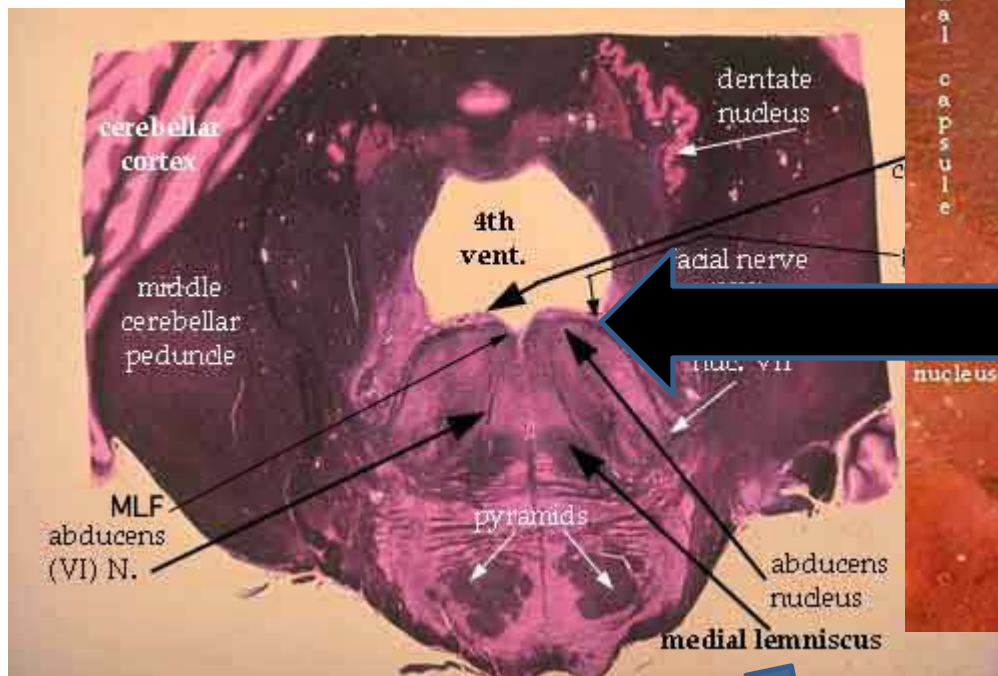
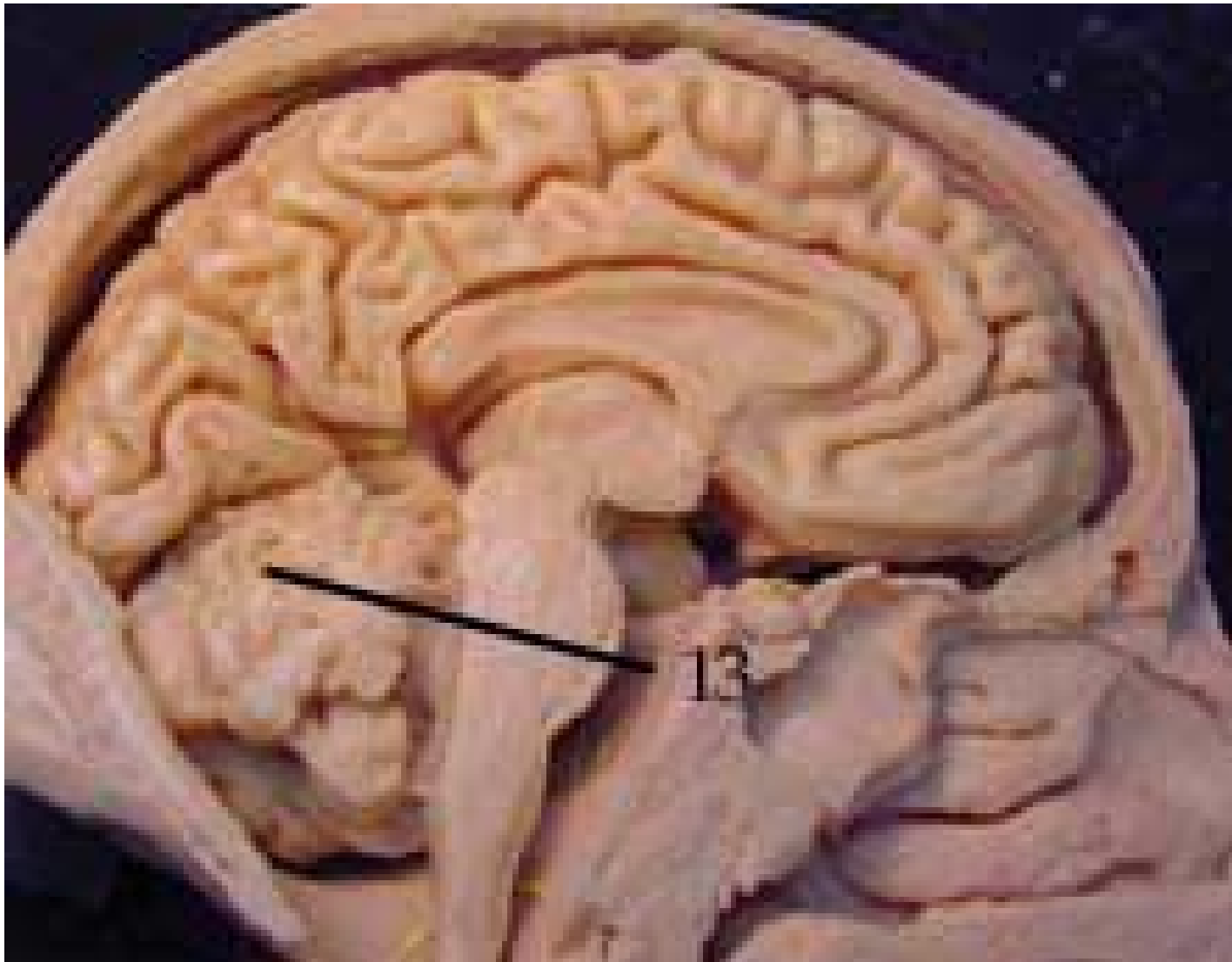


Figure 2.4 Musculature of the brow and eyelids. A. Front







Basic Anatomy

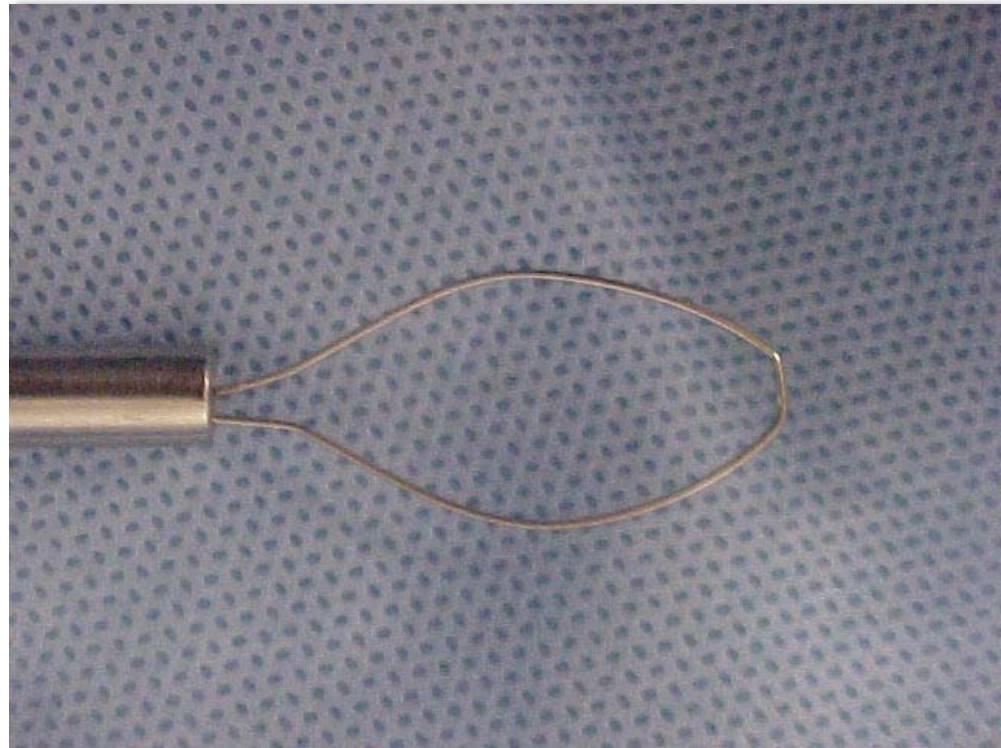
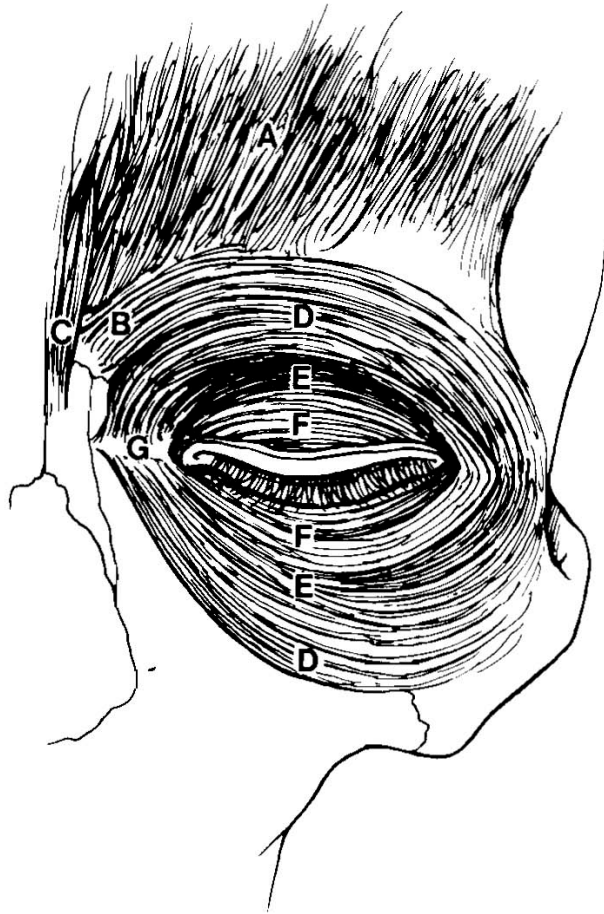


Figure 2.4 Musculature of the brow and eyelids. A. Front

Basic Anatomy

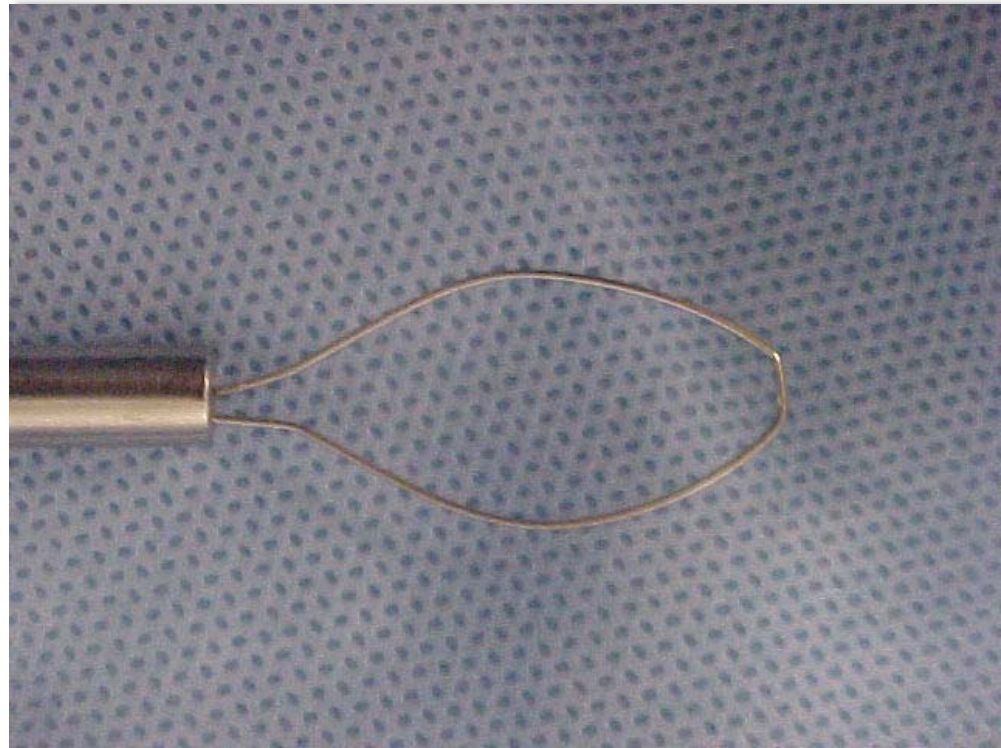
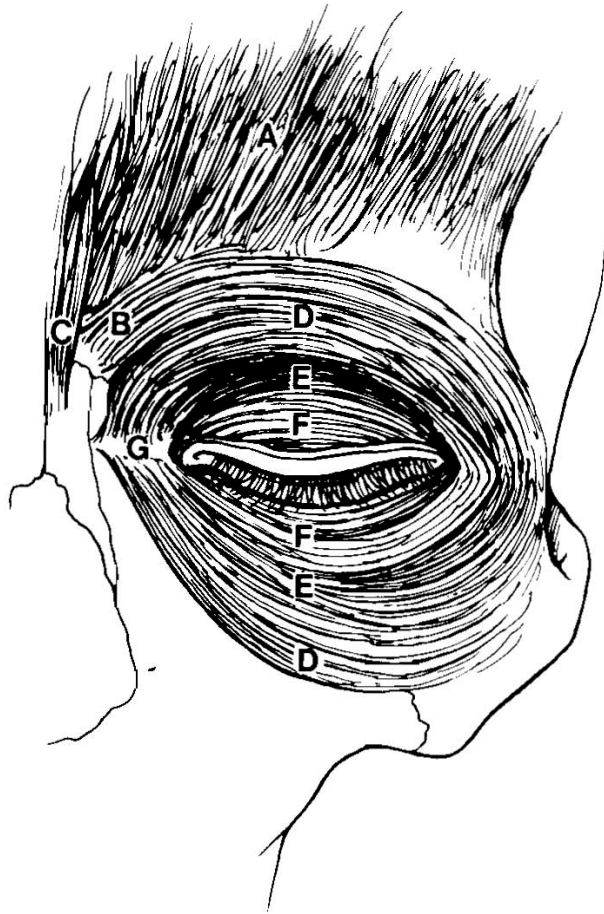


Figure 2.4 Musculature of the brow and eyelids. A. Front

Basic Anatomy

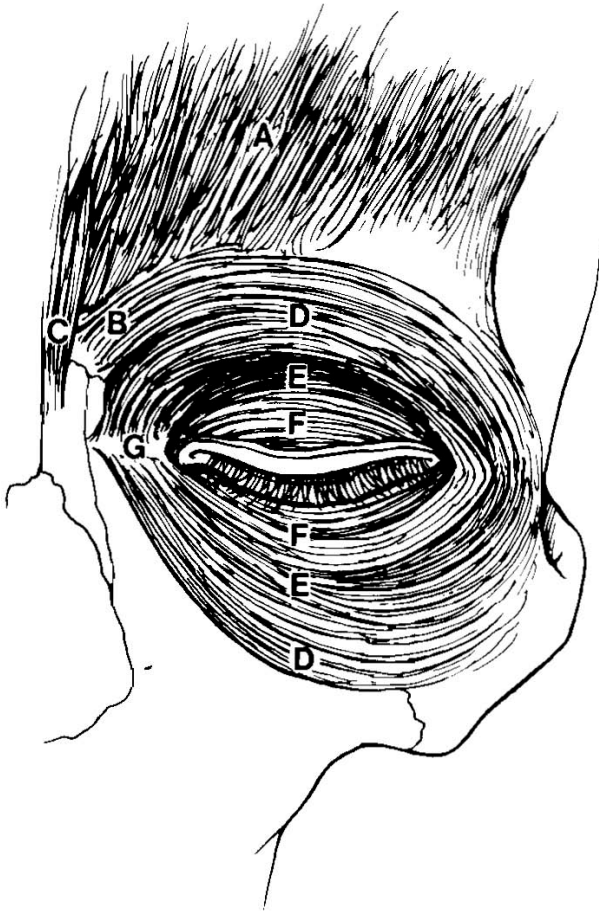


Fig. 2.4. Musculature of the brow and eyelids. A. Front

Basic Anatomy

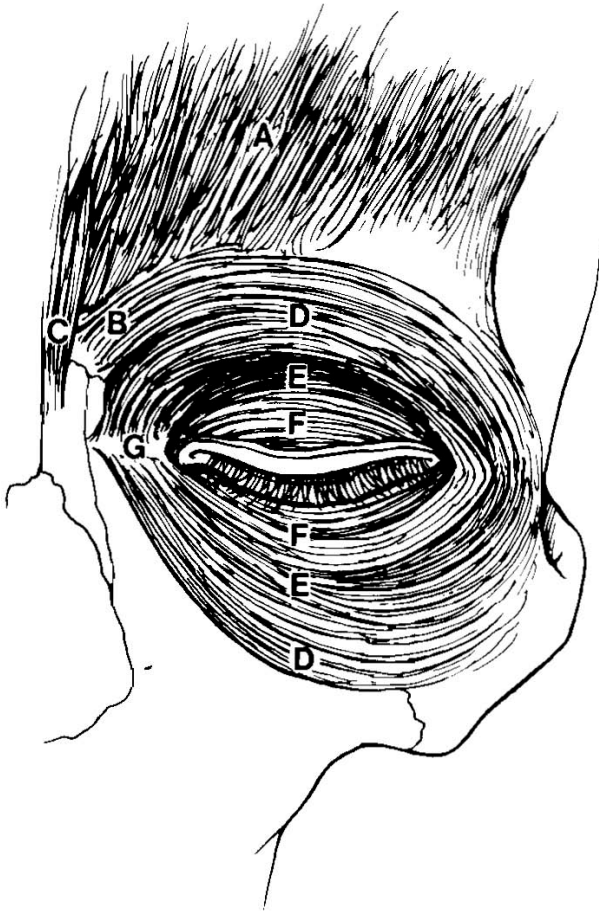
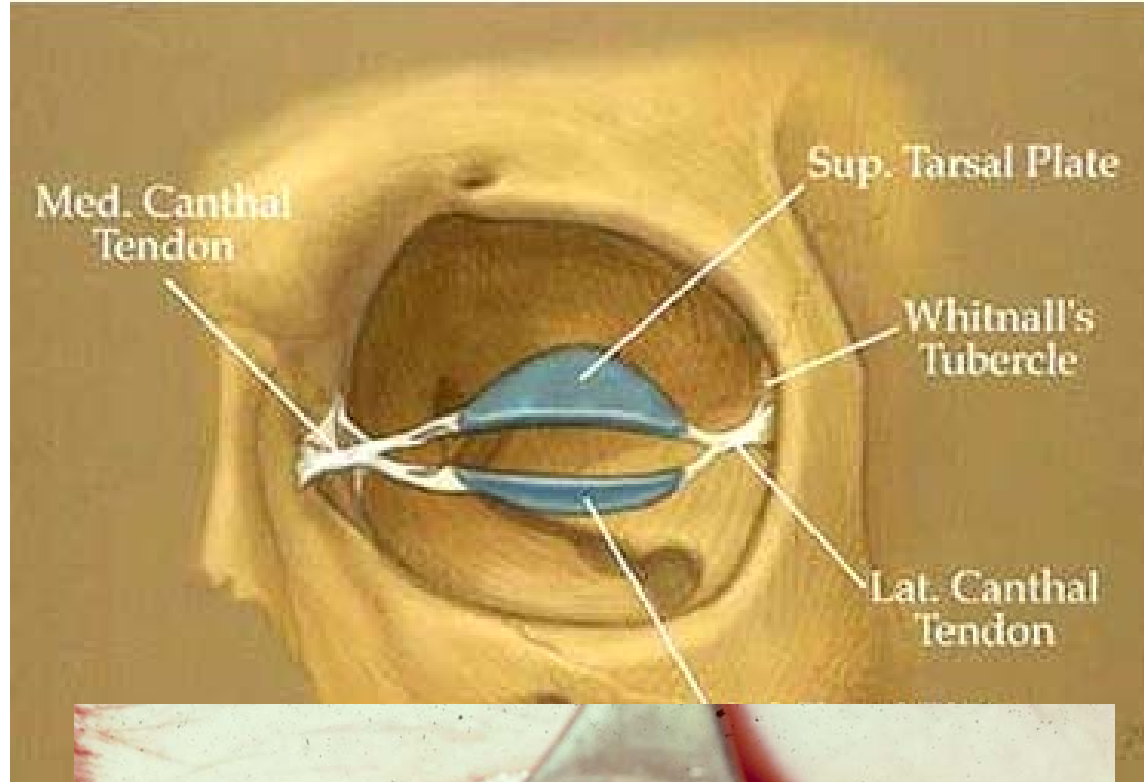


Fig. 2.4. Musculature of the brow and eyelids. A. Front



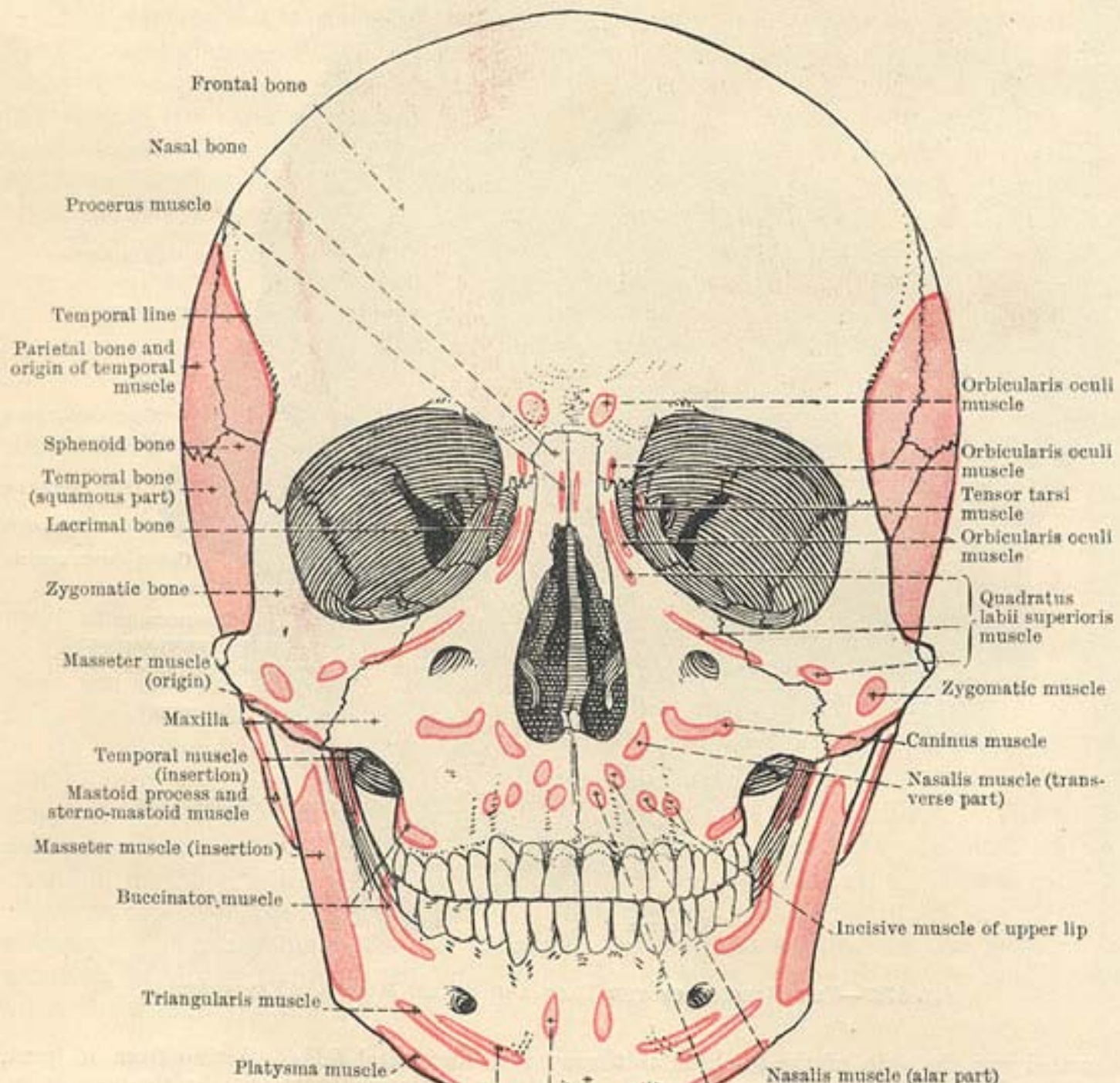
Critical Surgical Anatomy

Functional Significance of Fat



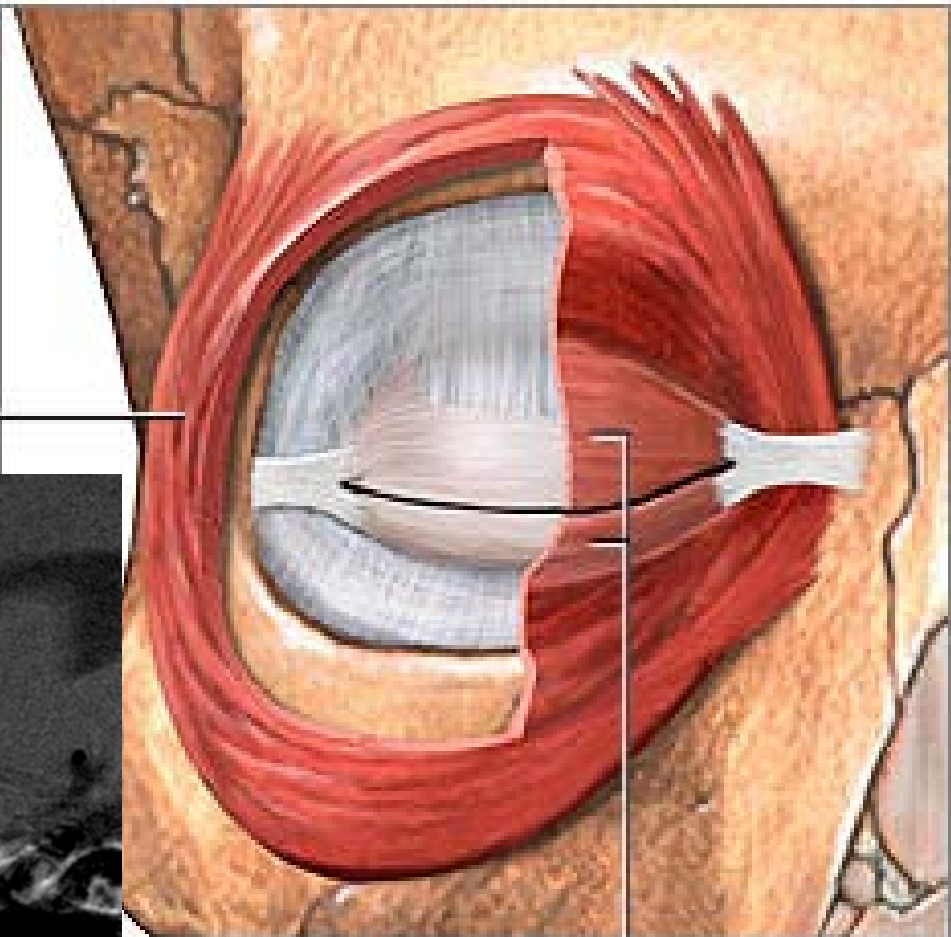
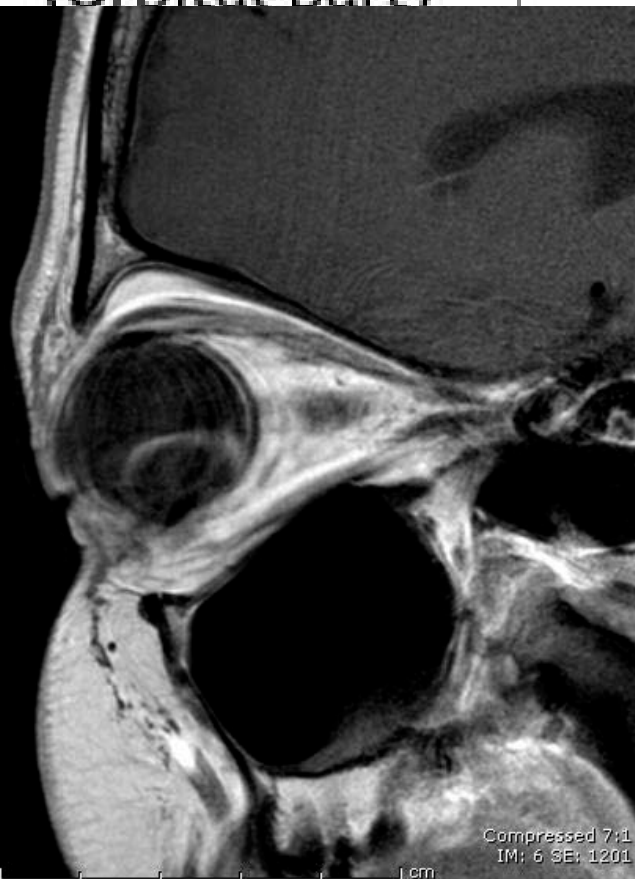
Functional Significance of Fat





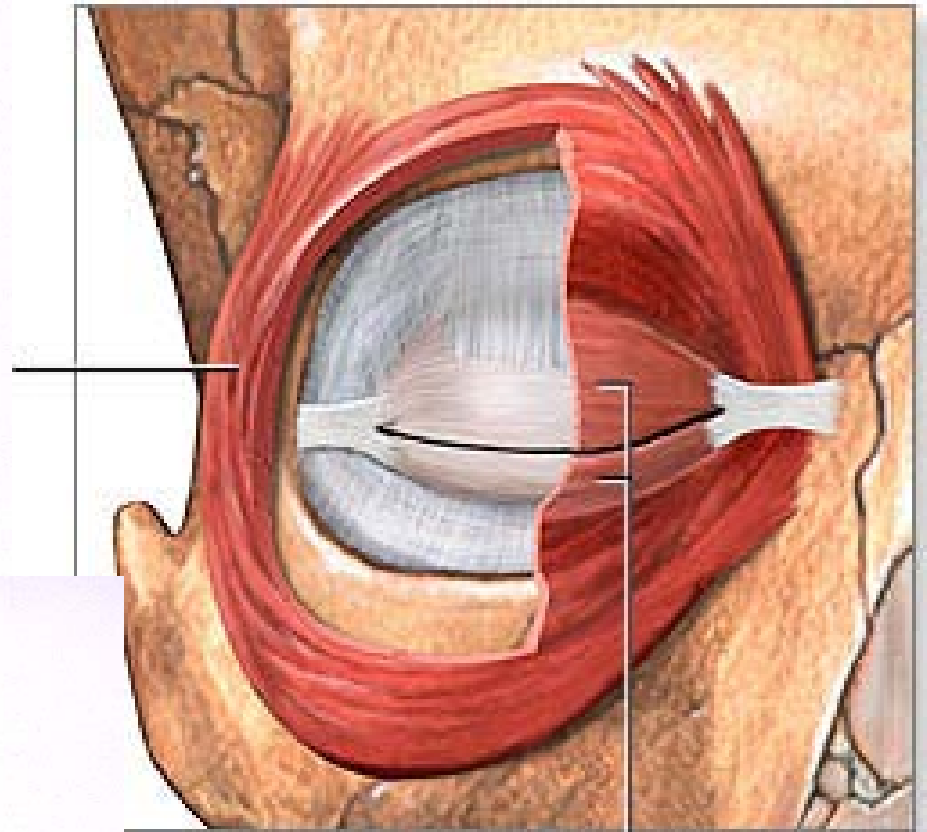
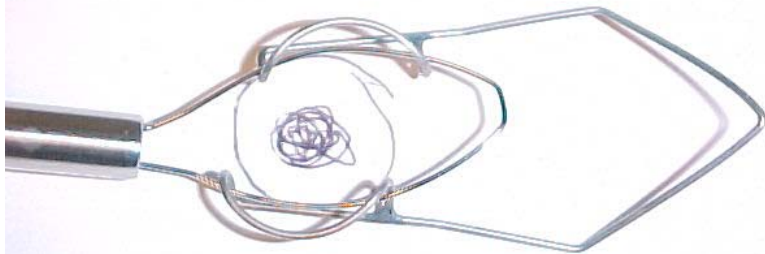
Orbicularis oculi (Orbital part)

Maddigan, Melinda

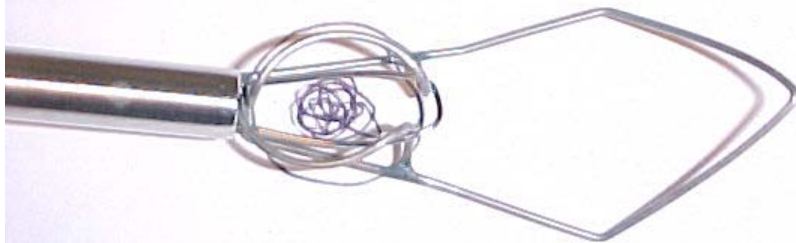


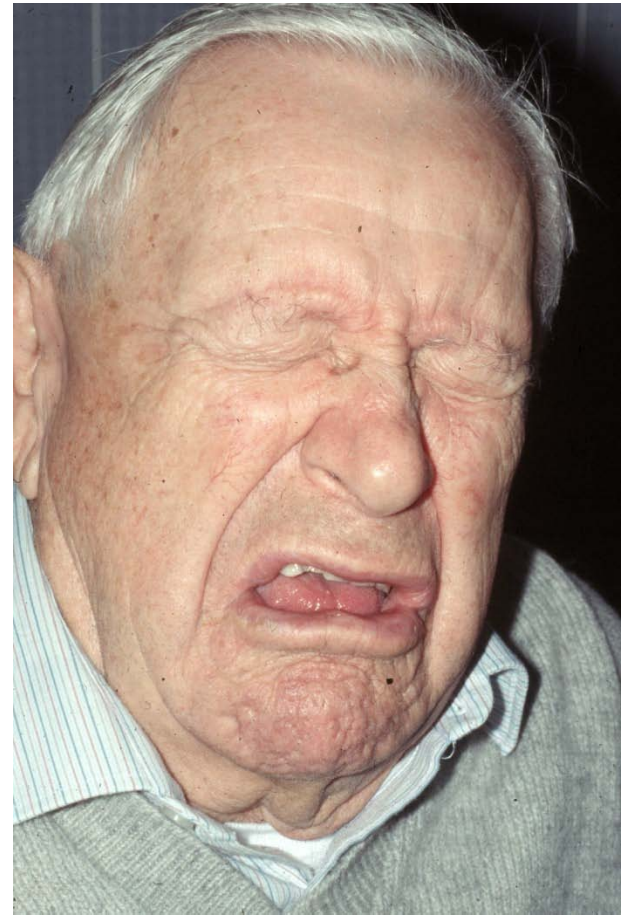
Orbicularis oculi (Palpebral part)

ADAM.

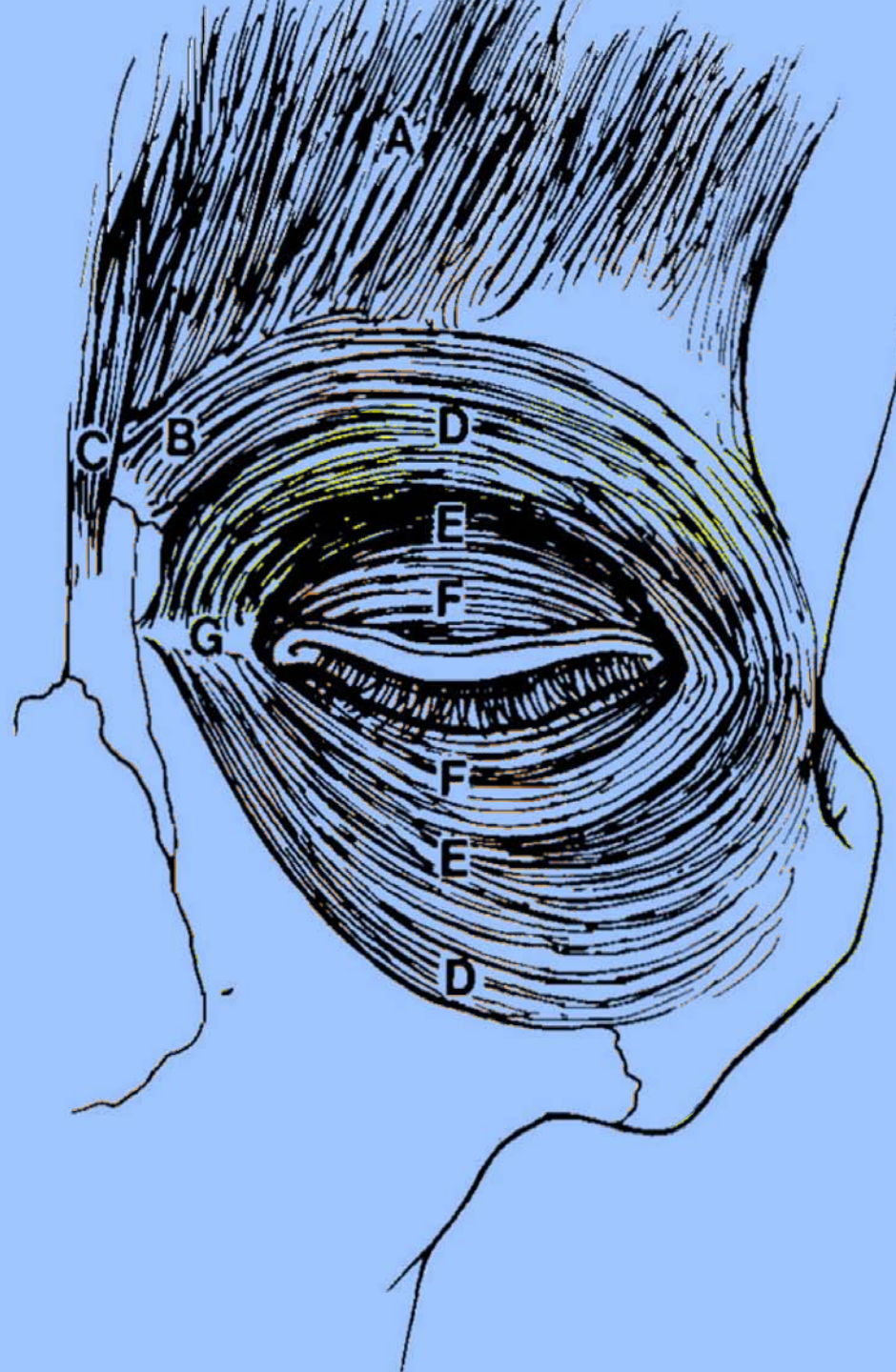


Orbicularis oculi
(Palpebral part)

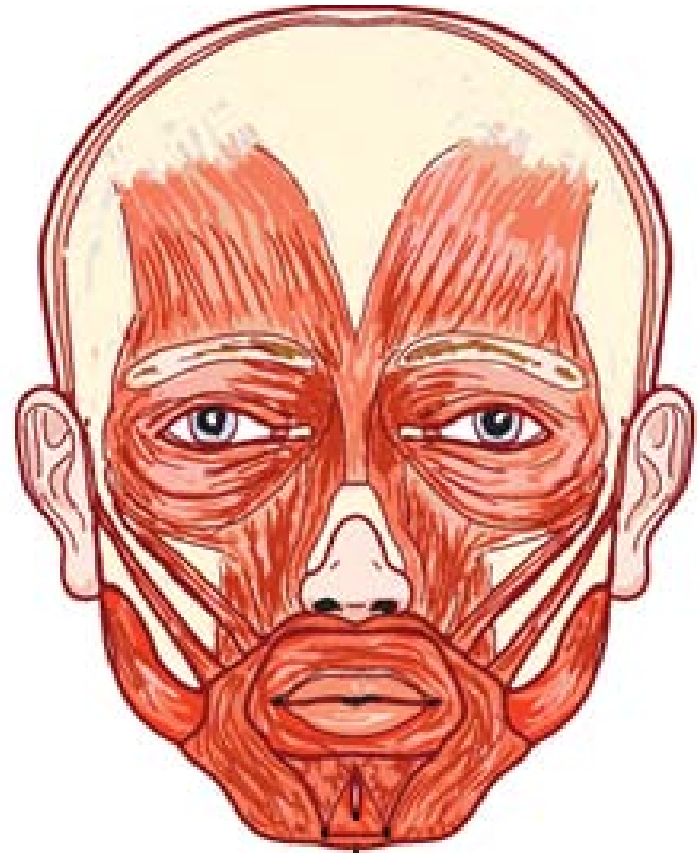
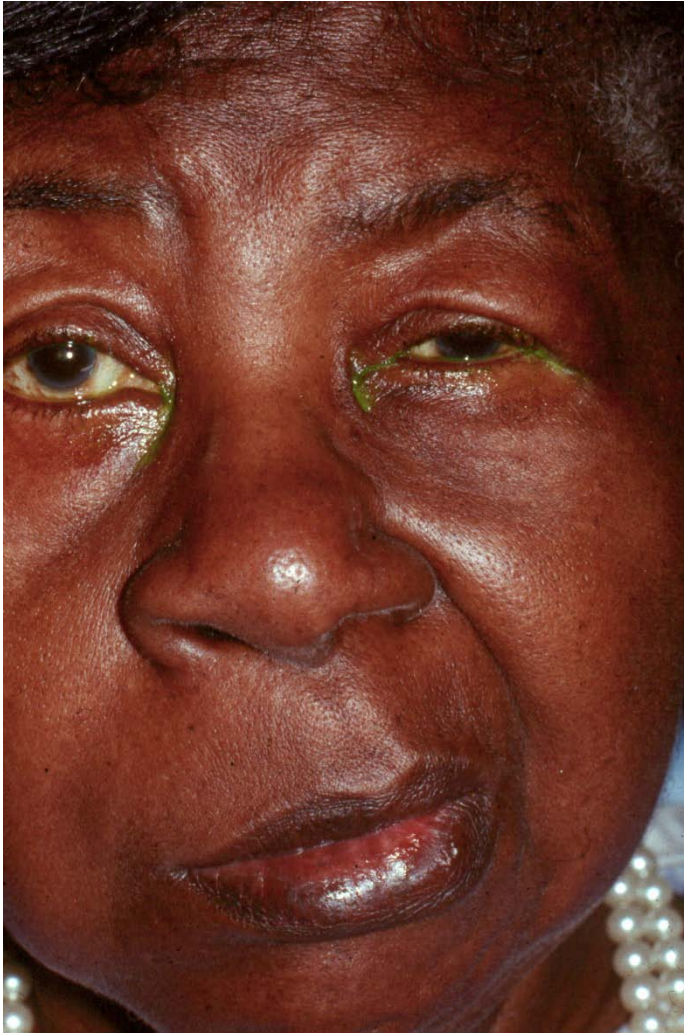








Planar Fat Joint and Hemi facial Spasm



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12/21/1979
29 YEAR
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A Massachusetts Eye and Ear Infirmary
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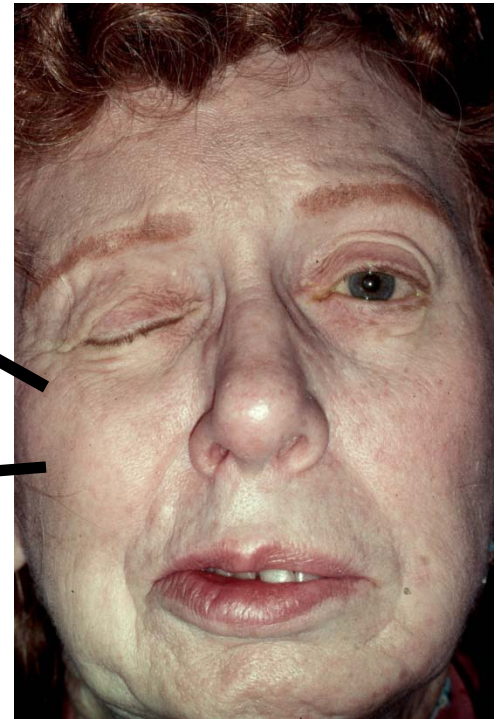
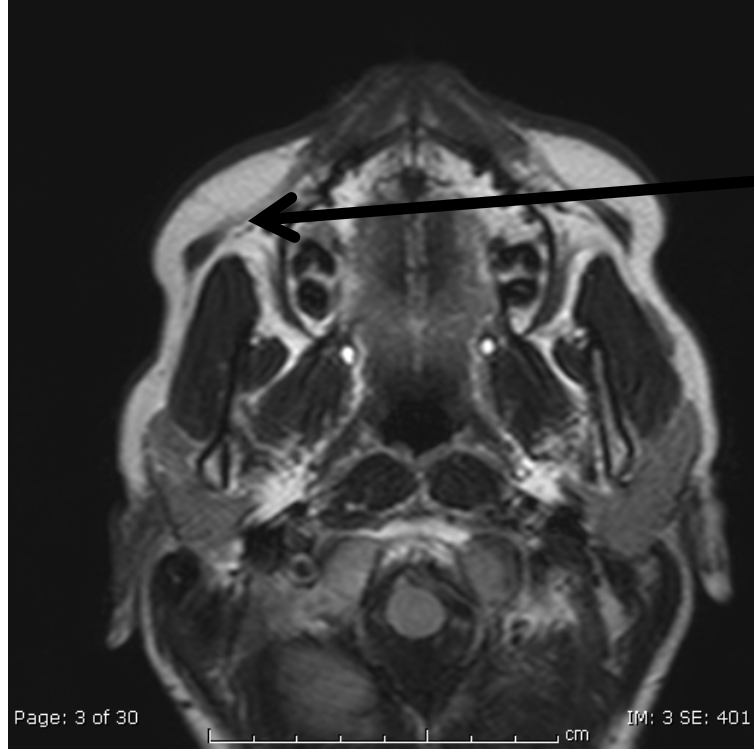
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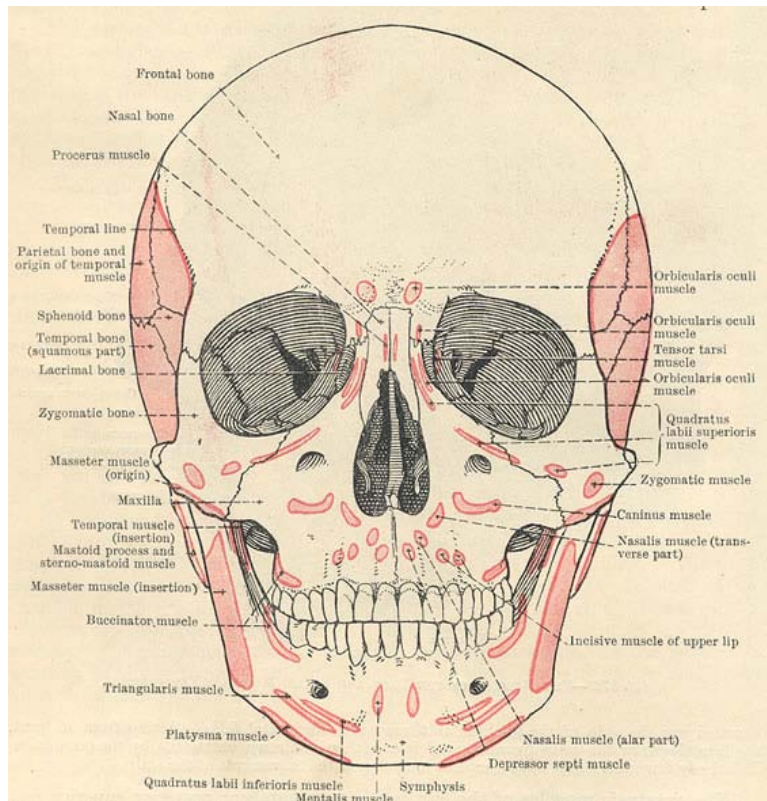
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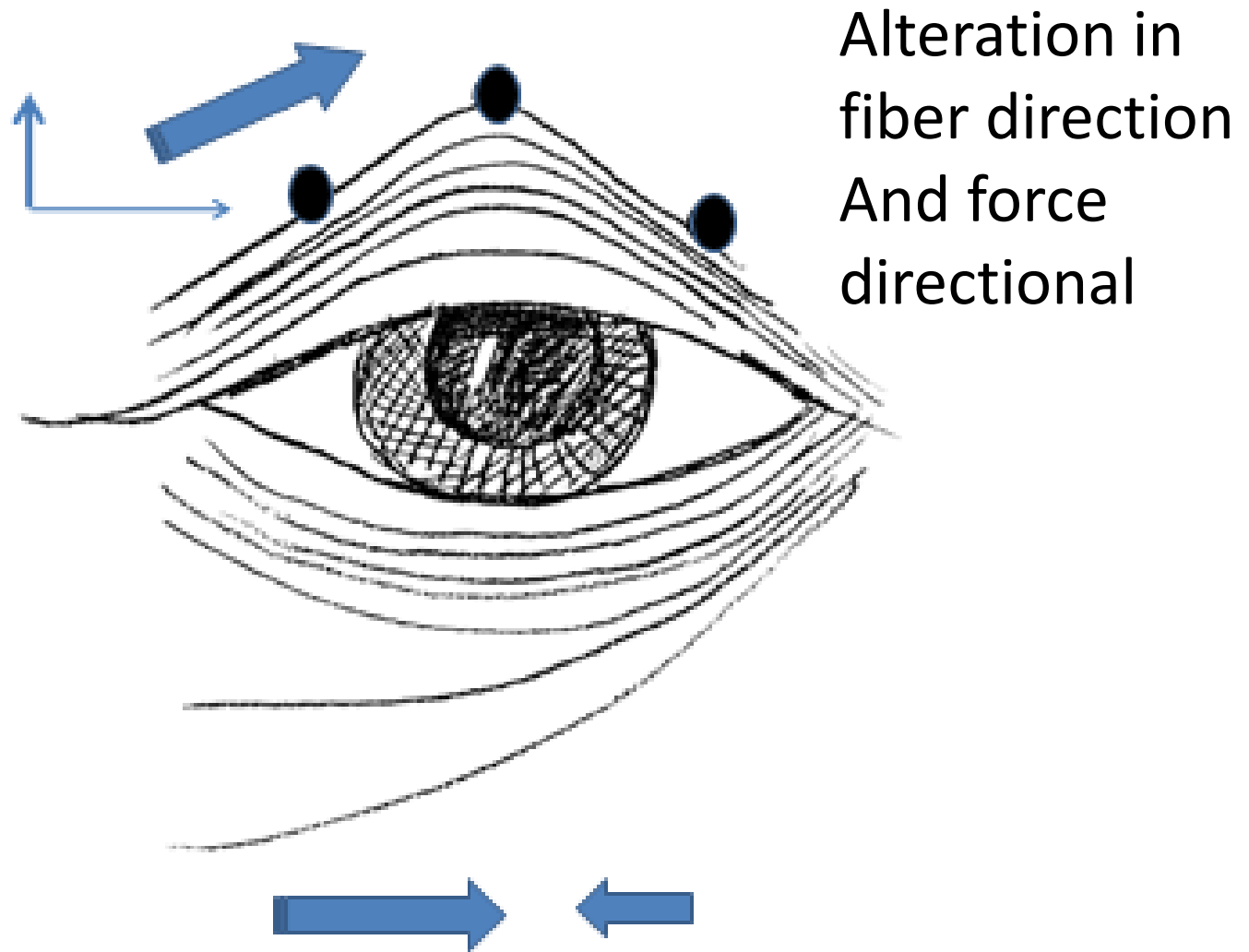
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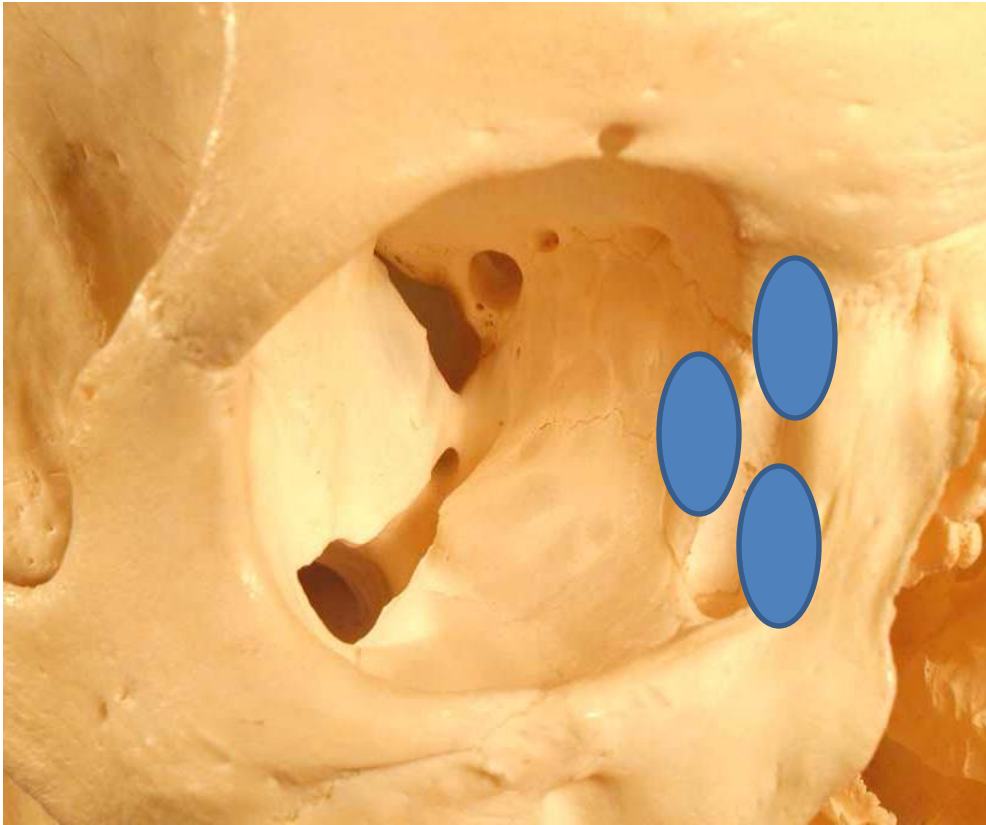


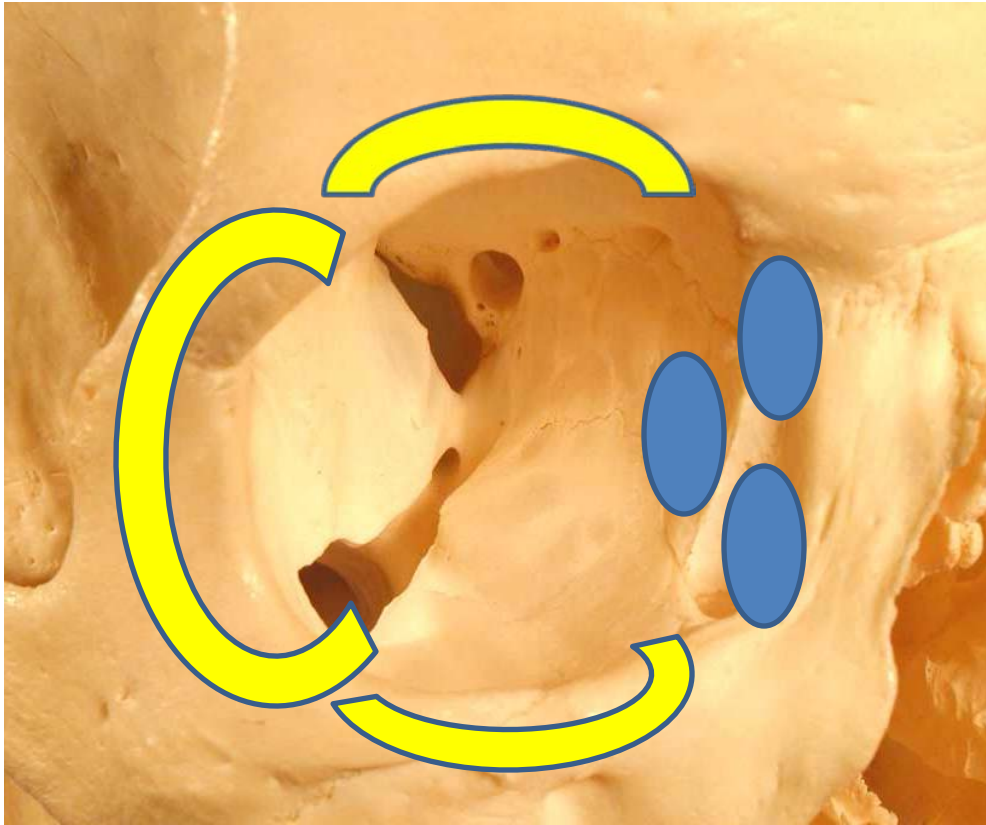


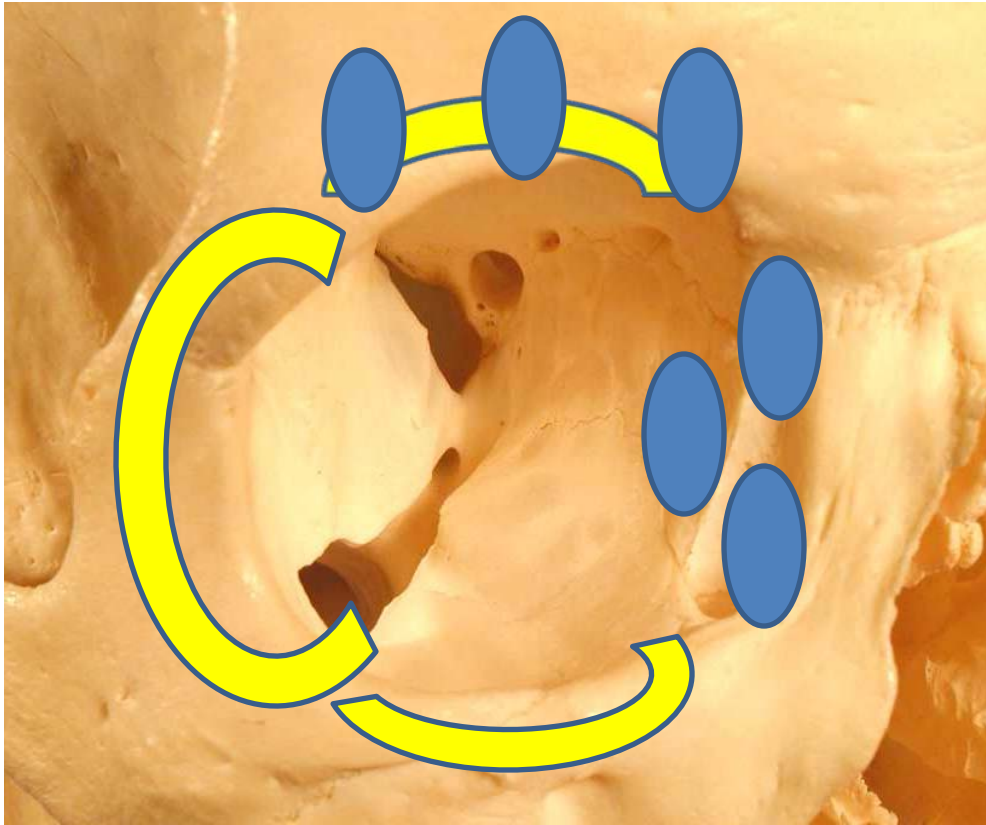
Potential Fixation Map

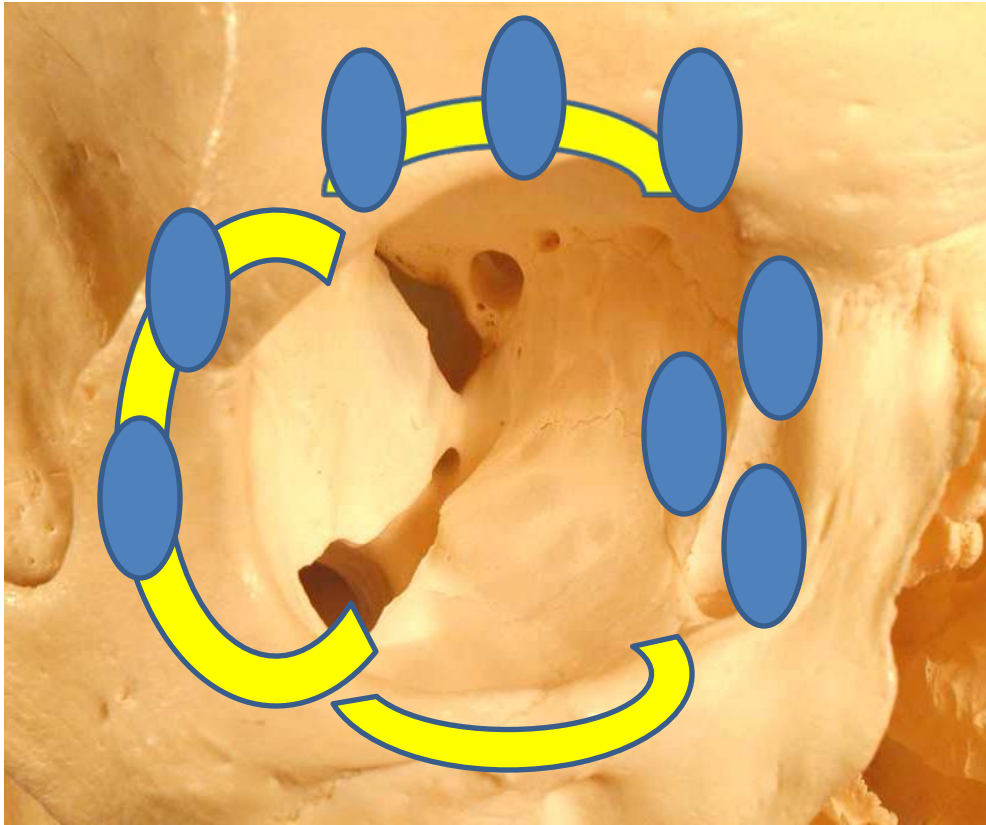








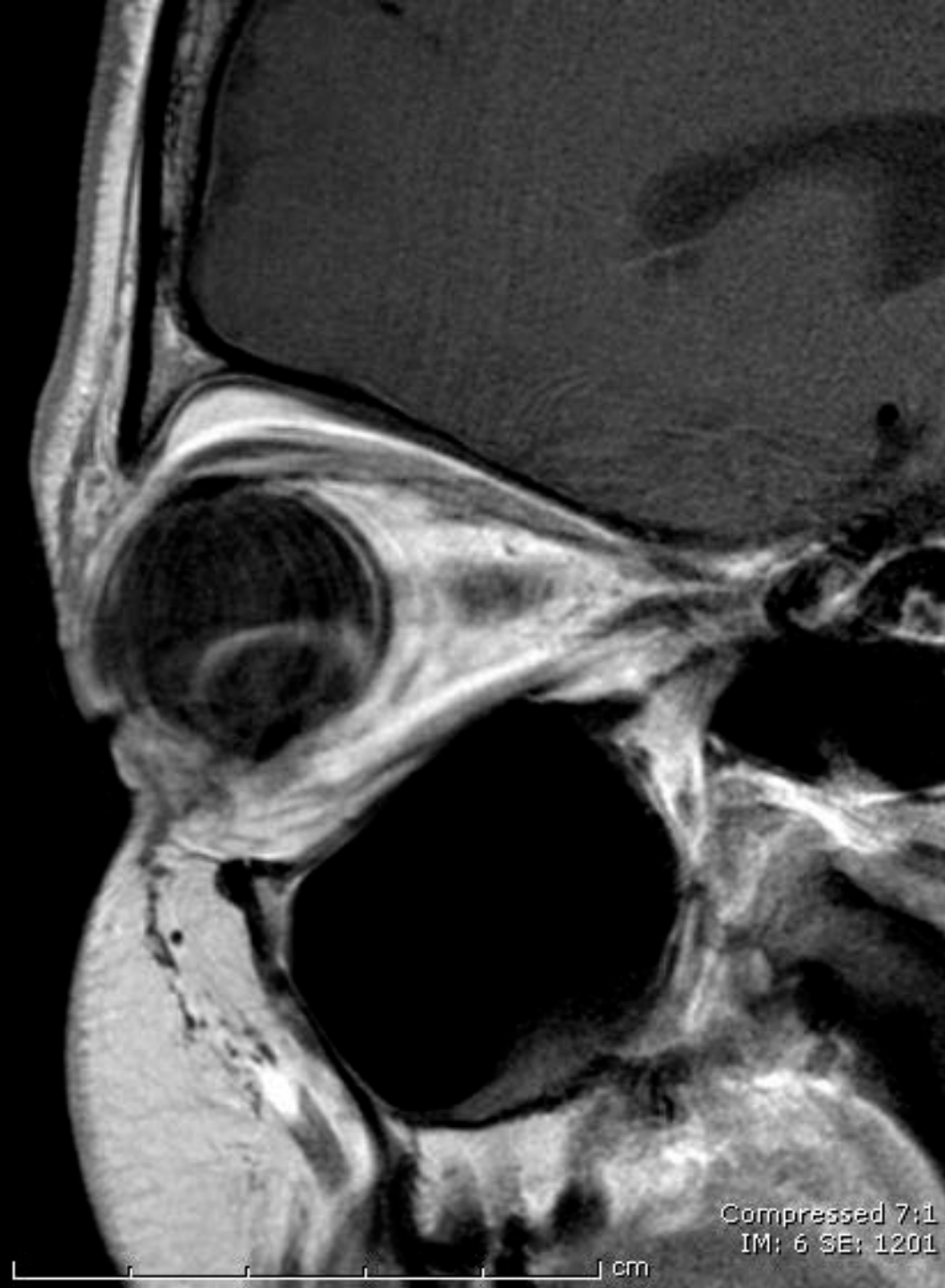


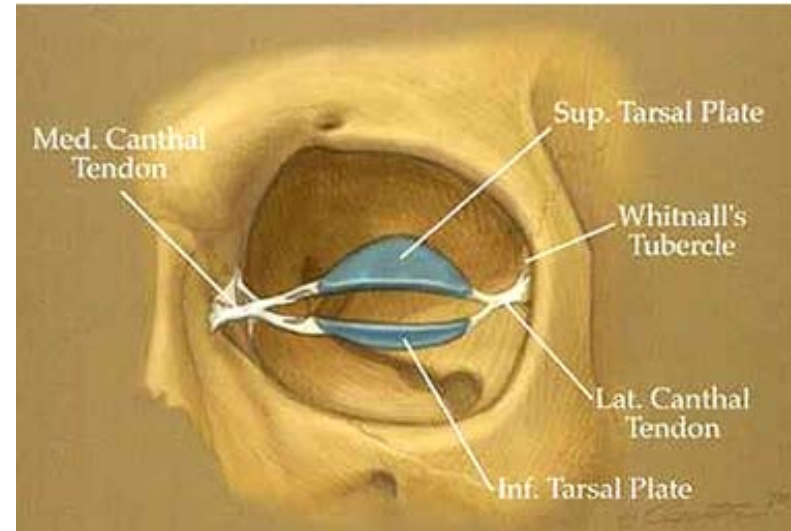
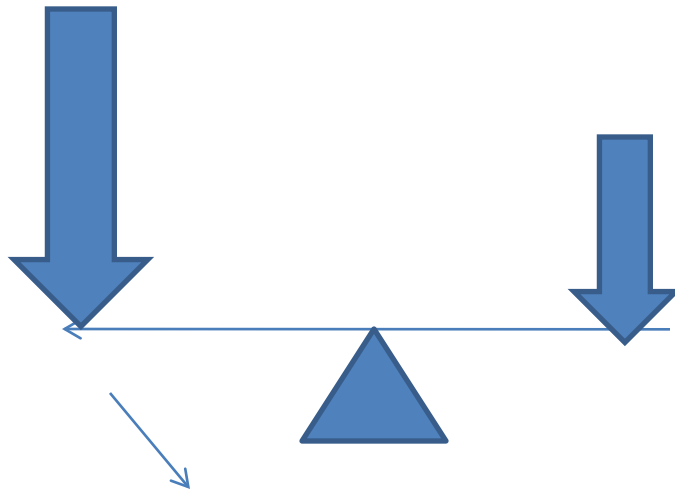




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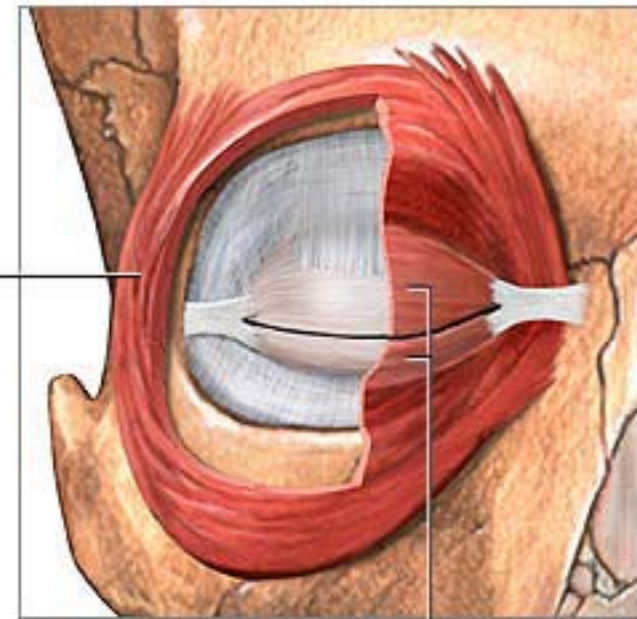
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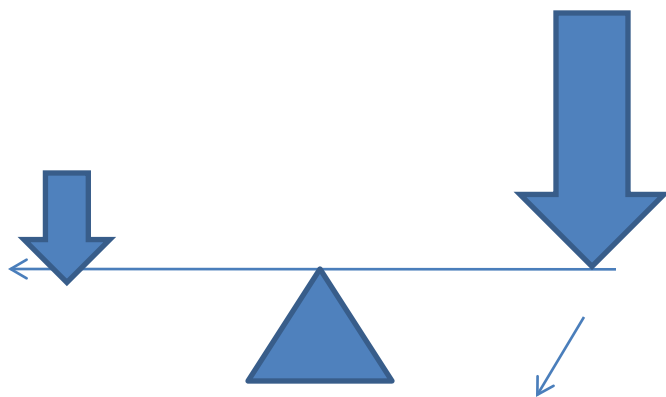


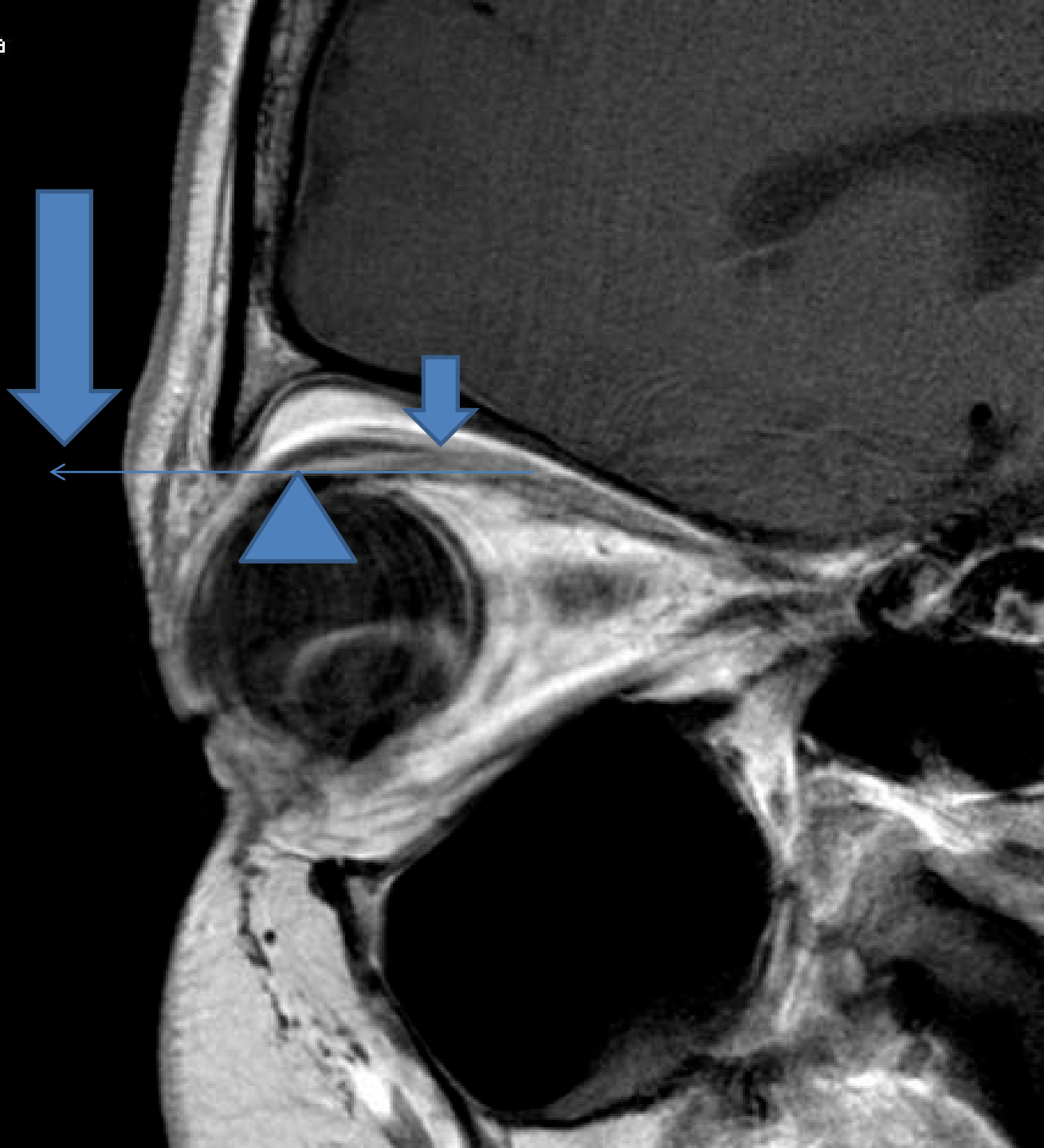


Orbicularis oculi
(Orbital part)

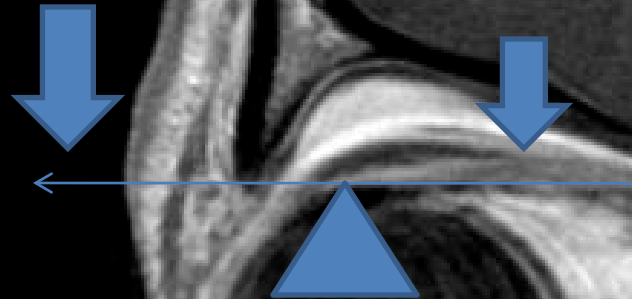
Force dynamics
of eyelid closure
Relative to
Blepharospasm





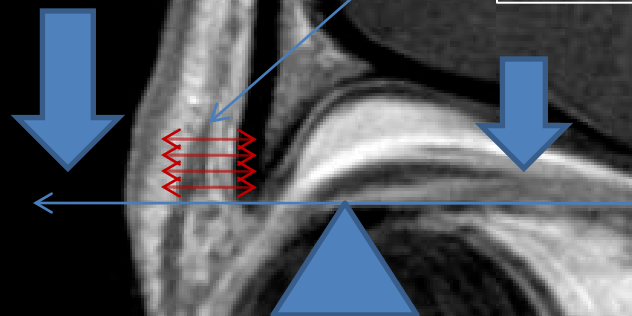


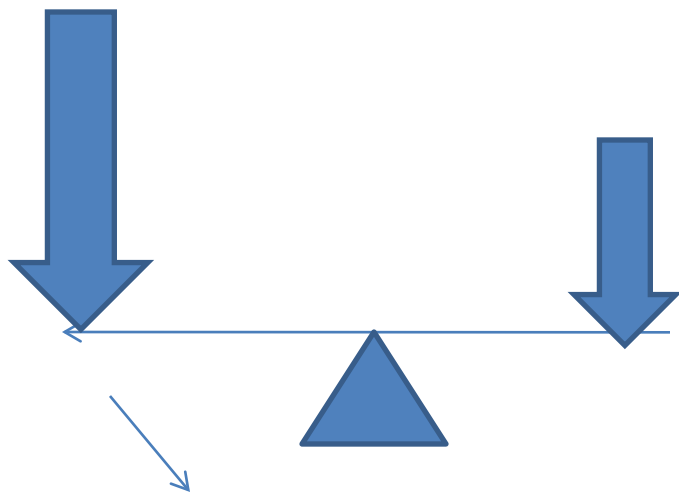
Botulinum,
Myectomy

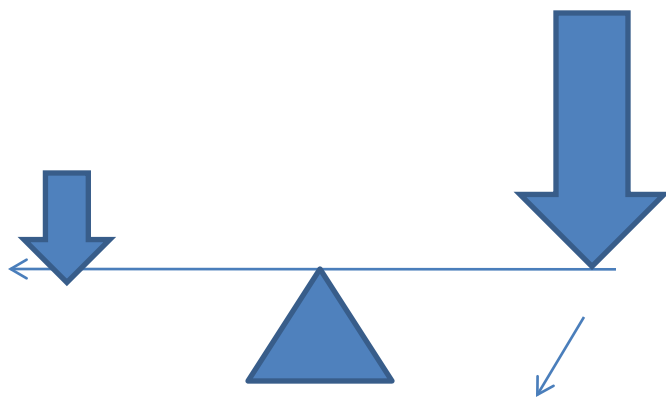


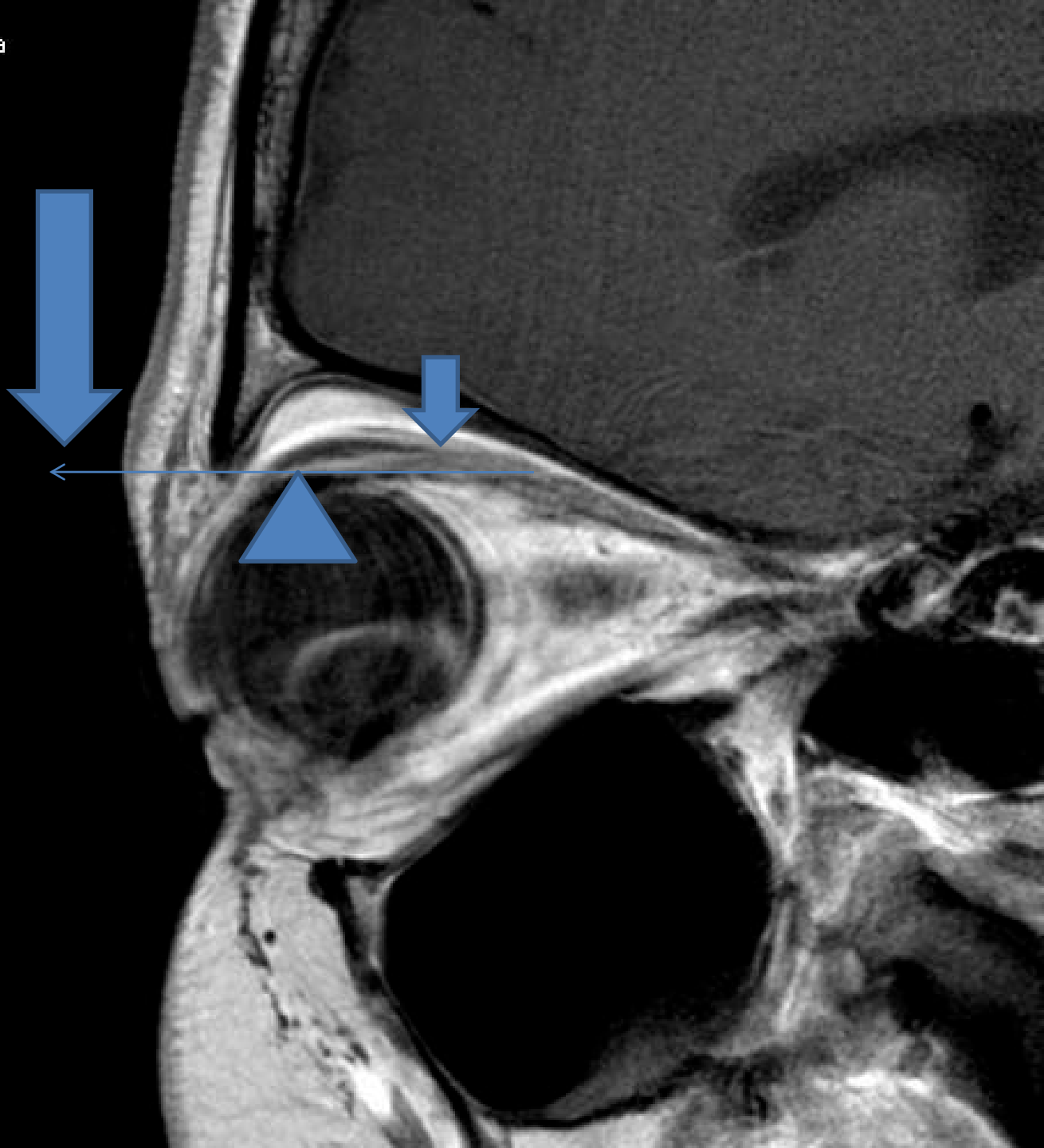
Myofixation

Restrictive
adhesion

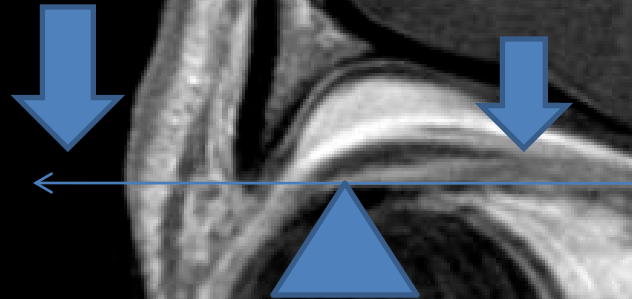






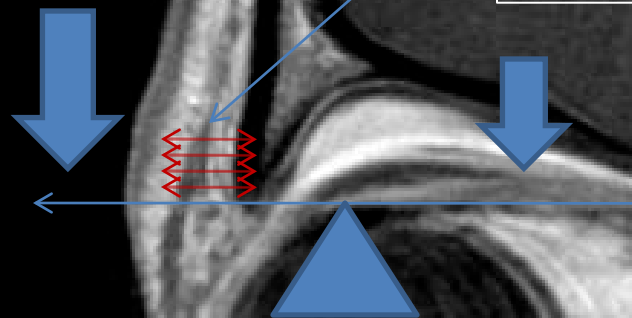


Botulinum,
Myectomy



Myofixation

Restrictive
adhesion



The Types of Abnormal Movement Associated with Blepharospasm

- Powerful Forced Squeezing
- Frequent Blinking
- Gentle Closure

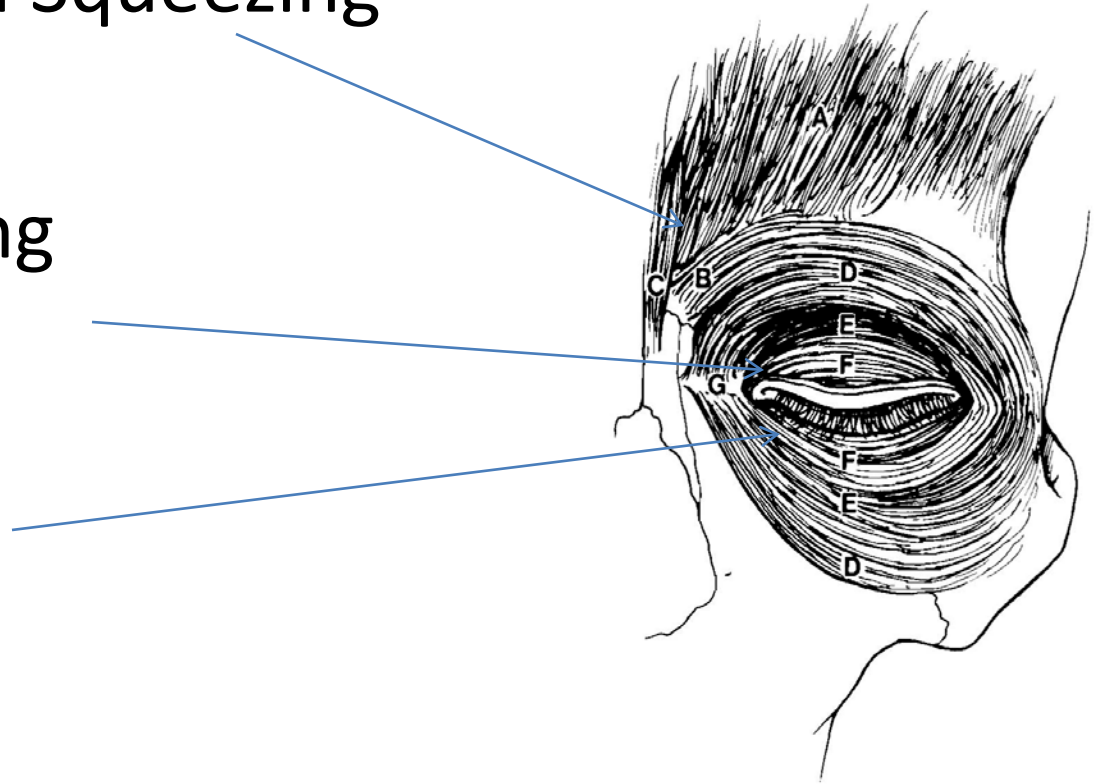


Figure 2.4 Musculature of the brow and eyelids. A. Brow

The Types of Abnormal Movement Associated with Blepharospasm

- **Powerful Forced Squeezing**

- Blepharospasm, Meige,
- Hemifacial Spasm

- **Frequent Blinking**

- Blepharospasm, Meige,
- Hemifacial Spasm

- **Gentle Closure**

- Apraxia of lid closure

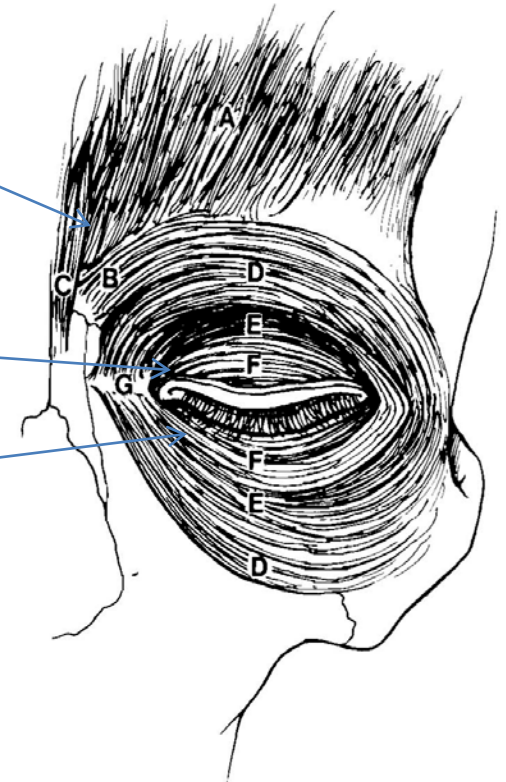
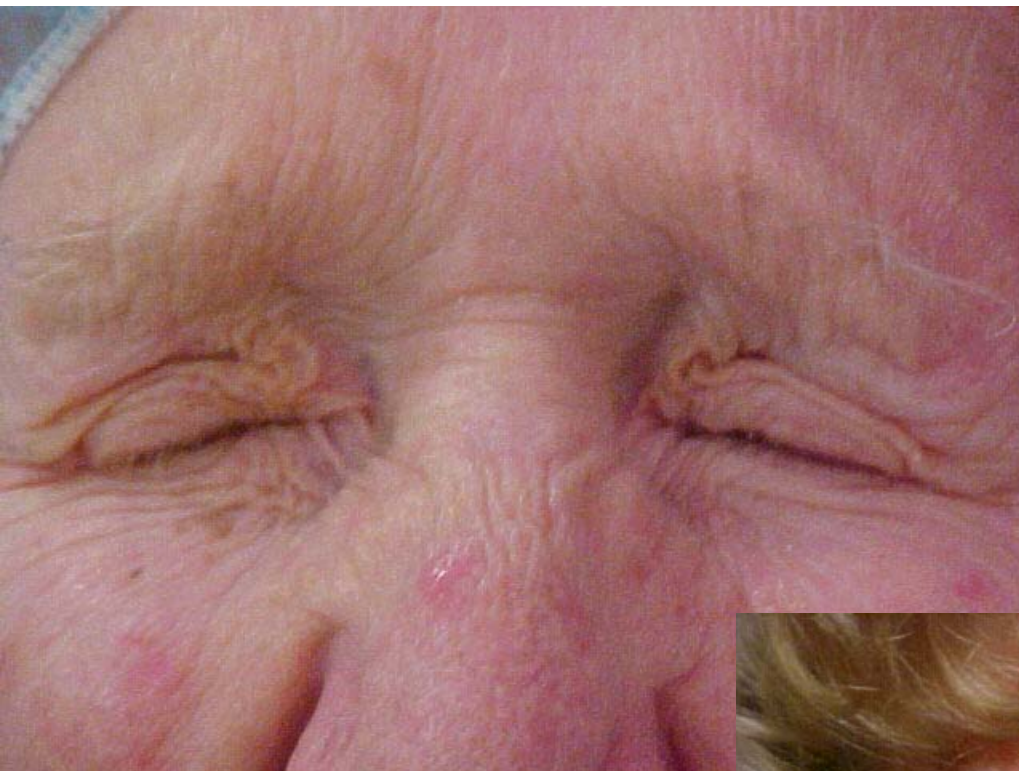


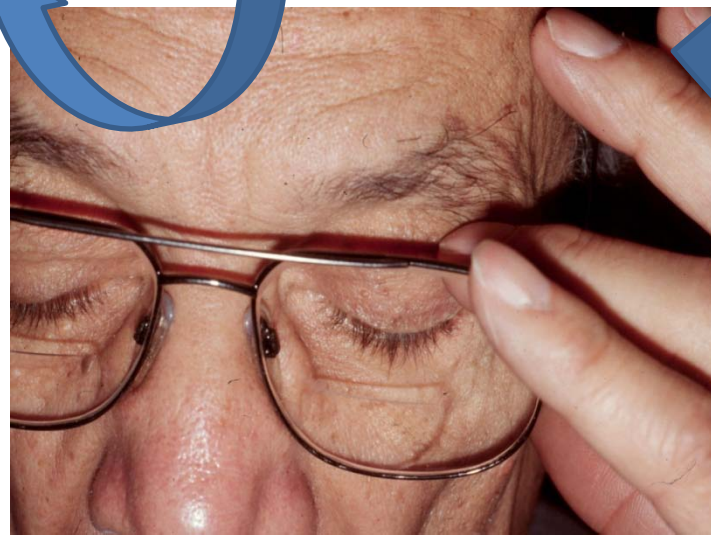
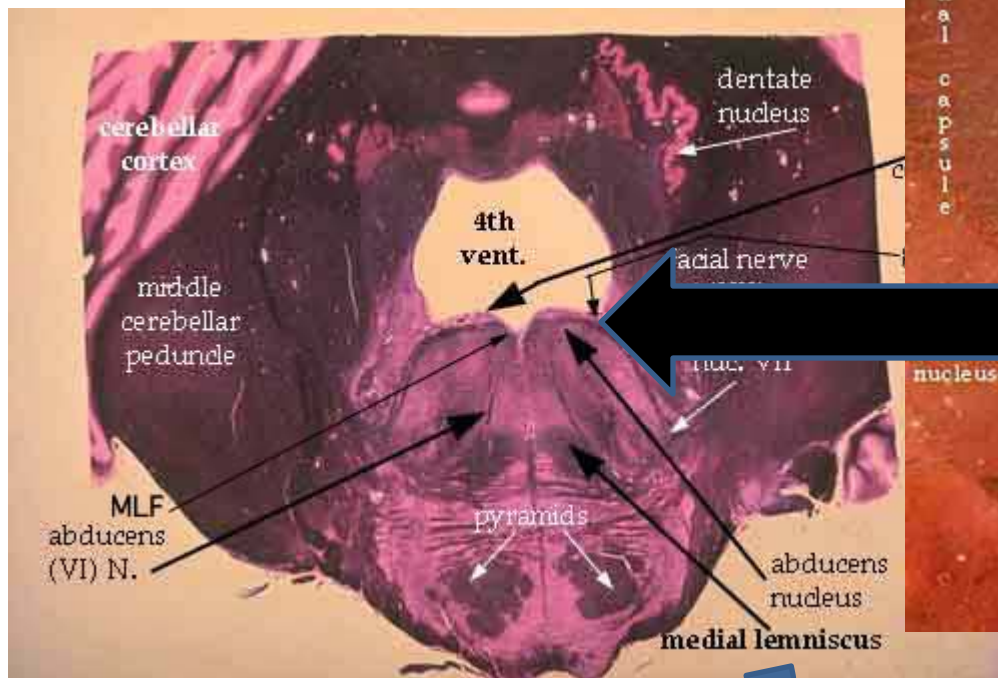
Figure 2.4 Musculature of the brow and eyelids. A, Forehead; B, upper eyelid; C, inner corner; D, lower eyelid; E, inner corner; F, lower eyelid; G, inner corner; H, lower eyelid.

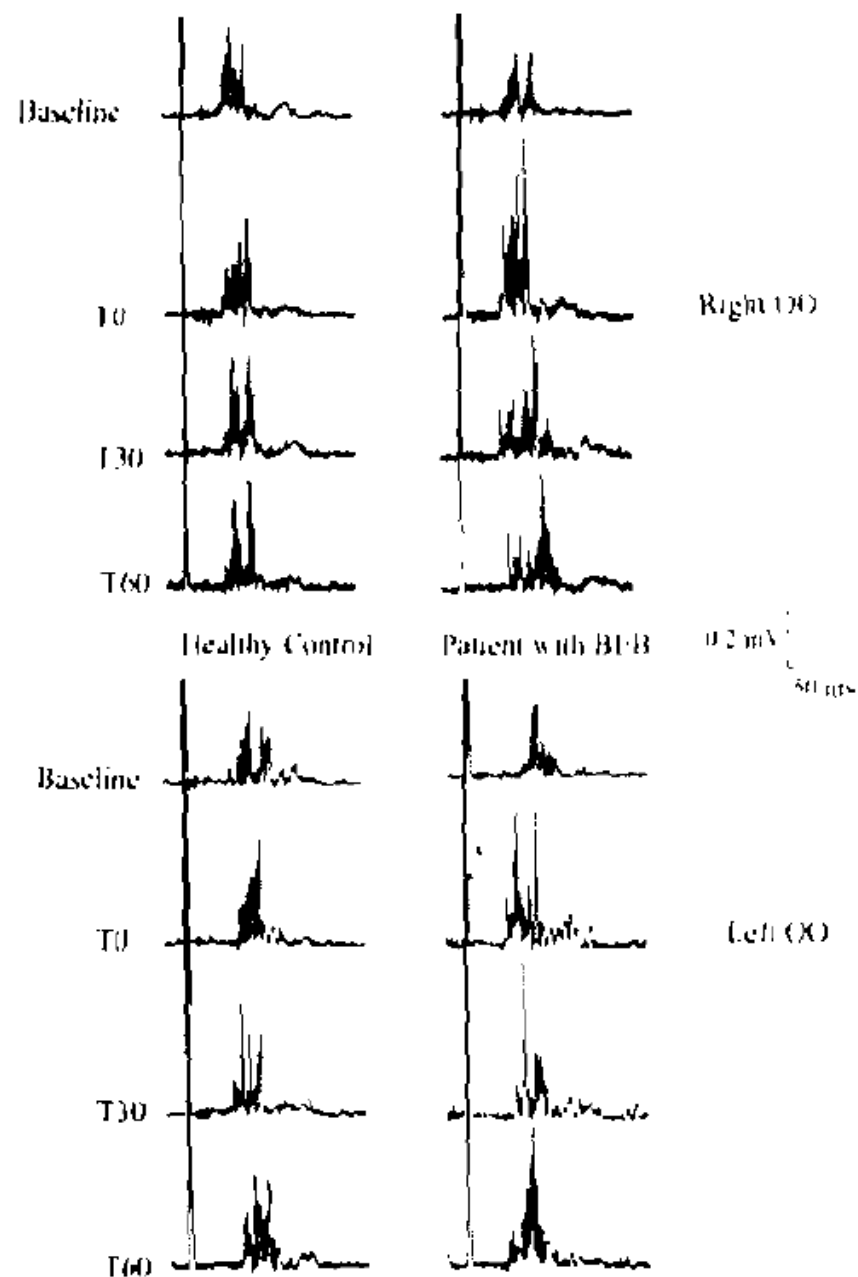
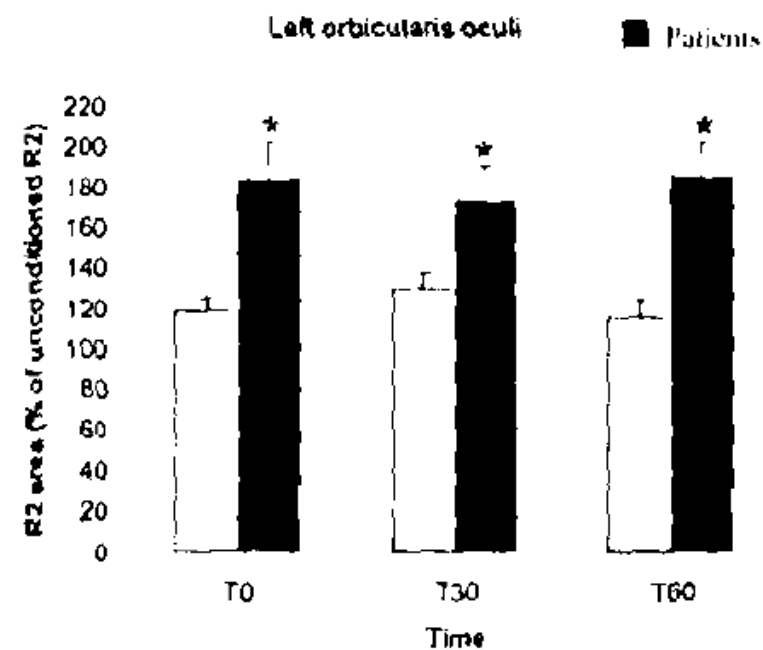
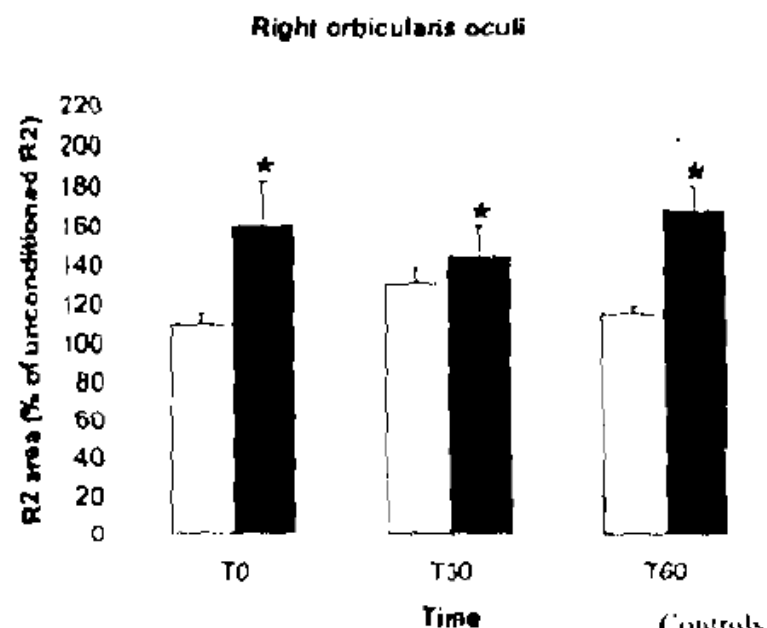




Sensory Theory and Mechanism







Third Finger
Only

A

B

C

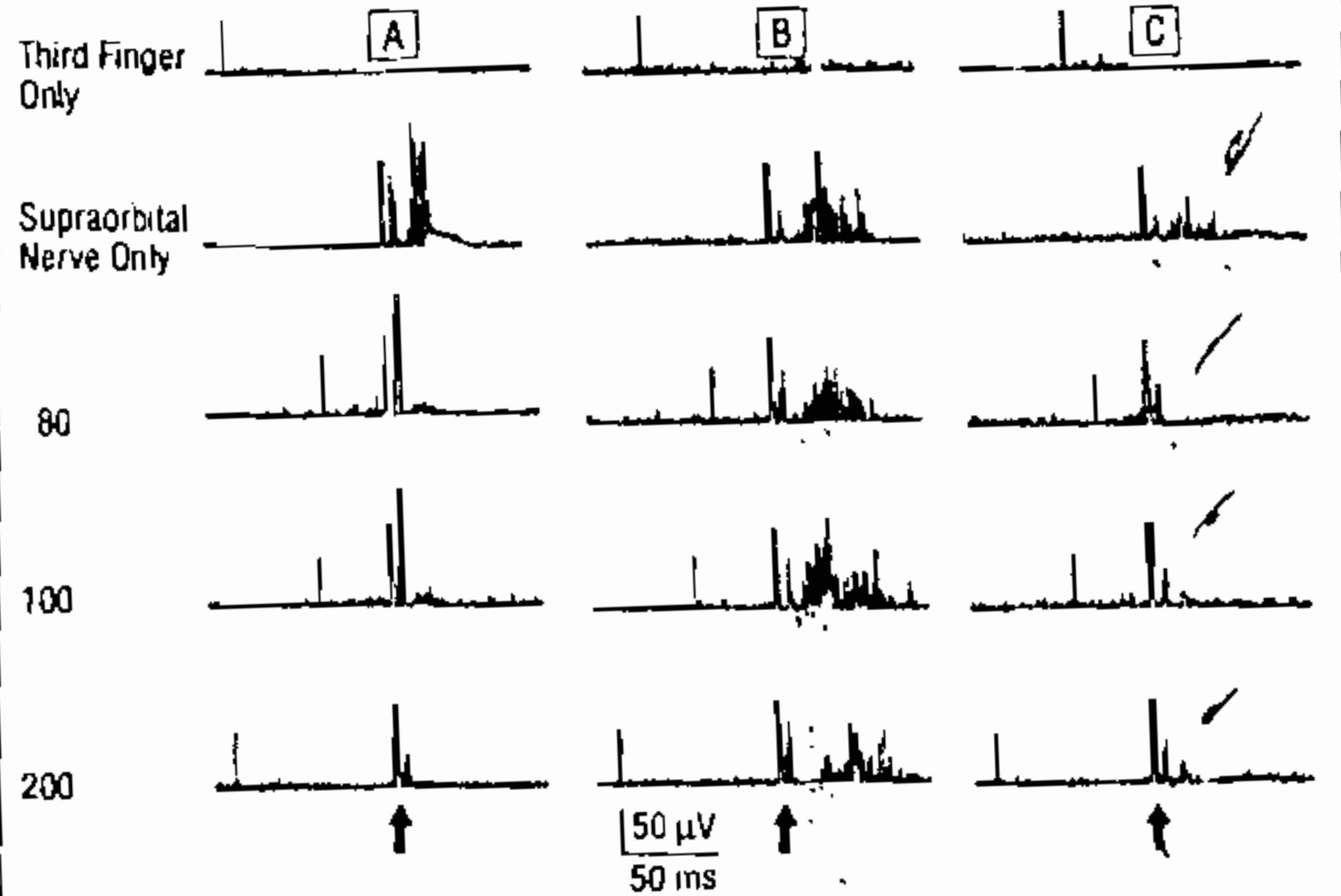
Supraorbital
Nerve Only

80

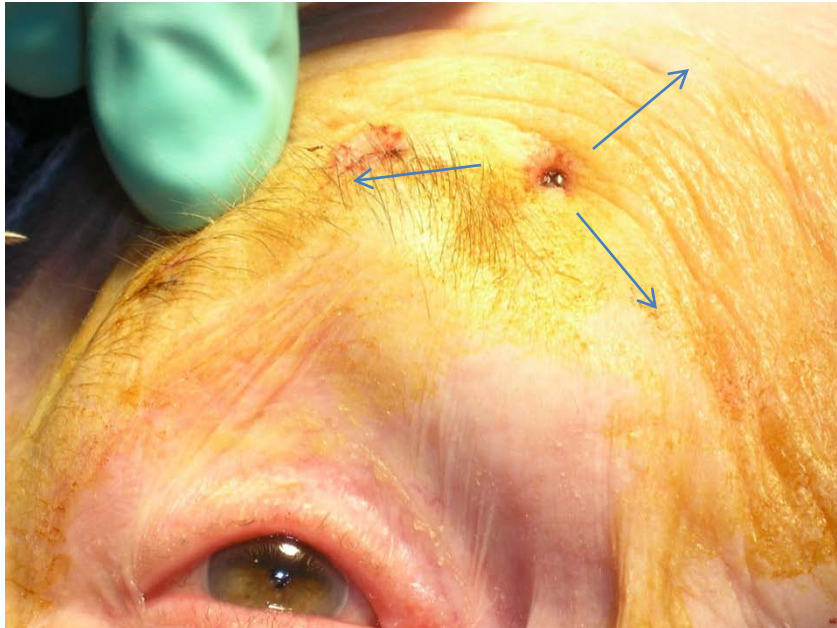
100

200

50 μ V
50 ms



Stimulation of fixation area during facial expressions



FACIAL EXPRESSIONS

AN ANIMATOR'S JOB IS THE SAME AS AN ACTOR'S JOB IN LIVE ACTION PICTURES.--BOTH SHOULD BE MASTERS OF PORTRAYING EMOTIONS.--STUDYING YOUR OWN GRIMACES IN A MIRROR IS A MUST.--PICK A CHARACTER YOU KNOW + GO THRU THE EXPRESSIONS WITH HIM, AS I HAVE HERE WITH THIS LITTLE PUP.



Trigeminal Nerve and Photophobia

Histamine

Glutamate=GABA

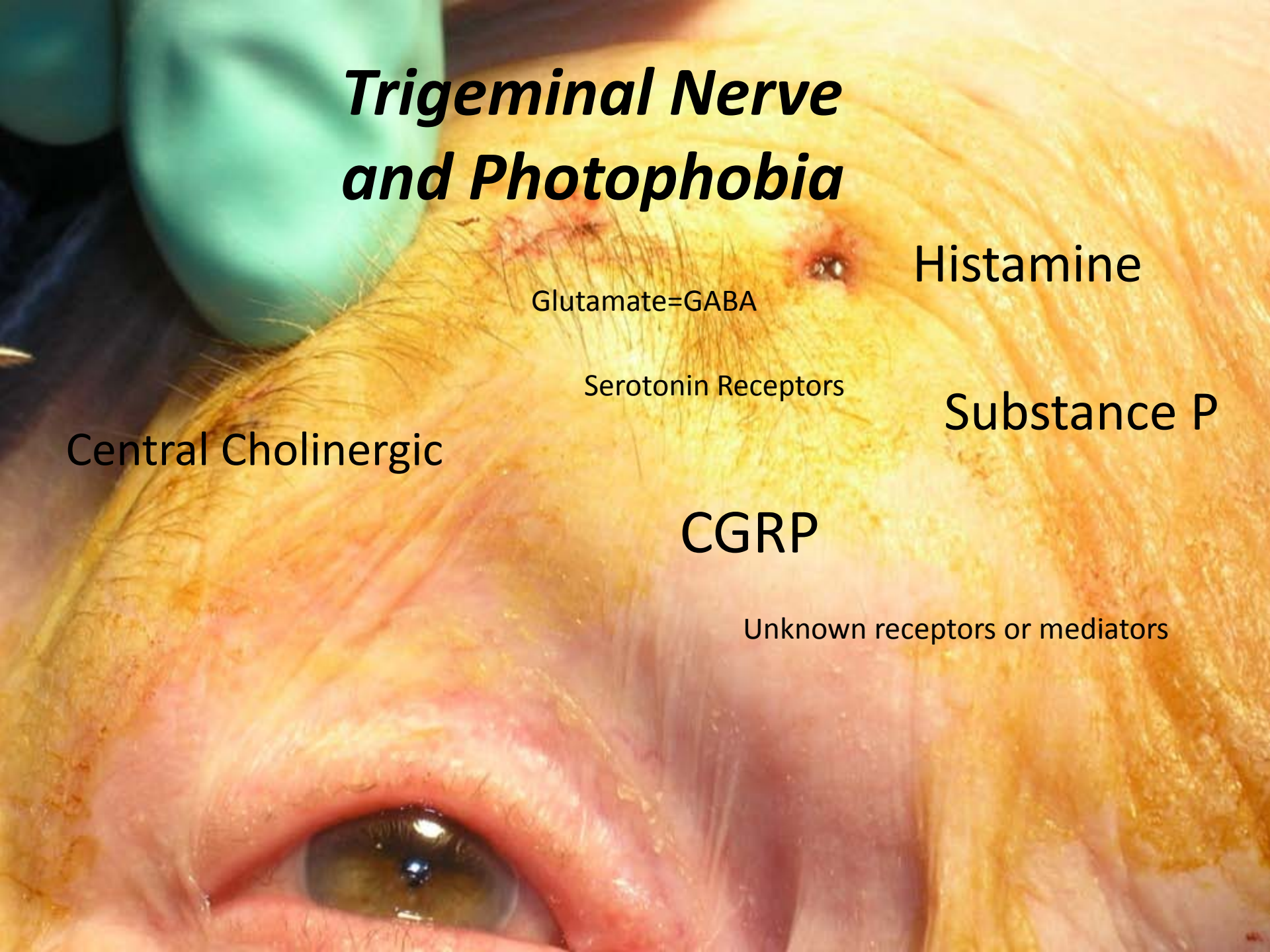
Serotonin Receptors

Substance P

Central Cholinergic

CGRP

Unknown receptors or mediators



Fixation points during expressions---→
Constant stimulation

----→ suppression of inter neurons
(supranuclear neurons)
in control causing involuntary impulse
bursts associated

-----→ reduction in dystonic movements

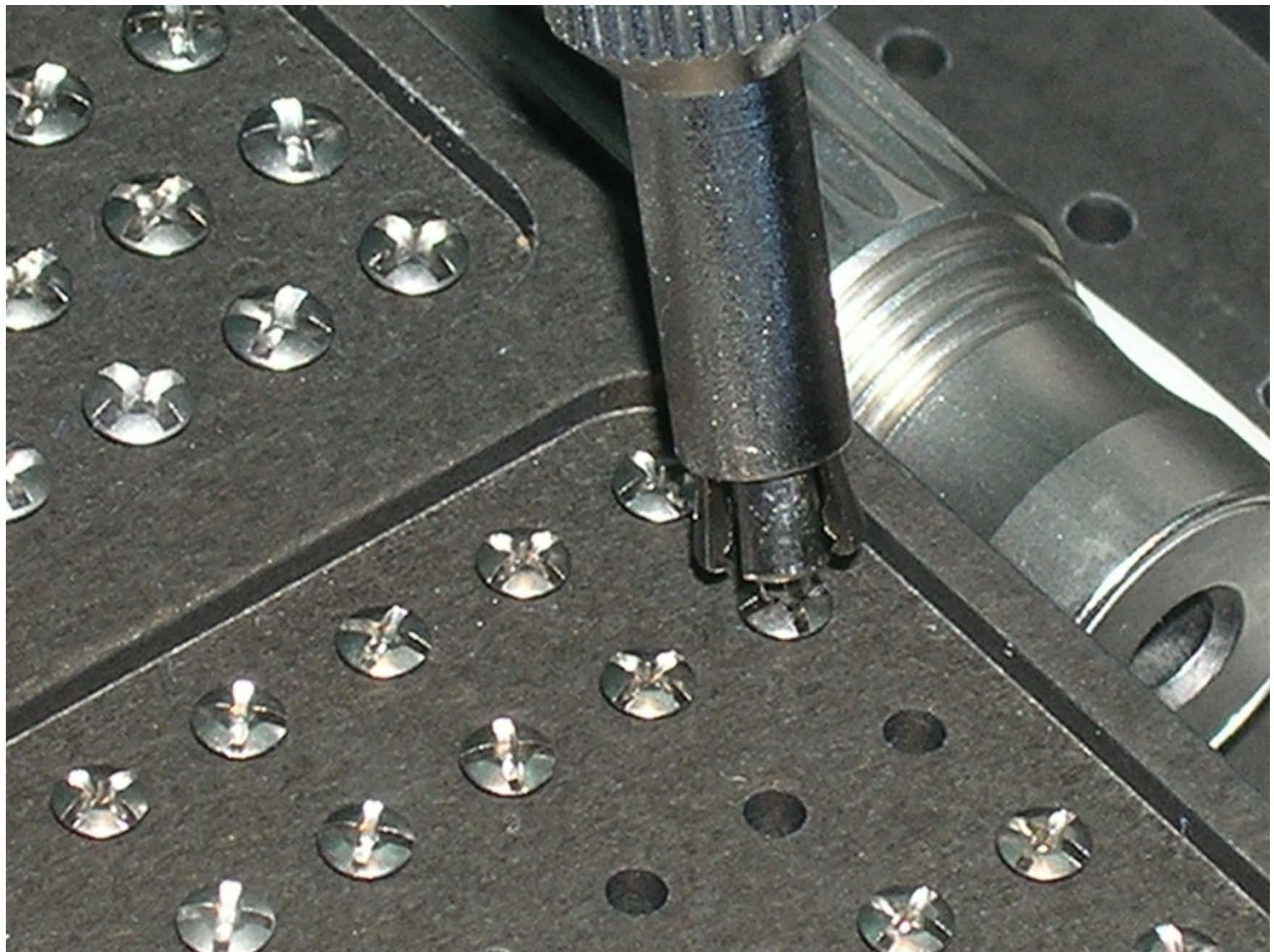
The procedure

Entry

- Meige, Essnetial Blepharospasm
- Bursts of spasms (pure apraxias excluded)
- Botulinum failures
- Usually tried one prior surgical procedure
- No prior headache syndrome
- Geste sensory trick preferable



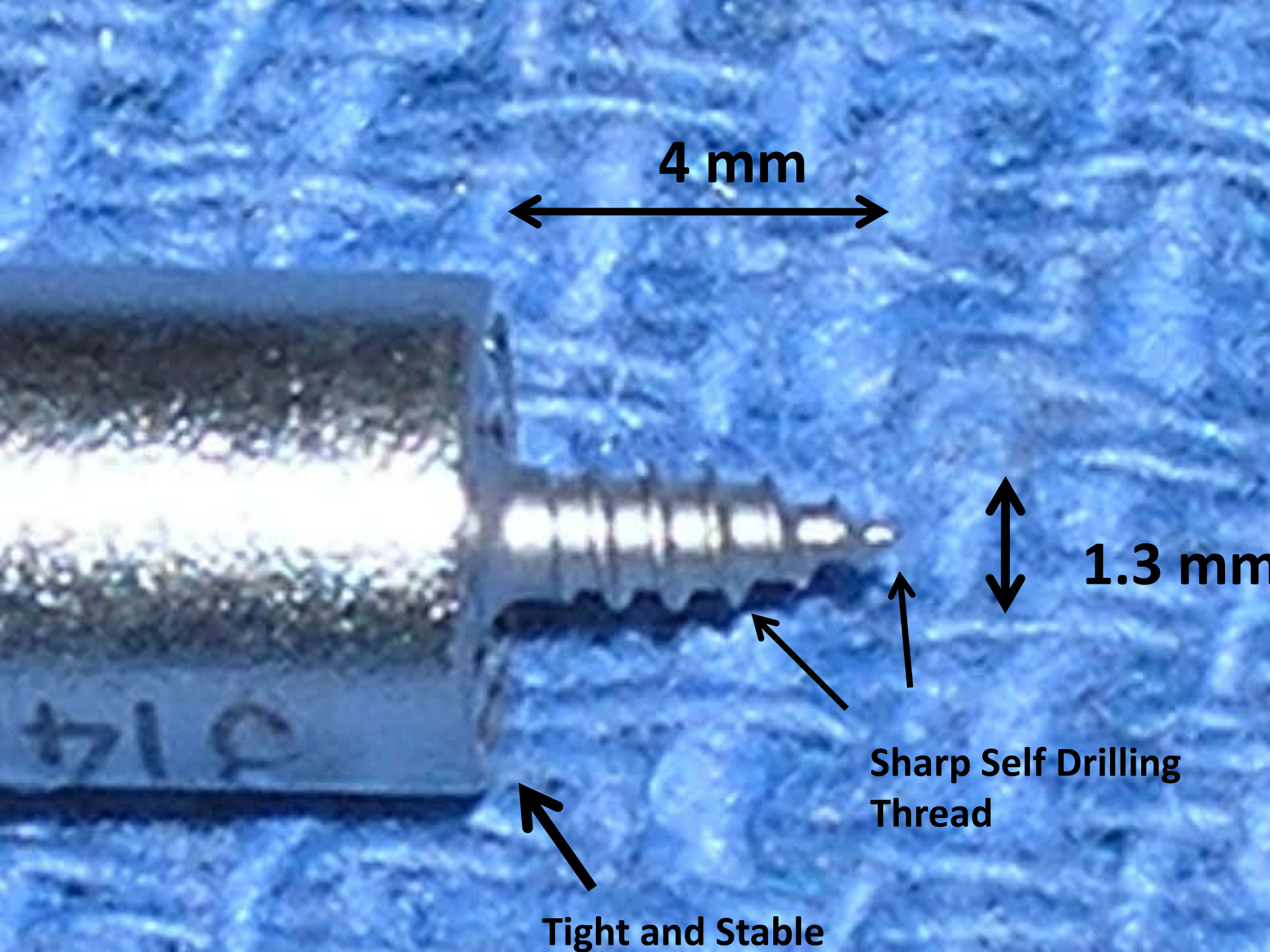












4 mm

1.3 mm

Sharp Self Drilling
Thread

Tight and Stable



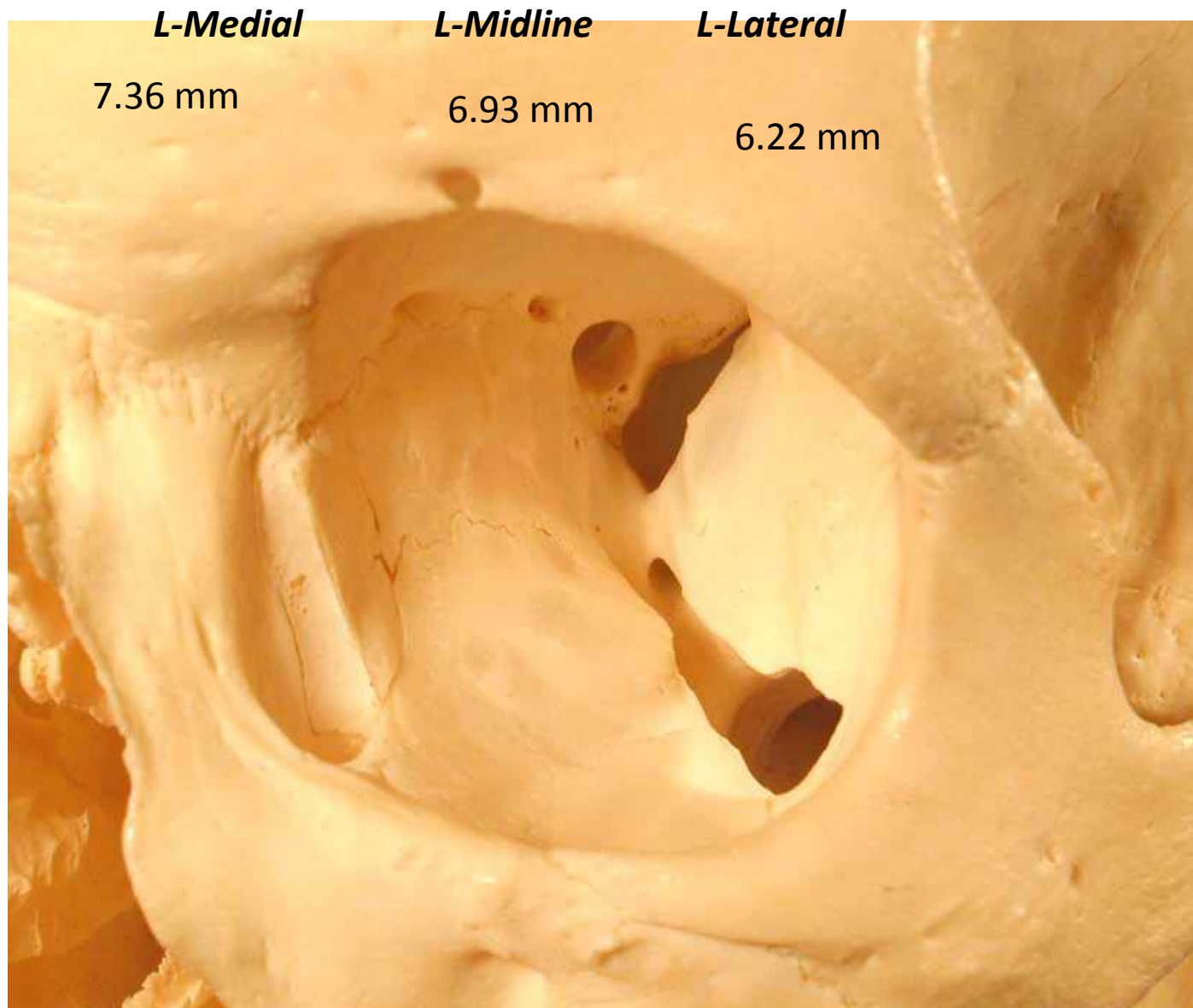


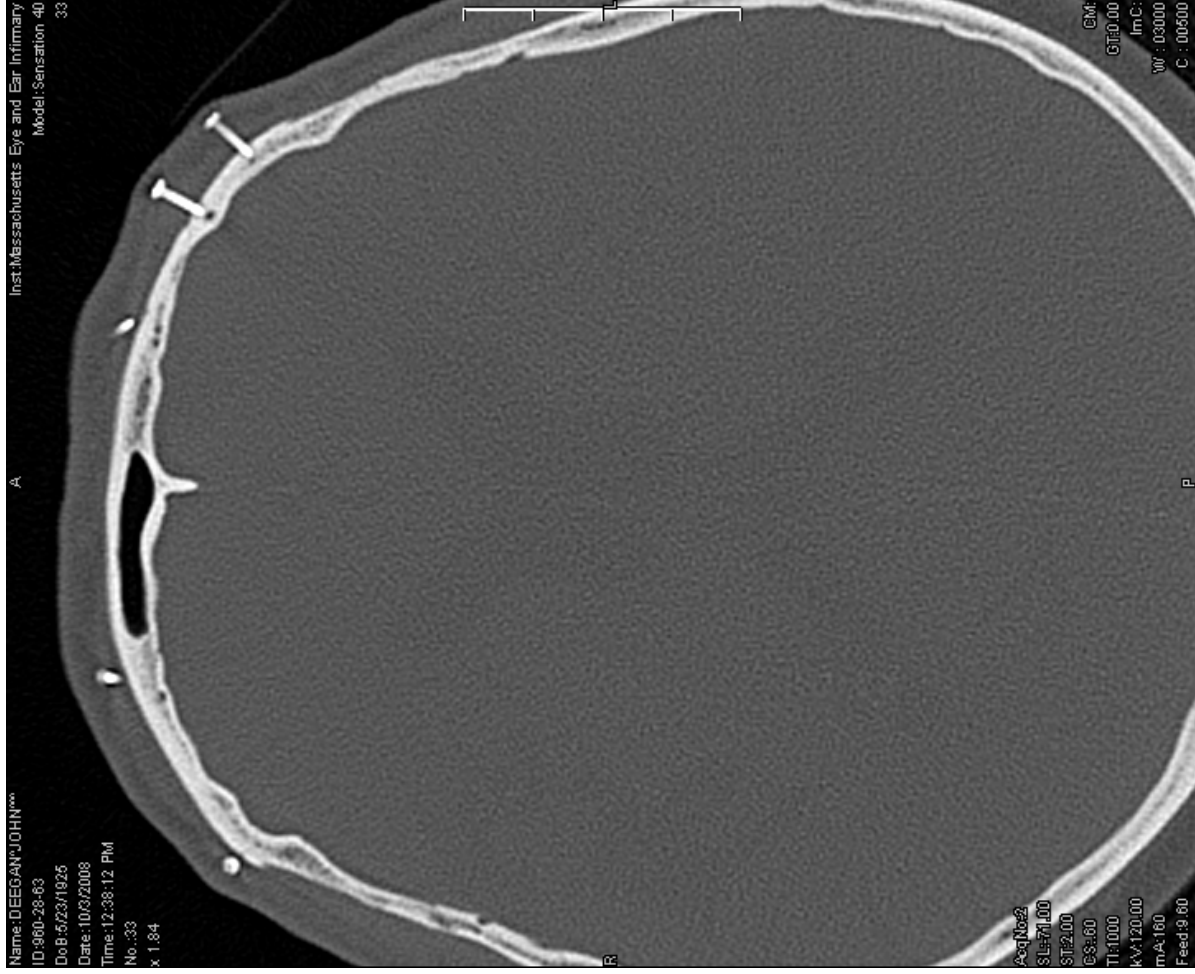






**Figure 1 Average Female Skull Thickness for Screw
Myo-Osseous Fixation Procedure**







Avoid Supraorbital











Advantages

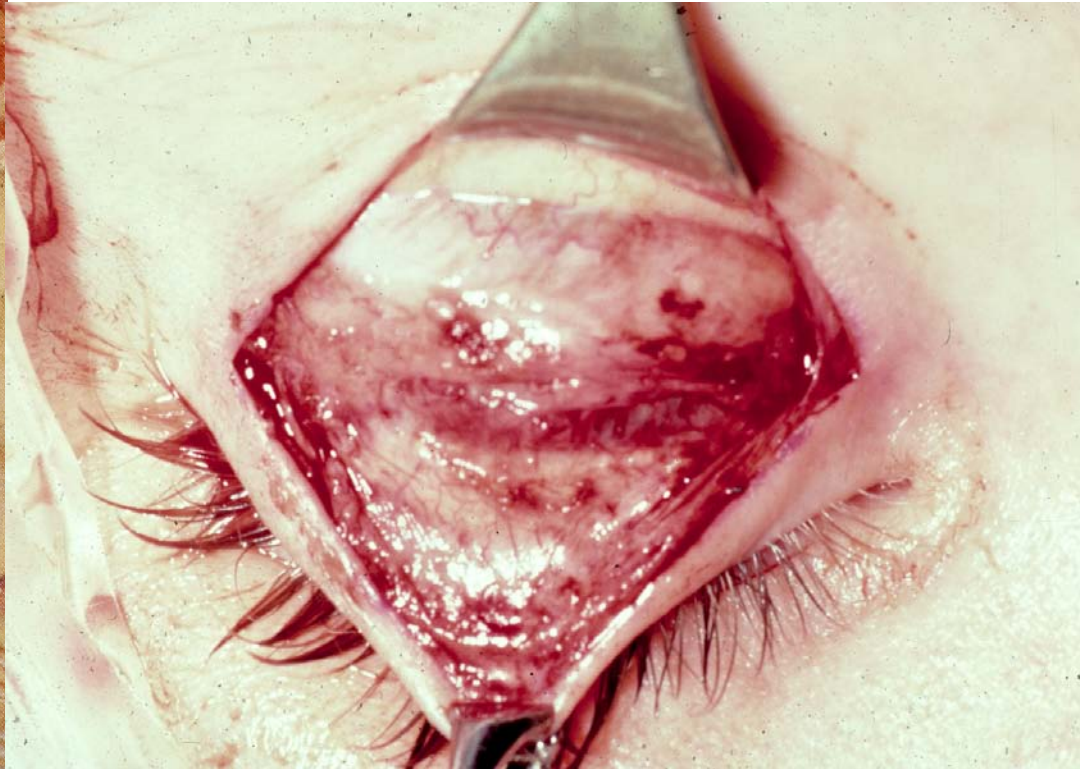
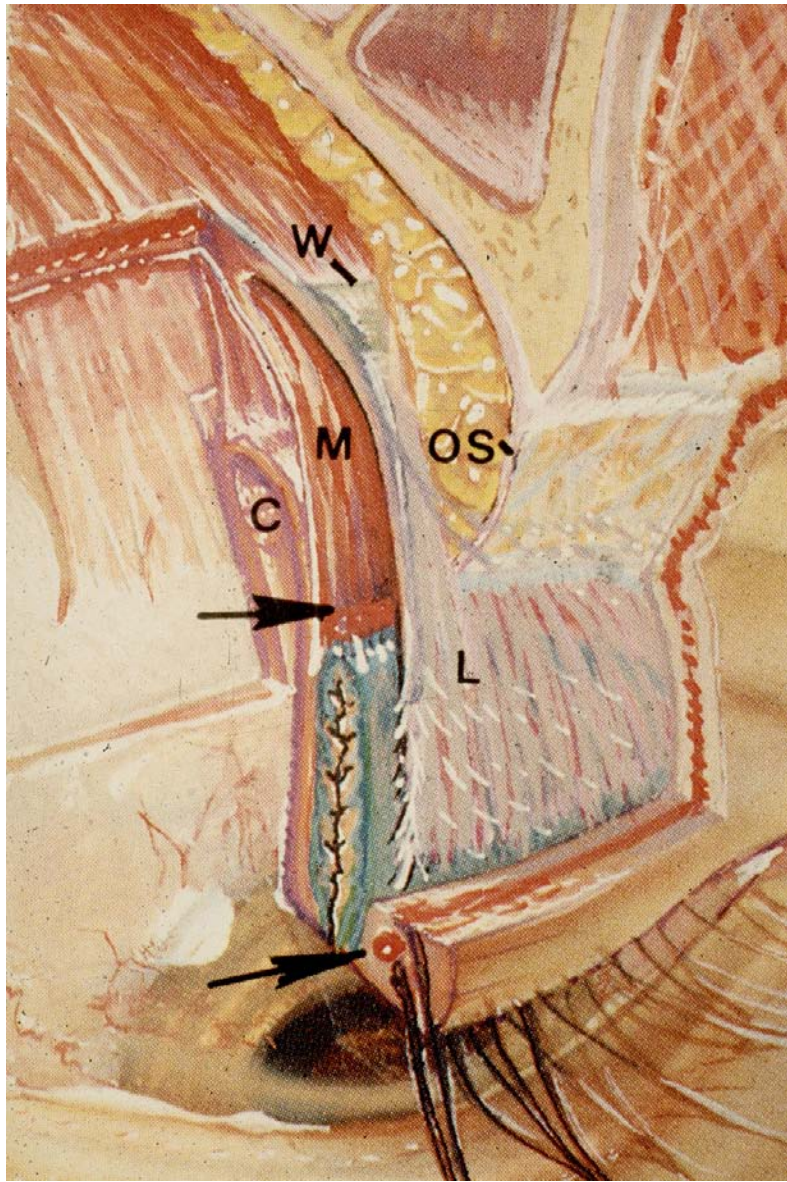
- Small incision quick heal
- Screws can be removed with sustained benefit
- No tissue destruction, no tissue resections, minimal deformity
- Blink is maintained, little ocular threat
- Points of fixation and restriction often not injected with Botulinum– augmentation with combined effect w/ BOTOX

Disadvantages

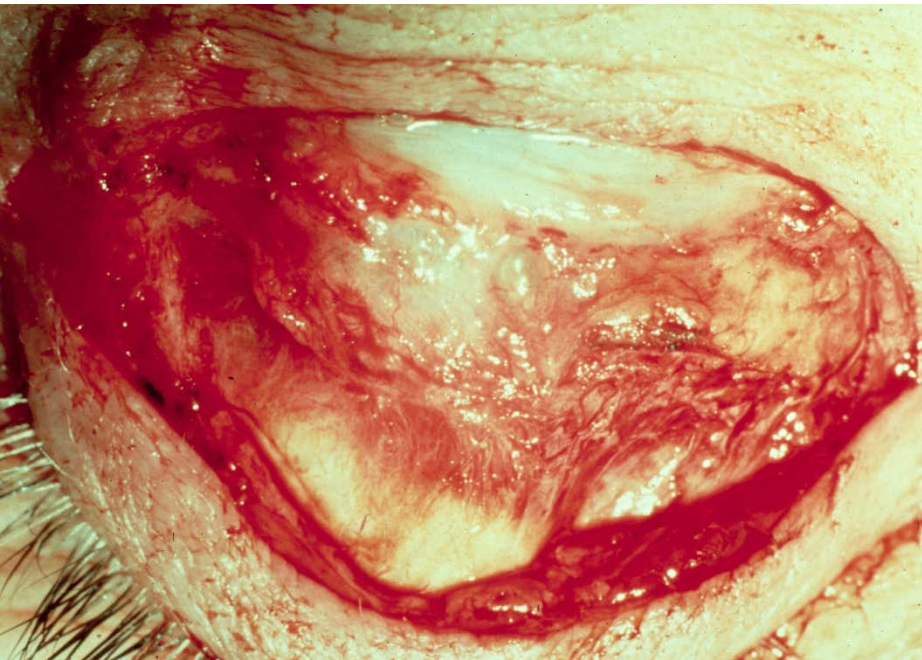
- Targets the orbital outer orbicularis mechanically
- Bumps can be felt in some cases where screw heads are placed
- Potential for supra orbital nerve damage
- Foreign body used
- Limited long term data, new procedure

Other Surgical Procedures

- Ptosis Correction
- Myectomy
 - Limited with ptosis correction
 - Extensive with ptosis correction, retractor Tightening
- Facial Neurectomy
 - Main trunk and upper branch
- Slings to the Brow
- Chemoablation

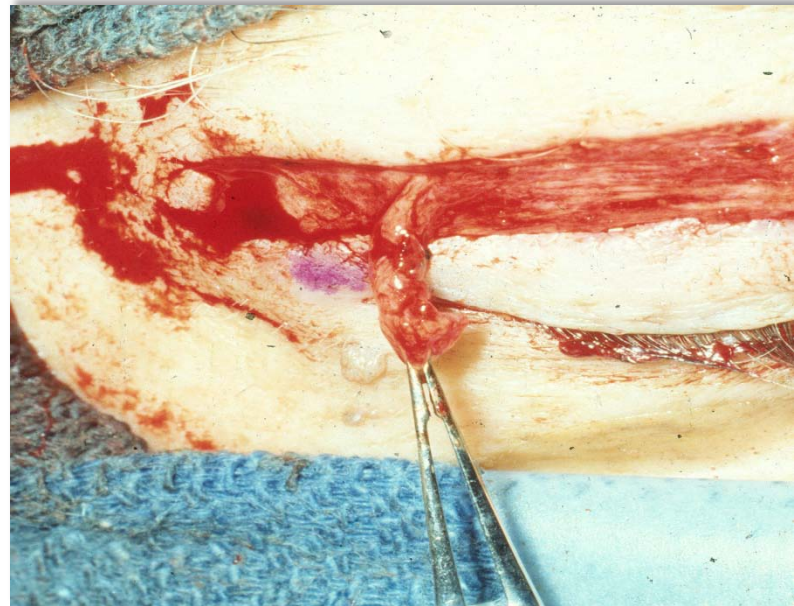
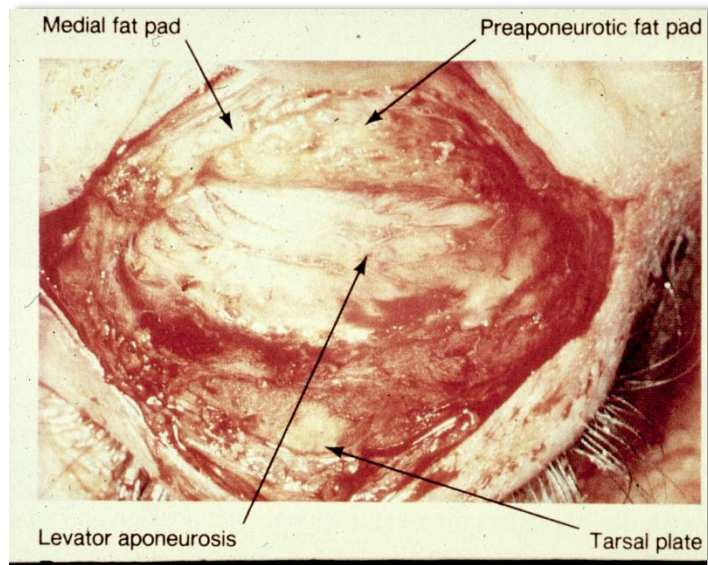


Ptosis Correction





Limited Myectomy



Extensive Myectomy

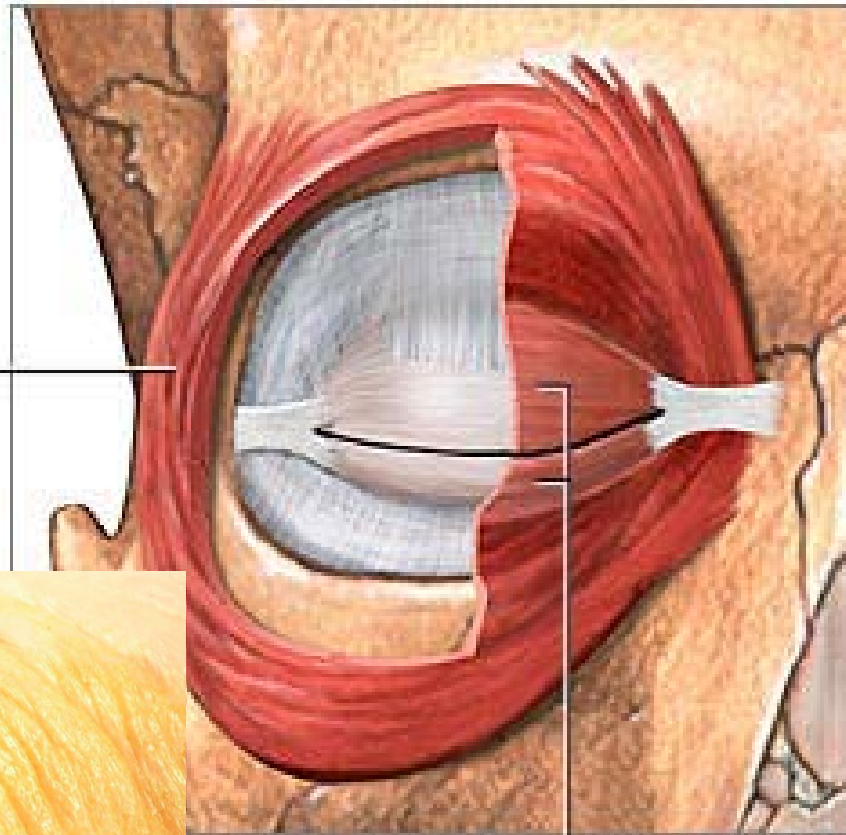
Facial Neurectomy

Slings



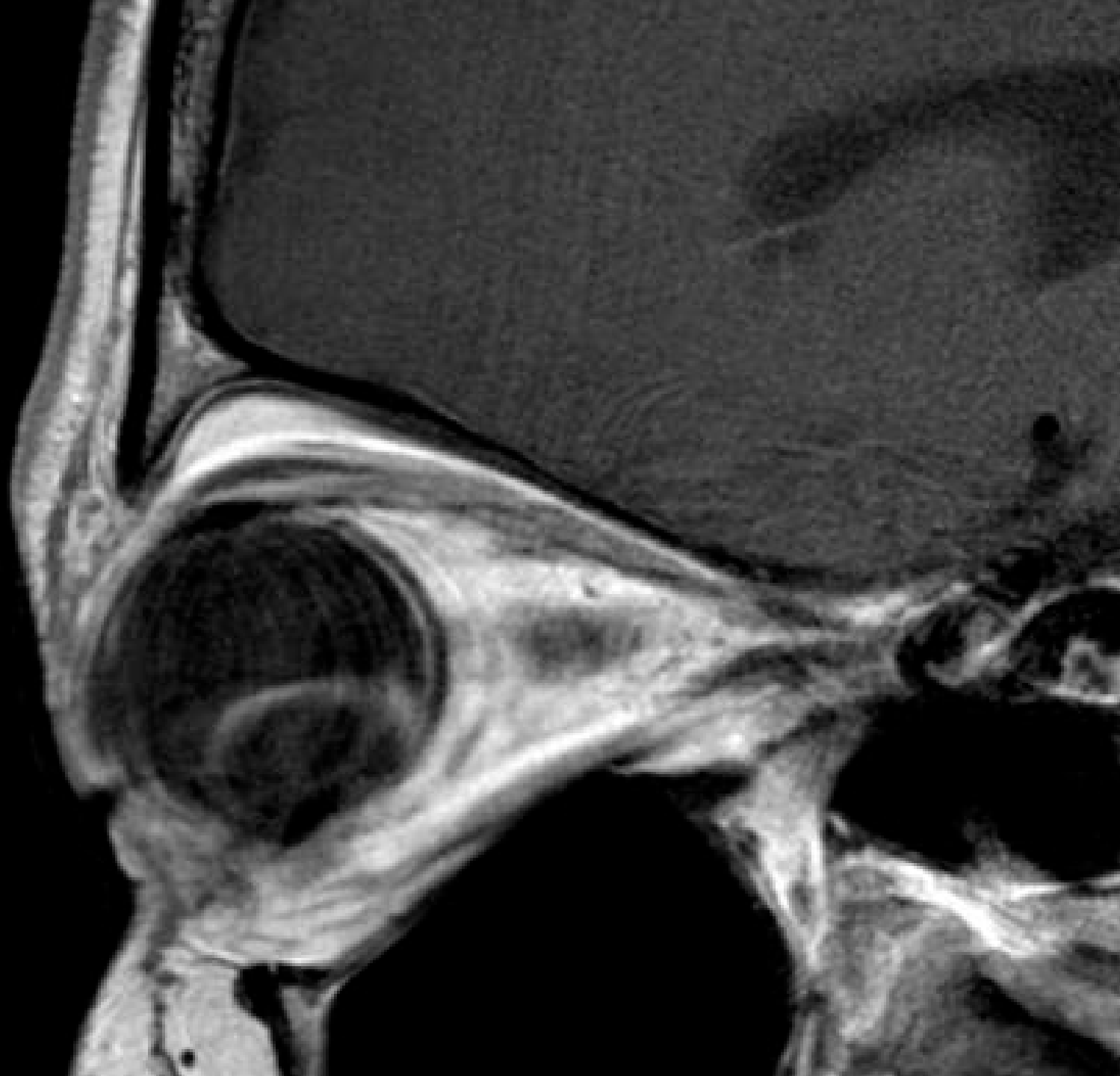


Orbicularis oculi
(Orbital part)



Orbicularis oculi
(Palpebral part)

© ADAM, Inc.





The Types of Abnormal Movement Associated with Blepharospasm

- Powerful Forced Squeezing
- Frequent Blinking
- Gentle Closure

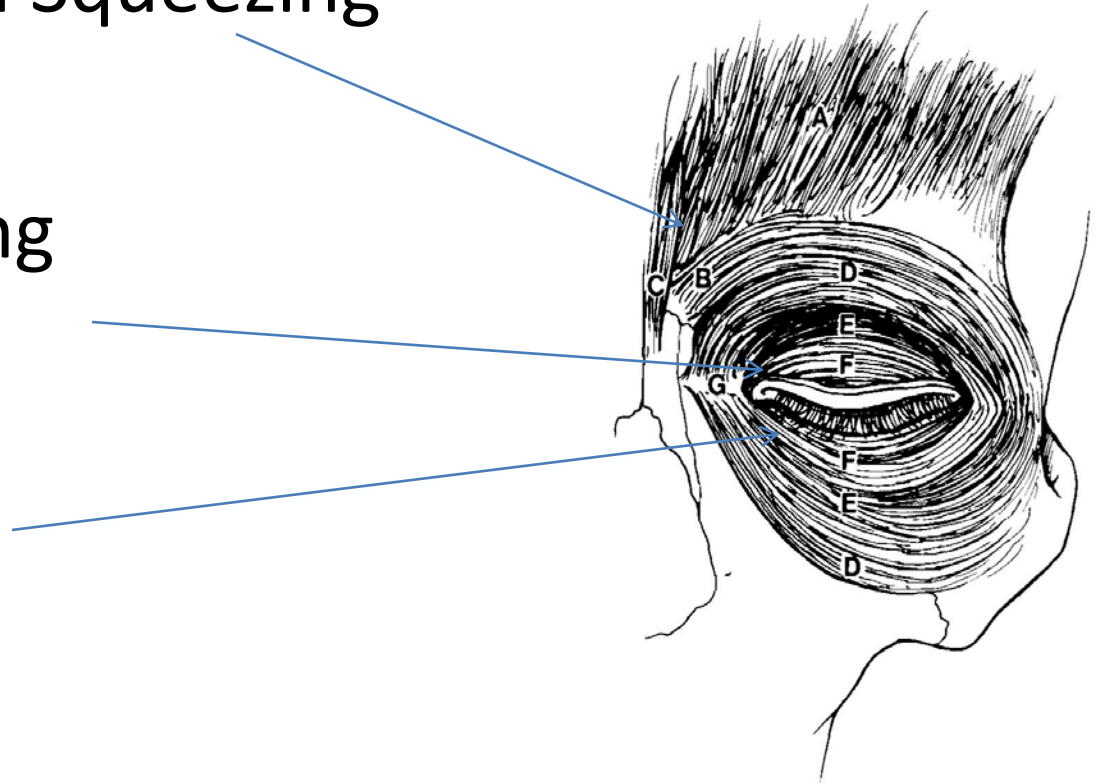
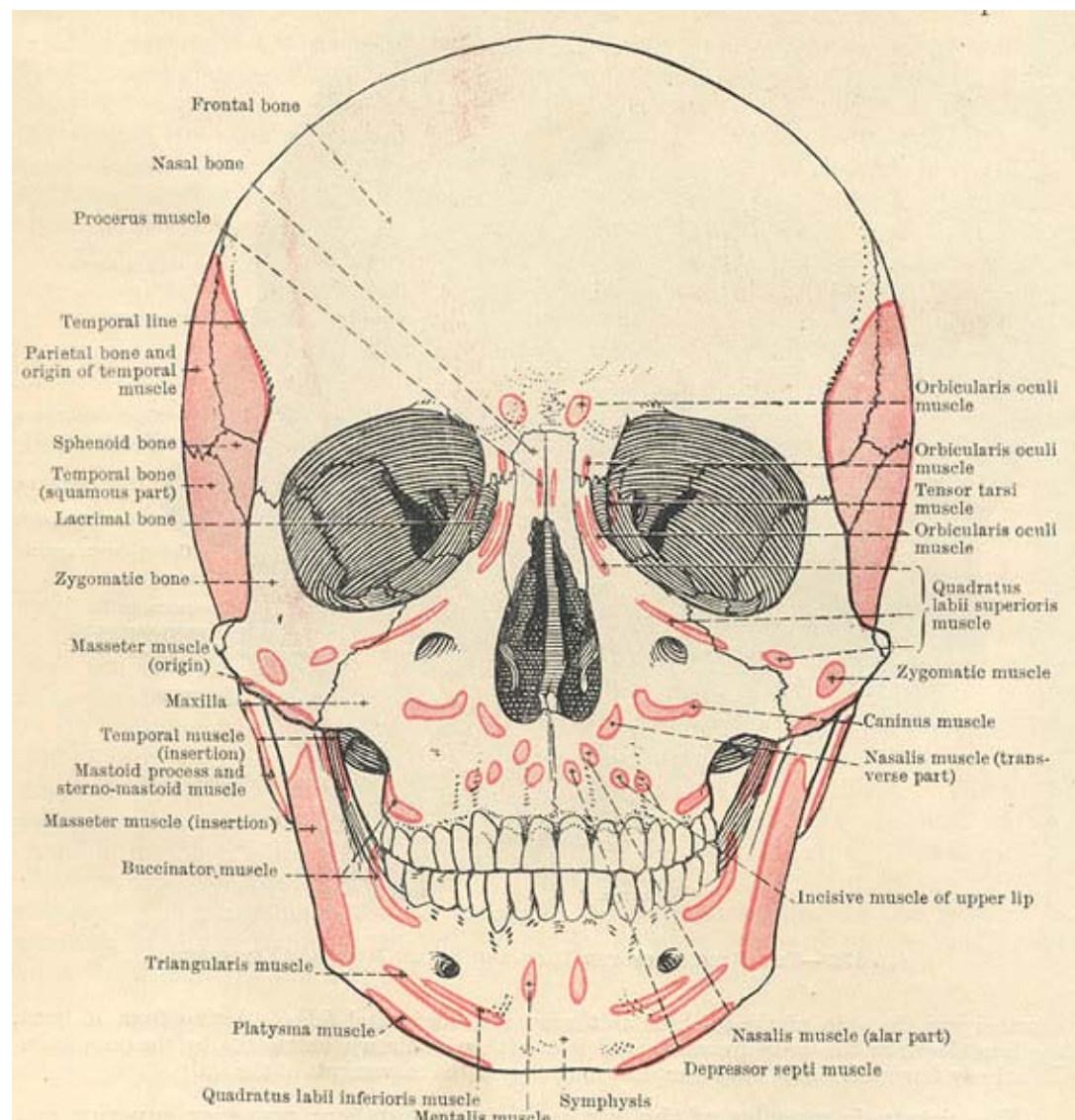
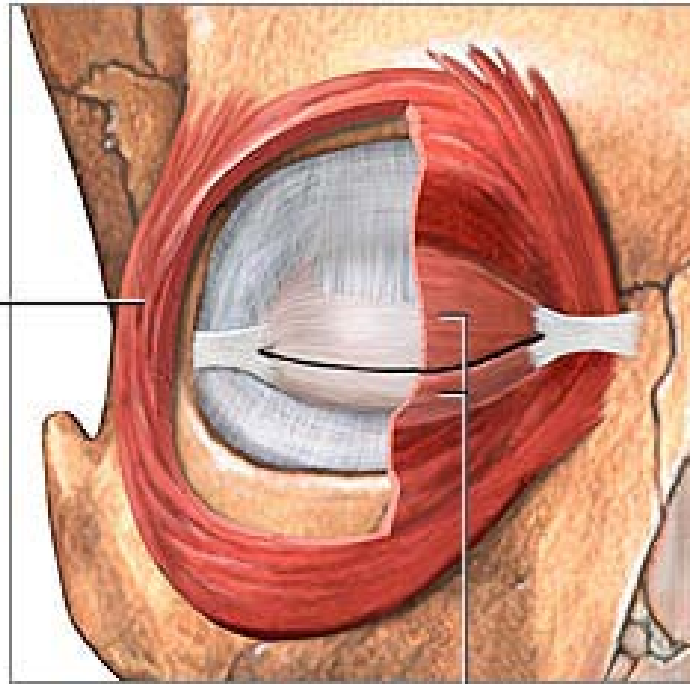


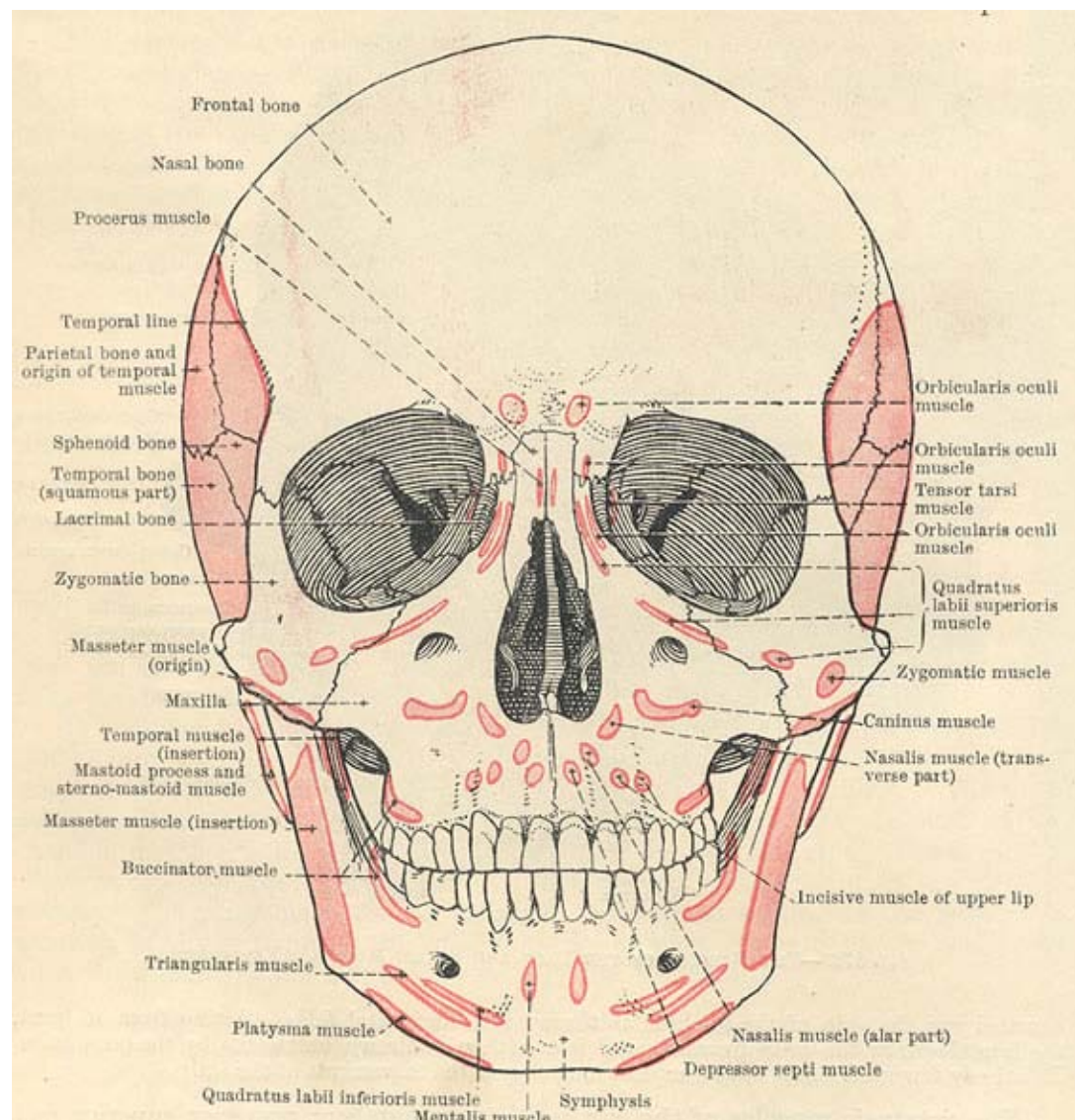
Figure 2.4 Musculature of the brow and eyelids. A. Brow

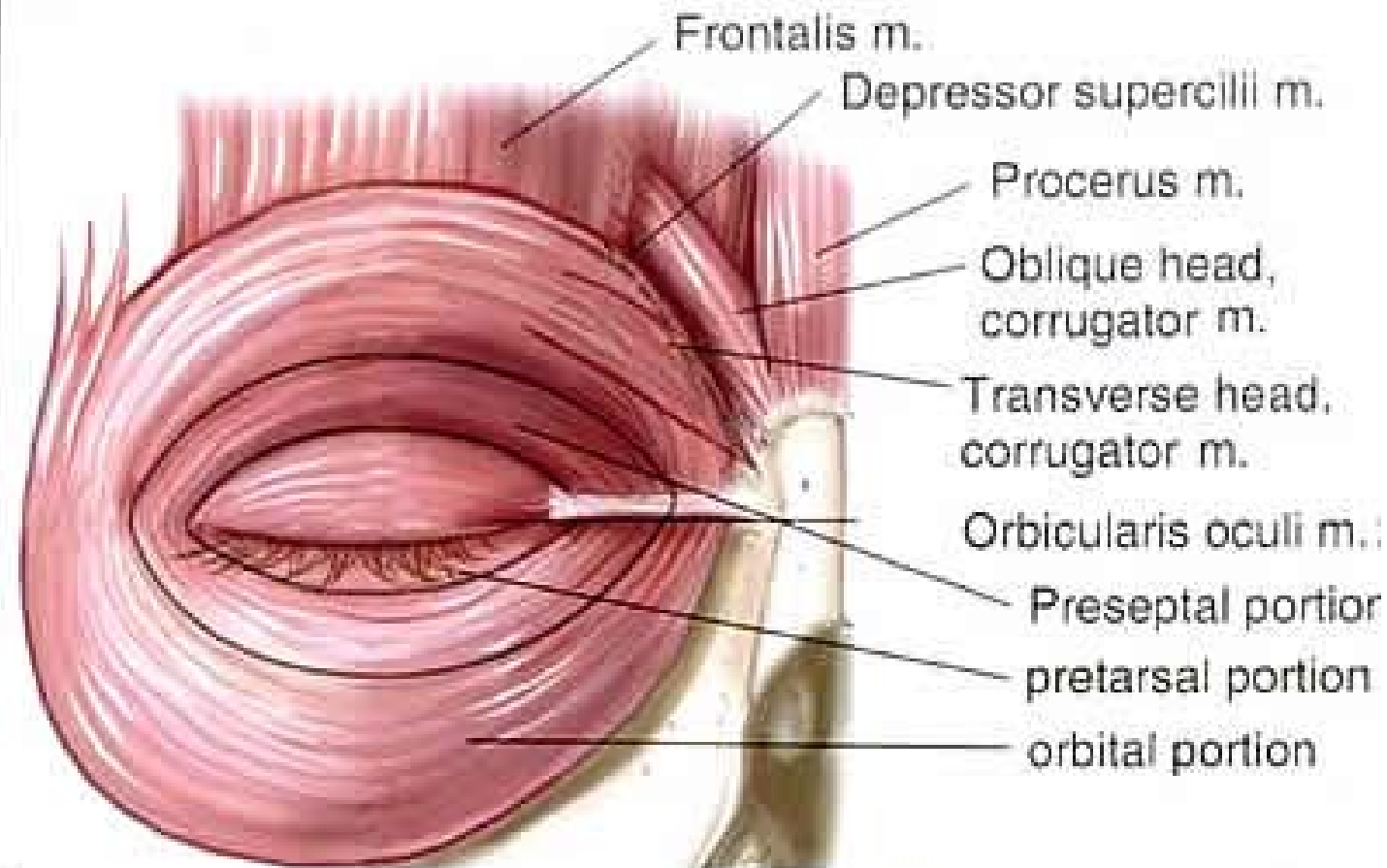


Orbicularis oculi
(Orbital part)



Orbicularis oculi
(Palpebral part)





Surgical Procedures

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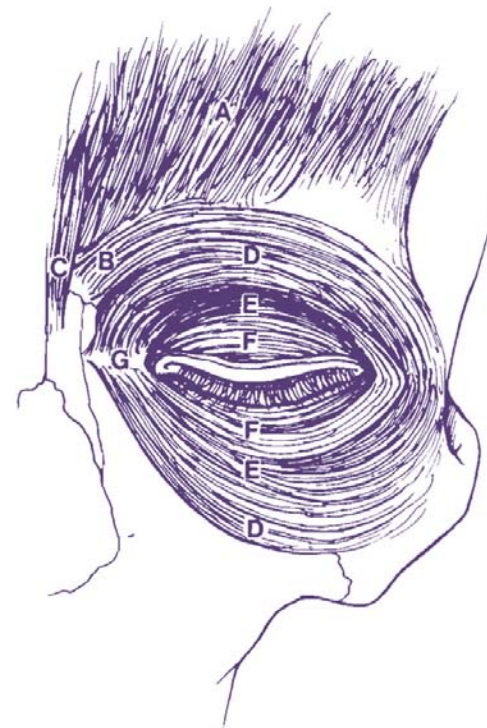
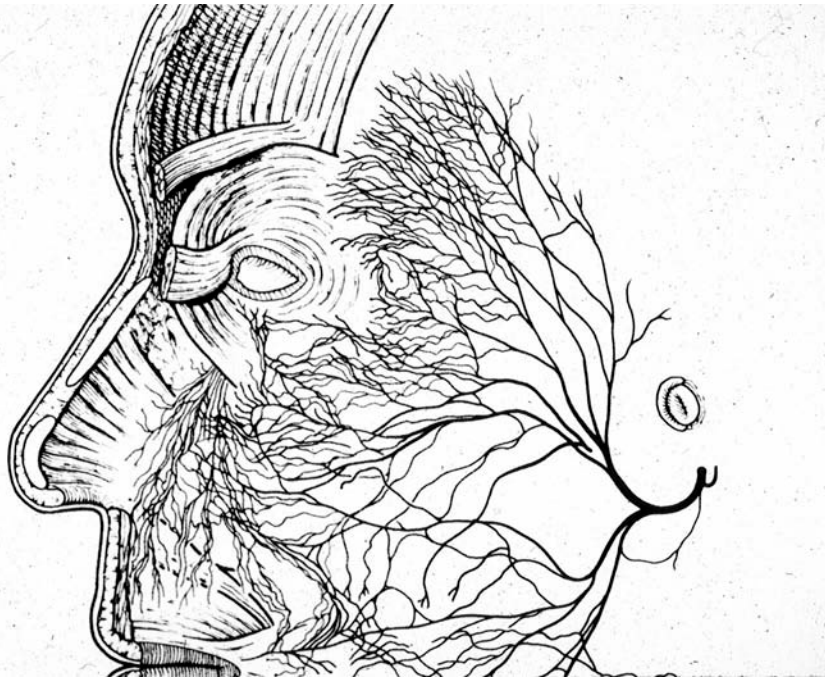
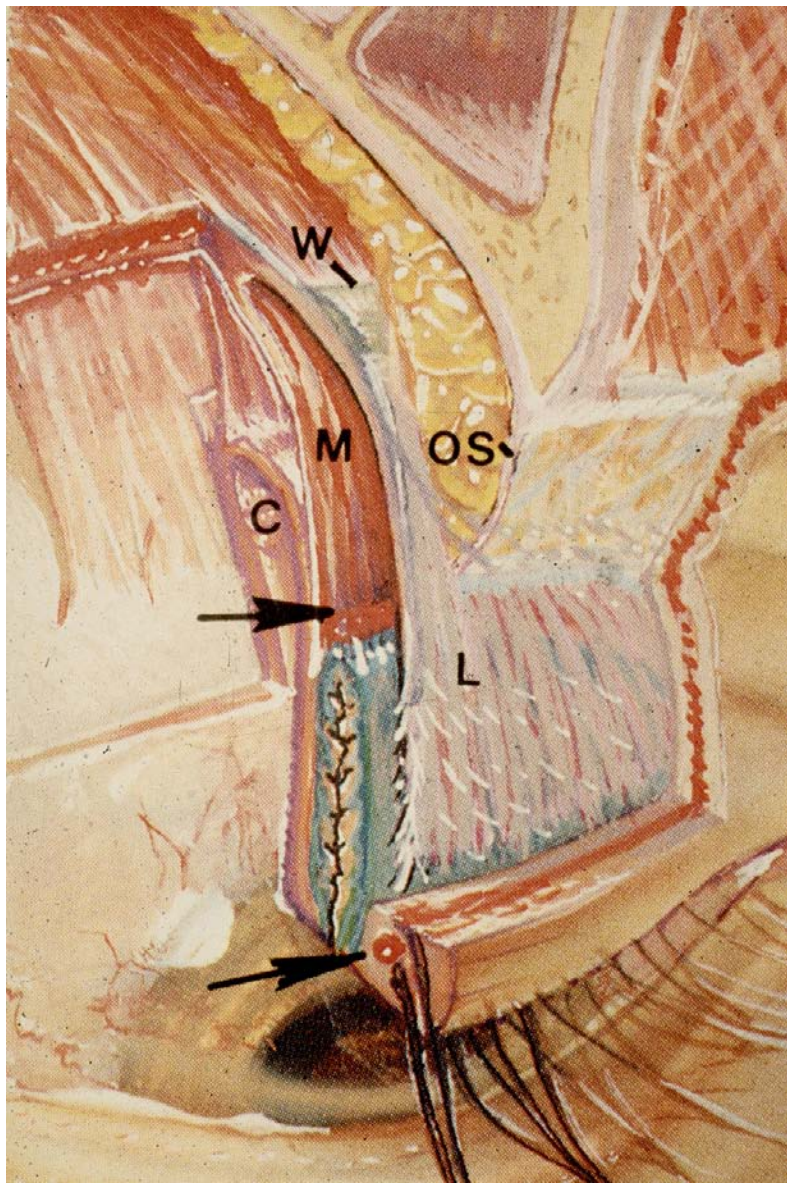
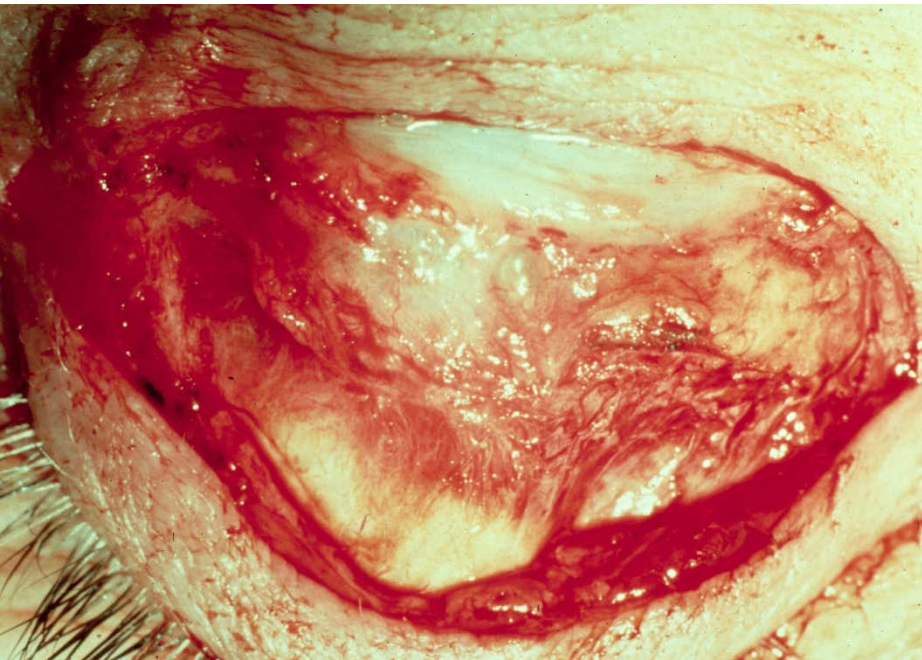


Figure 2.4 Musculature of the brow and eyelids. A. Front

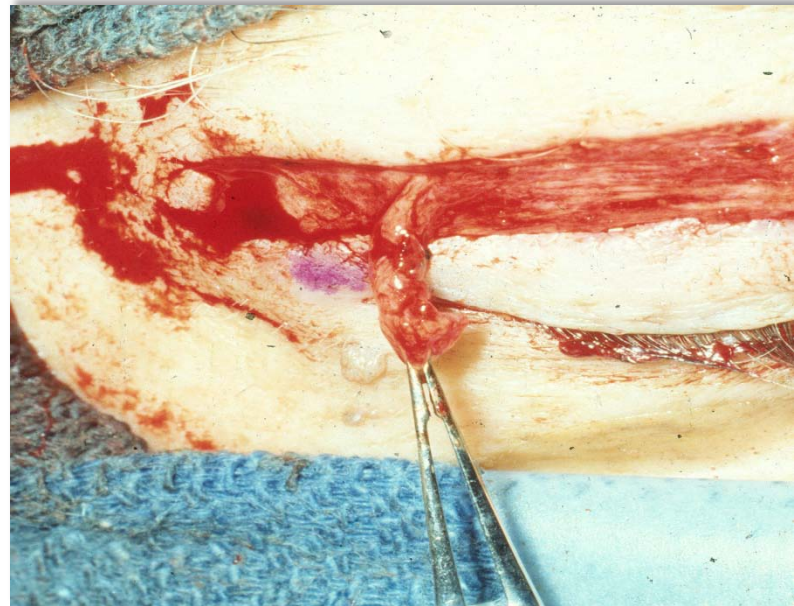
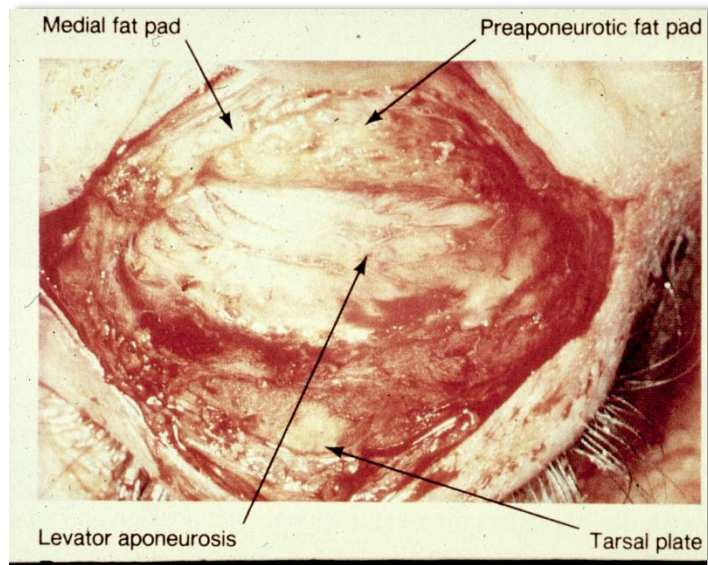


Ptosis Correction





Limited Myectomy



Extensive Myectomy

Facial Neurectomy

Slings





One year experience

- 12 patients
- Mean follow up = 8.5 months (range 2-14 months)
- All patient Botox failures
- All but one tried at least one or more surgical procedures
- All patients had BEB or Meige Disease

Grading Scale 0-4

- No blepharospasm , no impairment in vision, no impairment in function
- Mild blepharospasm, some activities are impaired but able to carry out routine functions, mild impairment in eyesight
- Moderate blepharospasm, many activities are very difficult to conduct, vision is moderately impaired.
- Severe blepharospasm, impairs most activities, vision is often impaired
- Blepharospasm almost constantly present and impairs almost all routine activities and is the most significant problem day to day, vision is extremely compromised.

Safety

- No substantial complications
- Loose bolt removed (1 case)
- Larger 6 mm bolt removed in 2 of twelve cases
- Mild to moderate headache in 4 of 12 for several days with complete resolution
- One patient found C pap mask more difficult for sleep apnea
- No chronic headaches, no neuropathy, no decrease in blink, no infections, no skull penetrations

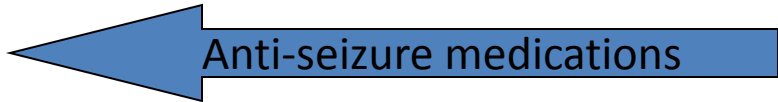
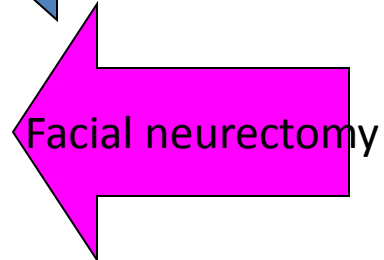
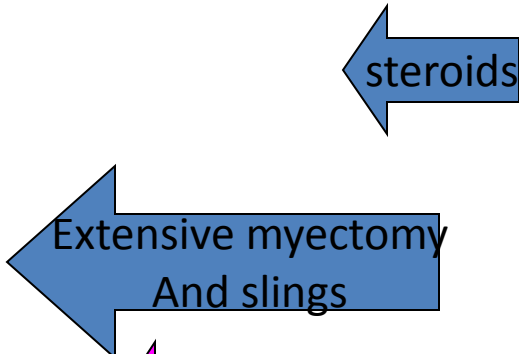
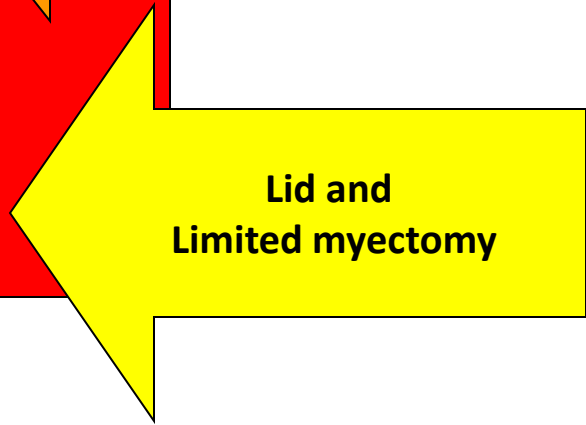
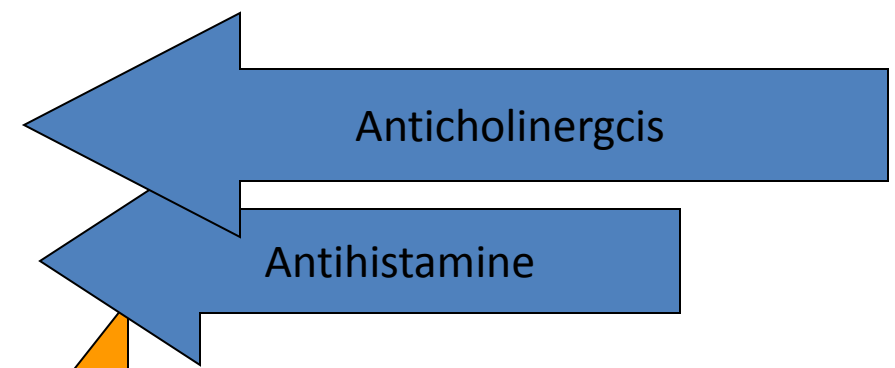
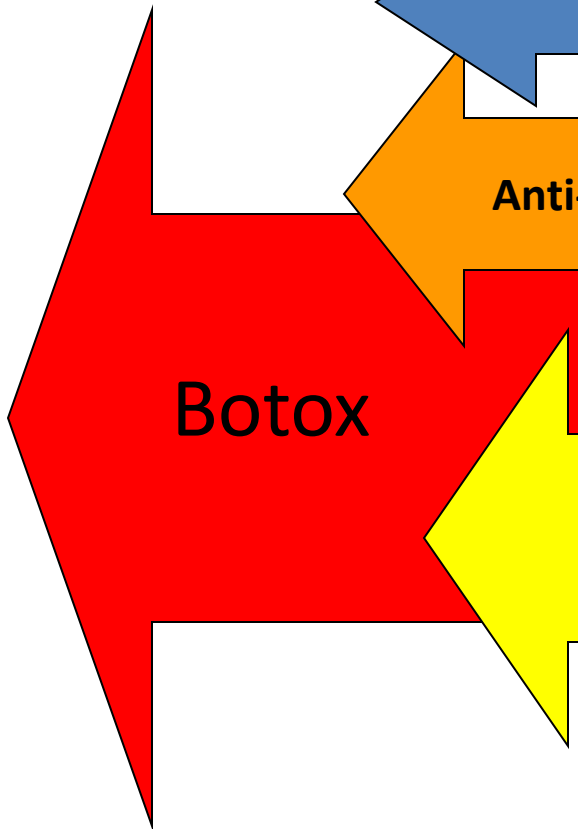
Efficacy

- 11 of 12 Patients had at least 1 point improvement on severity scale
- 9 of 12 patients noted substantial improvement, 2 point change or greater
- 10 of 12 noted substantial improved result to subsequent botulinum injection
- 9 of 10 note improvement in sensory trick, 6 complete elimination of behavior
- Efficacy to second and third BTX cycle as been maintained in most
- Photophobia improved in 4 of 7 cases where this was a major issue

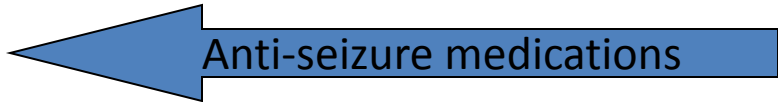
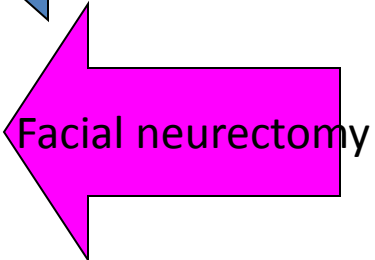
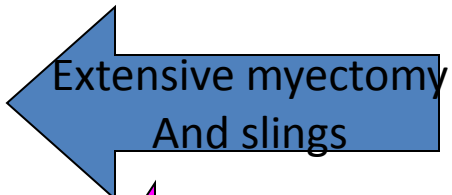
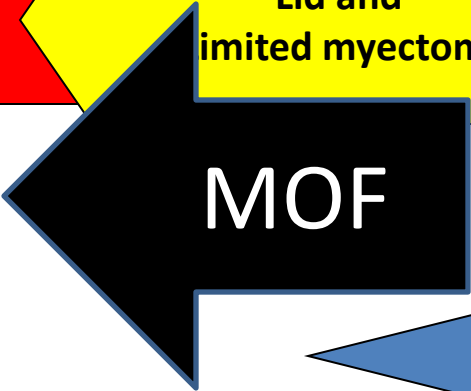
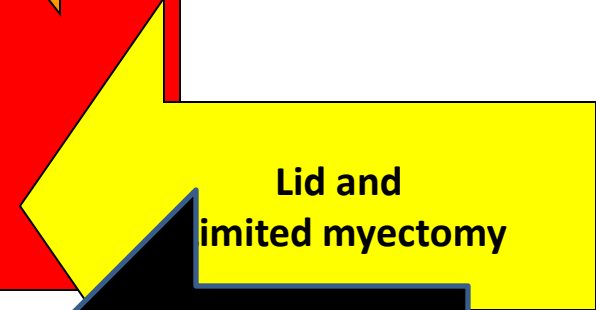
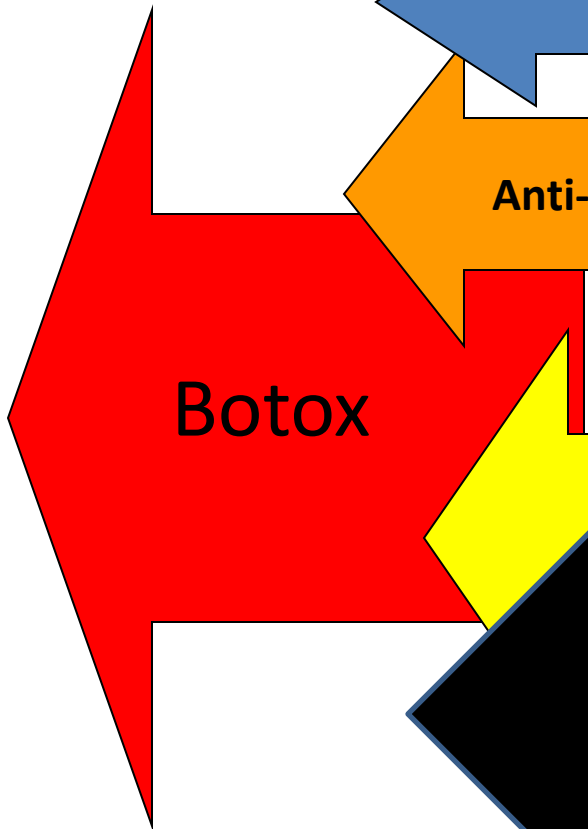
Anatomic results

- Anatomic brow elevation apparent in 11 of 12 patients, drift down over time
- Restriction in brow descent and rhytide generation noted in 12 of 12 patients and found to be maintained in virtually all patients 6 months after surgery
- Brow fixation being maintained

**B
E
B**



**B
E
B**



Final Comments about Illness in General

- Try to leave a complete and normal life
- Don't dwell on infirmities
- Have faith
- Value your loving relationships in life