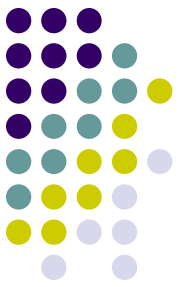


Q

Botox

- *Mechanism of action:* Prevents

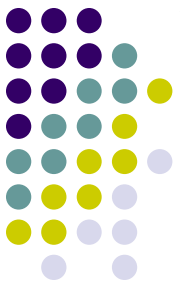
abb. + word



A

Botox

- *Mechanism of action:* Prevents ACh release



Q

Botox

- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*

It is bound and internalized within

first two words of
four-word phrase

last two words of
four-word phrase

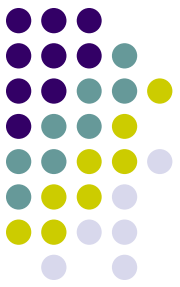


A

Botox

- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**





Q

Botox

- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about # -# (unit of time)

A

Botox

- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**



Q

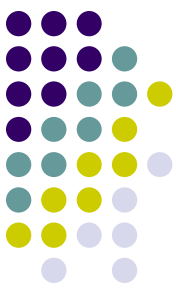
Botox



- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**
- *Duration of action:*
 - About # - # (unit of time) in extraocular muscles

A

Botox



- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**
- *Duration of action:*
 - About **5 - 8 weeks** in extraocular muscles

Q

Botox



- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**
- *Duration of action:*
 - About **5 - 8 weeks** in extraocular muscles
 - About

- # (unit of time)

 in facial muscles



A

Botox

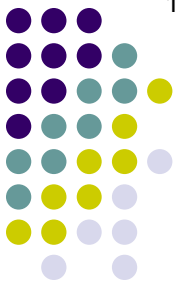
- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**
- *Duration of action:*
 - About **5 - 8 weeks** in extraocular muscles
 - About **3 - 4 months** in facial muscles



Botox

Q

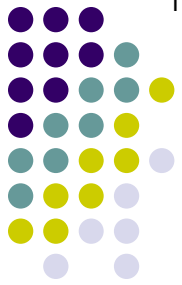
- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**
- *Duration of action:*
 - About **5 - 8 weeks** in extraocular muscles
 - About **3 - 4 months** in facial muscles
- Paralyzed muscle **a change**; antagonist **a different change**



Botox

A

- *Mechanism of action:* Prevents **ACh release**
- *Where does the toxin 'go' to do its work?*
It is bound and internalized within **local motor nerve terminals**
- *Time to onset of action* is about **2 – 4 days**
- *Duration of action:*
 - About **5 - 8 weeks** in extraocular muscles
 - About **3 - 4 months** in facial muscles
- Paralyzed muscle **lengthens** ; antagonist **contracts**



Botox

Q

- subspecialty-related
- subspecialty-related
- subspecialty-related

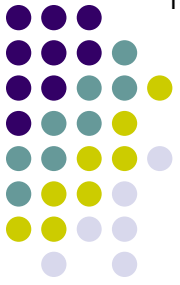
Three general classes of ophthalmic indications for Botox use

A

Botox

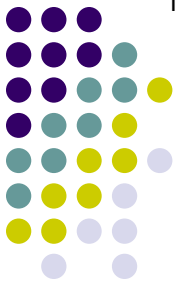
- Strabismus-related
- Neuro-related
- Plastics/cosmesis-related

Three general classes of ophthalmic indications for Botox use



Q

Botox



- Strabismus-related

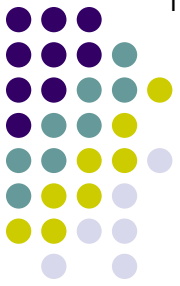
- ?

Two well-established uses for Botox in strab management

- ?

- Neuro-related

- Plastics/cosmesis-related



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- **Neuro**-related
- **Plastics/cosmesis**-related



Q

Botox

- **Strabismus**-related
 - **Primary tx for ET**

How keen is the Peds book on Botox as a primary intervention in ET?

- **Plastics/cosmesis**-related



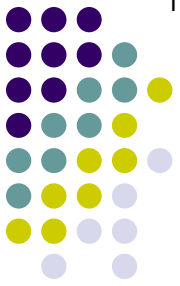
A

Botox

- **Strabismus**-related
 - **Primary tx for ET**

How keen is the Peds book on Botox as a primary intervention in ET?
Not very. It emphasizes that Botox-only intervention is associated with higher failure and re-op rates.

- **Plastics/cosmesis**-related



Botox

Q

- **Strabismus**-related
 - Primary tx for ET
 - **Augmentation of large-angle ET surgery**

- *How large does at ET need to be to warrant Botox augmentation?*

-



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - **Augmentation of large-angle ET surgery**
- *How large does at ET need to be to warrant Botox augmentation?*
Really large—we're talking at least 60 Δ or so



Botox

Q

- **Strabismus**-related
 - Primary tx for ET
 - **Augmentation of large-angle ET surgery**
- *How large does at ET need to be to warrant Botox augmentation?*
Really large—we're talking at least 60Δ or so
- *In strab surgery, chemodenervation with Botox produces a 'chemical recession.'*
- *What agent can be injected into the antagonist muscle to produce a chemical **resection** effect, thereby improving the Botox's efficacy?*



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - **Augmentation of large-angle ET surgery**

- *How large does at ET need to be to warrant Botox augmentation?*
Really large—we're talking at least 60Δ or so

In strab surgery, chemodenervation with Botox produces a 'chemical recession.'

- *What agent can be injected into the antagonist muscle to produce a chemical **resection** effect, thereby improving the Botox's efficacy?*

Bupivacaine

Q

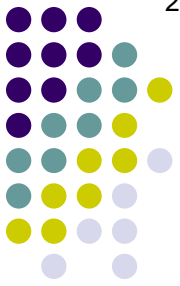
Botox

- Strabismus-related

Botox therapy is likely to yield poor results in which strabismus scenarios?

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- Plastics/cosmesis-related





A

Botox

- **Strabismus**-related

*Botox therapy is likely to yield **poor** results in which strabismus scenarios?*

- Large angle restrictive strabismus
- A/V patterns
- Dissociated vertical deviations
- Disorders of the oblique muscles

- **Plastics/cosmesis**-related



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- **Neuro**-related
 - ? *A group of neuro conditions for which Botox is commonly employed as tx*
- **Plastics/cosmesis**-related

A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- **Neuro**-related
 - CN7 overactivity disorders
- **Plastics/cosmesis**-related





Botox

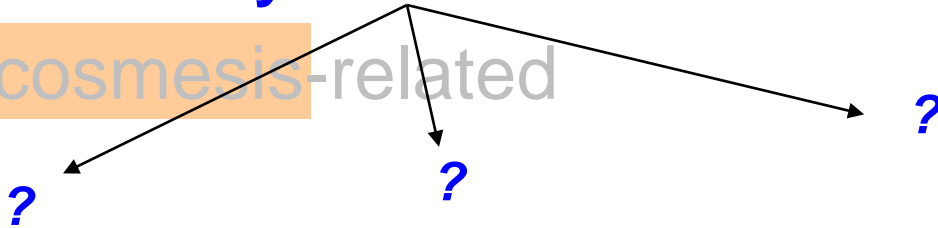
Q

- Strabismus-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

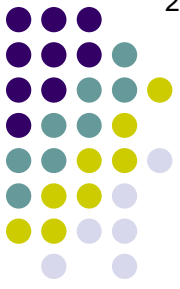
- Neuro-related

- **CN7 overactivity disorders**

- Plastics/cosmesis-related



What three CN7 overactivity disorders are discussed at length in the Neuro book (and to a lesser extent in the Plastics book)?



A

Botox

- Strabismus-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
- Neuro-related
 - **CN7 overactivity disorders**
- Plastics/cosmesis-related
 - Benign essential blepharospasm (BEB)
 - Hemifacial spasm
 - Facial myokymia

What three CN7 overactivity disorders are discussed at length in the Neuro book (and to a lesser extent in the Plastics book)?



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

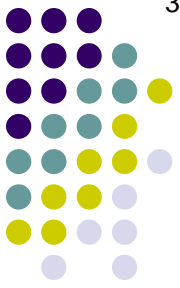
**Benign essential
blepharospasm (BEB)**

Hemifacial spasm

uni- v bilat

muscle

spasms



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

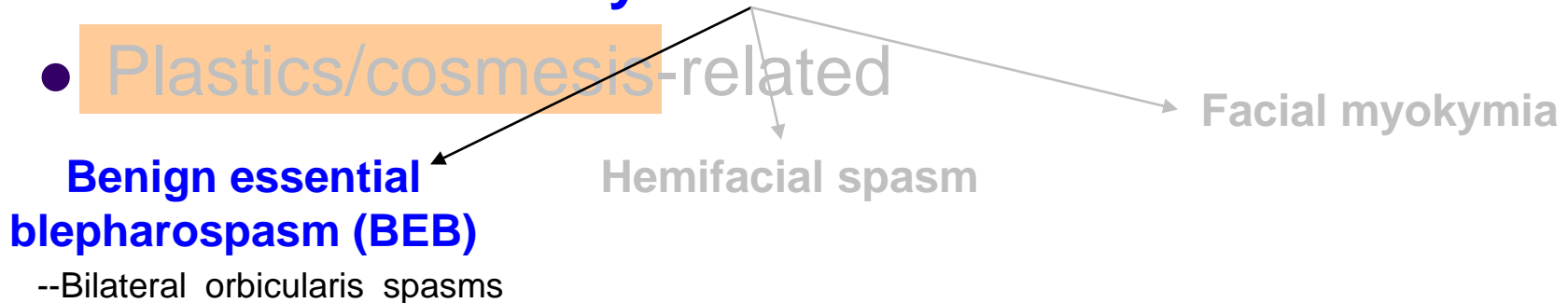
Facial myokymia

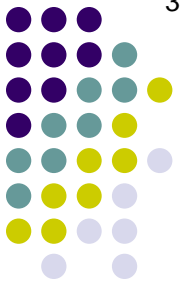
Benign essential

blepharospasm (BEB)

--Bilateral orbicularis spasms

Hemifacial spasm





Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

blepharospasm (BEB)

--Bilateral orbicularis spasms

--Onset after age #

Hemifacial spasm



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

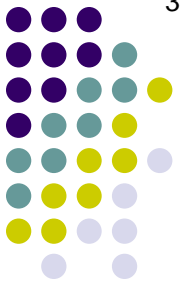
Facial myokymia

Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40

Hemifacial spasm



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F r ^ v M

Hemifacial spasm



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F > M

Hemifacial spasm

Botox



- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

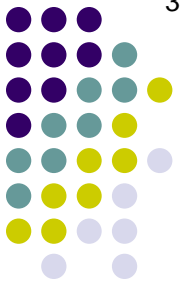
Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating

Hemifacial spasm

Factoid: No Q



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

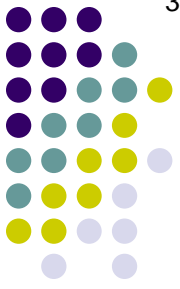
Facial myokymia

Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating
- does vs doesn't occur during sleep

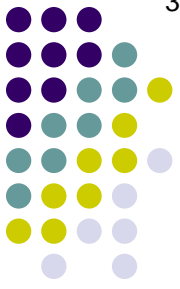
Hemifacial spasm



A

Botox

- **Strabismus**-related
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- **Neuro**-related
 - **CN7 overactivity disorders**
- **Plastics/cosmesis**-related
 - **Benign essential blepharospasm (BEB)**
 - Bilateral orbicularis spasms
 - Onset after age 40
 - F > M
 - Initially mild/infrequent; can progress to be incapacitating
 - Doesn't occur during sleep
 - Hemifacial spasm
 - Facial myokymia



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

blepharospasm (BEB)

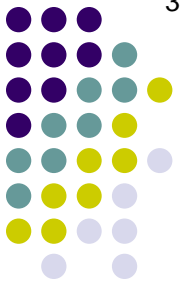
- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to

word 1 of 2

word 2

dysfunction

Hemifacial spasm



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction

Hemifacial spasm



Q

Botox

- **Strabismus**-related
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- **Neuro**-related
 - **CN7 overactivity disorders**
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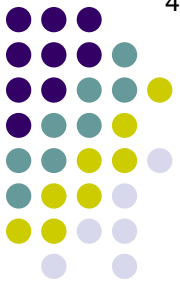
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- Onset after age 40
- F > M
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Hemifacial spasm

Facial myokymia

Should neuroimaging be performed for BEB?



A

Botox

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 - Primary tx for ET
 - Augmentation of large-angle ET surgery
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- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction**

Hemifacial spasm

Facial myokymia

Should neuroimaging be performed for BEB?
No—it is generally unrevealing, and unnecessary

Botox



- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

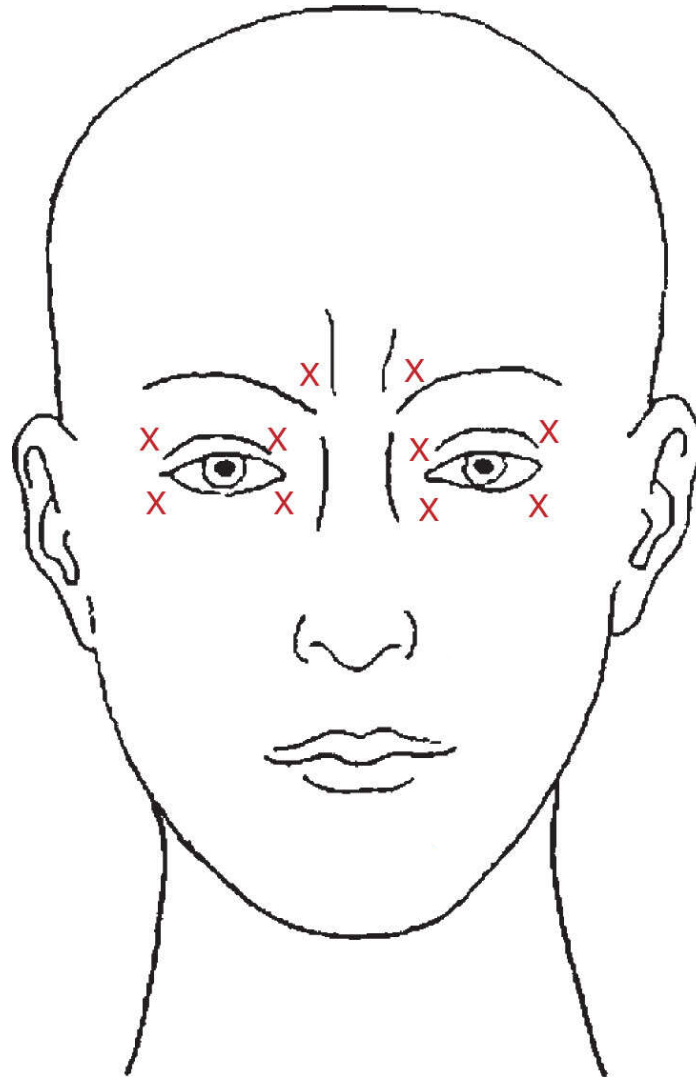
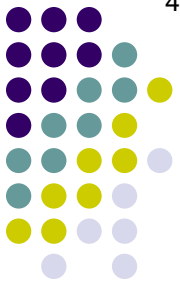
blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
- F > M
- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 Botox injections ringing both periorbital regions

Hemifacial spasm

Factoid: No Q

Botox



Typical Botox injection sites for BEB



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

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Hemifacial spasm

What is Meige syndrome?



A

Botox

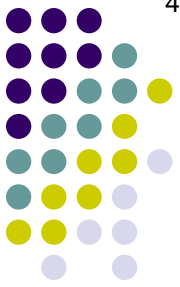
- **Strabismus**-related
 - Primary tx for ET
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 - **CN7 overactivity disorders**
- **Plastics/cosmesis**-related
 - Facial myokymia

Benign essential blepharospasm (BEB)

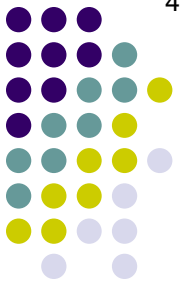
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Hemifacial spasm

What is Meige syndrome?
BEB + involuntary facial grimacing



Meige syndrome (and rosacea, it seems)



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

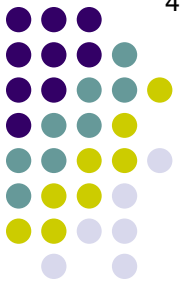
Facial myokymia

**Benign essential
blepharospasm (BEB)**

Hemifacial spasm

- Bilateral orbicularis spasms
- Onset after age 40
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- Initially mild/infrequent; can progress to be incapacitating
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- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 Botox injections ringing both periorbital regions

What must one rule out prior to making a diagnosis of BEB?



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

Benign essential

blepharospasm (BEB)

- Bilateral orbicularis spasms
- Onset after age 40
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- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 Botox injections ringing both periorbital regions

Hemifacial spasm

What must one rule out prior to making a diagnosis of BEB?
 Reflex blepharospasm 2ndry to dry eyes or other issues



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

**Benign essential
blepharospasm (BEB)**

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ringing both periorbital regions

Hemifacial spasm

uni- v bilat

hemifacial spasms



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

**Benign essential
blepharospasm (BEB)**

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- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 Botox injections
ringing both periorbital regions

Hemifacial spasm

- Unilateral hemifacial spasms



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

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blepharospasm (BEB)**

- Bilateral orbicularis spasms
- Onset after age 40
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- Initially mild/infrequent; can progress to be incapacitating
- Doesn't occur during sleep
- Probably 2ndry to basal ganglia dysfunction
- Tx: 4-8 Botox injections
ringing both periorbital regions

Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only **orbicularis oculi** muscle, progresses to hemiface



A

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

Facial myokymia

**Benign essential
blepharospasm (BEB)**

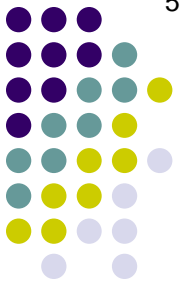
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- Tx: 4-8 Botox injections ringing both periorbital regions

Hemifacial spasm

- Unilateral hemifacial spasms
- Initially involves only orbicularis muscle, progresses to hemiface



Hemifacial spasm



Q

Botox

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery

- **Neuro**-related

- **CN7 overactivity disorders**

- **Plastics/cosmesis**-related

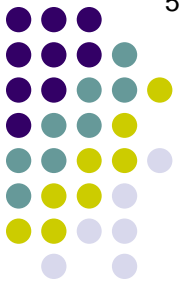
Facial myokymia

Benign essential blepharospasm (BEB)

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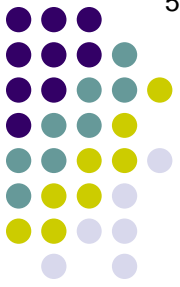
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Take note of this distinguishing feature!



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word 3

words 1&2 of 3



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compression

What is the classic compressive lesion?



A

Botox

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Facial myokymia

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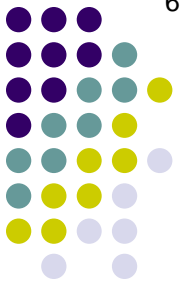
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compression

What is the classic compressive lesion?
A dolichoectatic vessel



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compression

*What is the classic compressive lesion?
A dolichoectatic vessel*

Should neuroimaging be performed?



A

Botox

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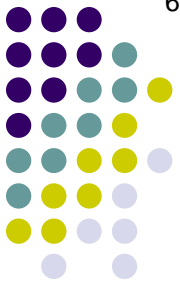
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compression

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A dolichoectatic vessel

Should neuroimaging be performed?
Yes, to confirm the vascular nature of the compressive lesion, and to rule out a mass

Botox



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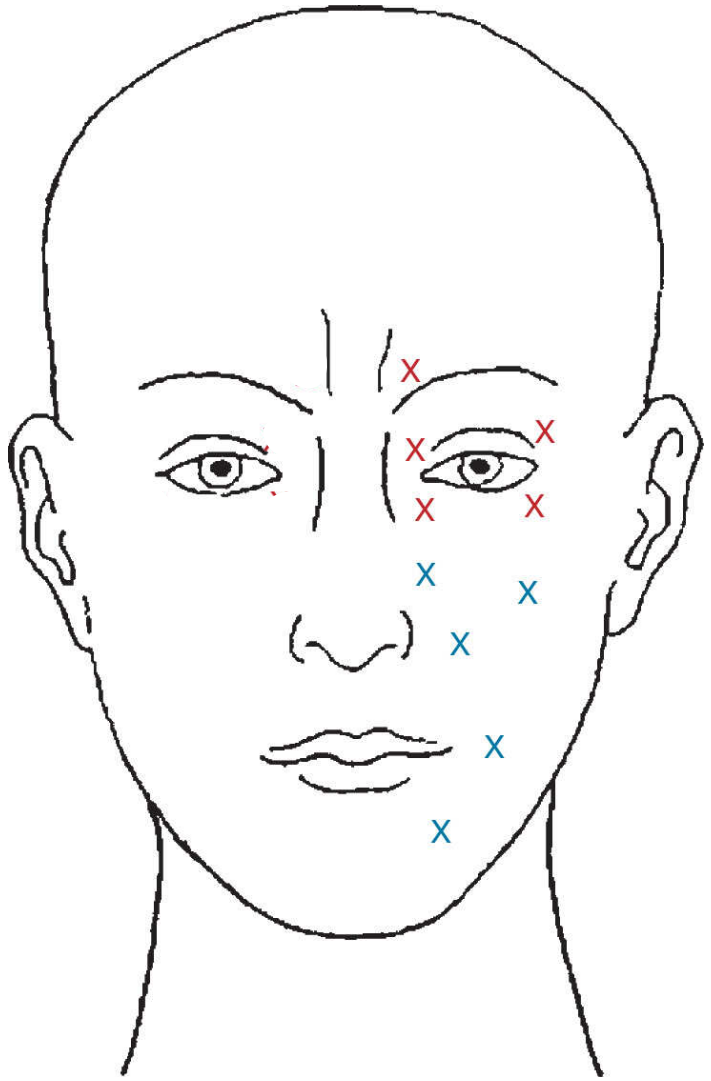
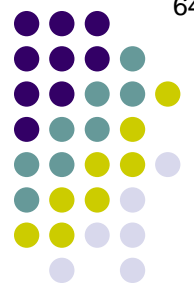
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Factoid: No Q

Botox



Typical Botox injection sites for hemifacial spasm



Q

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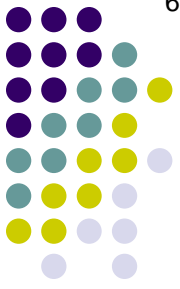
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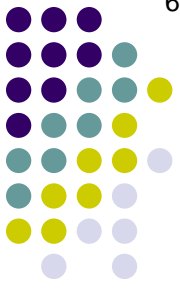
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How is decompression typically achieved?



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Botox

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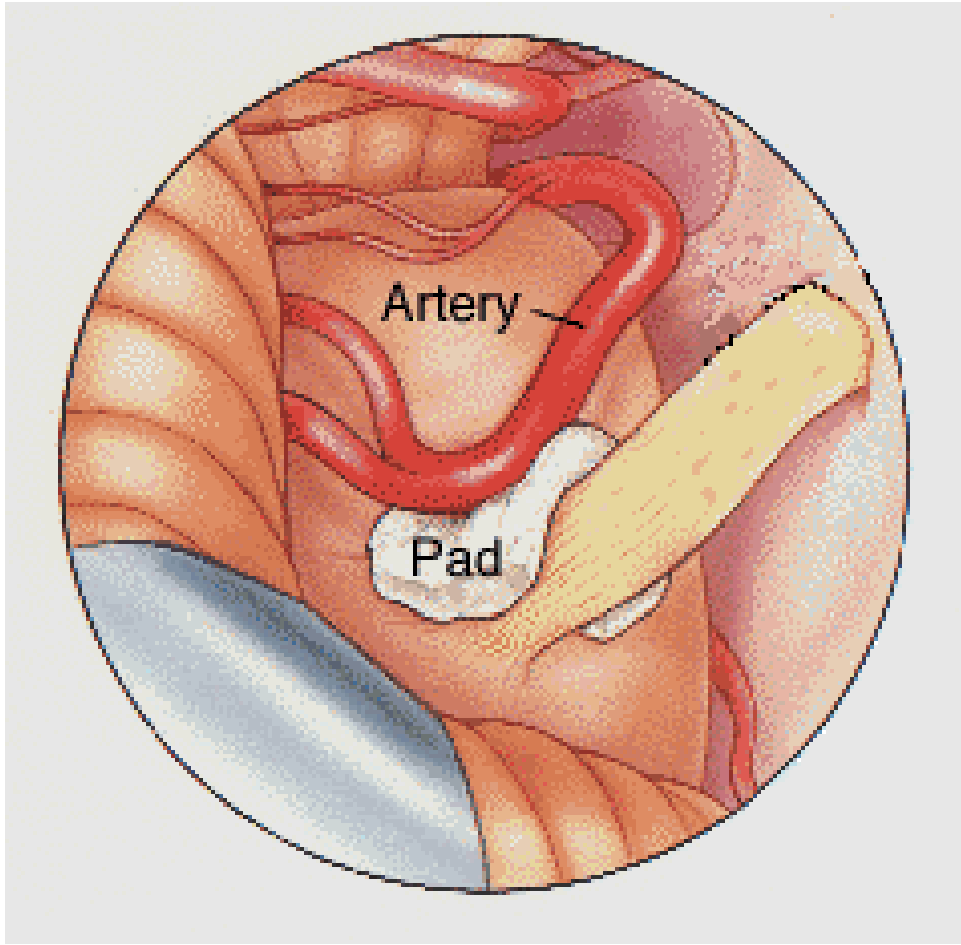
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How is decompression typically achieved?
A sponge is placed between the offending vessel and nerve

Botox



Surgical decompression



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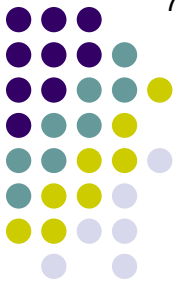
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Facial myokymia

- uni- v bilat rippling movements of facial musculature



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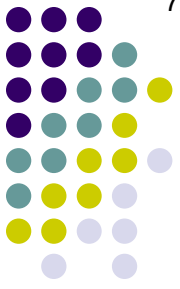
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Facial myokymia

- Unilateral rippling movements of facial musculature



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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only muscle initially, then progress to hemiface



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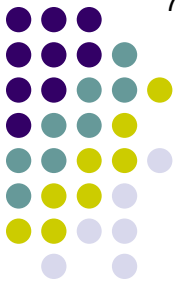
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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to **CNS area** lesion



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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion



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Facial myokymia

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- 2ndry to pontine lesion (lesion in kids; abb in adults)



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Facial myokymia

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- 2ndry to pontine lesion (glioma in kids; MS in adults)



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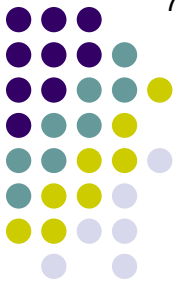
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Facial myokymia

- Unilateral rippling movements of facial musculature
- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (glioma in kids; MS in adults)
- three words**
- Intermittent orbicularis flutter



A

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- Benign eyelid myokymia:** Intermittent orbicularis flutter



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- 2ndry to pontine lesion (glioma in kids; MS in adults)
- Benign eyelid myokymia:** Intermittent orbicularis flutter
- Can be treated with Botox if persistent (= ongoing x time)



A

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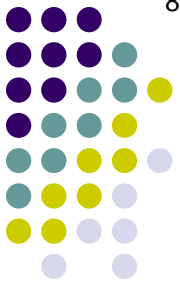
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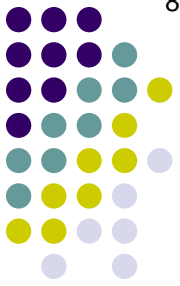
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- May involve only orbicularis muscle initially, then progress to hemiface
- 2ndry to pontine lesion (glioma in kids; MS in adults)
- Benign eyelid myokymia:** Intermittent orbicularis flutter
- Can be treated with Botox if persistent (= ongoing x months)



Botox

Q

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
 - **Neuro**-related
 - CN7 overactivity disorders
 - **Plastics/cosmesis**-related
 - ?
 - ?
 - ?
 - ?
 - ?
- } *Locations commonly Botox'd for cosmesis*



Botox

A

- **Strabismus**-related
 - Primary tx for ET
 - Augmentation of large-angle ET surgery
 - **Neuro**-related
 - CN7 overactivity disorders
 - **Plastics/cosmesis**-related
 - Glabellar area
 - Lateral canthal lines
 - Forehead
 - Perioral rhytids
 - Platysmal bands
- Locations commonly Botox'd for cosmesis*