The top-left portion of the slide features a series of thin, black, overlapping lines that form various geometric shapes, including triangles and polygons, creating a complex, abstract pattern.

FUNCTIONAL CHEMODENERVATION

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**DISCLOSURES:
NONE**

AGENDA

- Understand the physiology behind use of botulinum toxin in Otolaryngology
- Learn about different applications of toxin
- Utilize insights regarding billing and coding

TOXIN – ONLY COSMETIC?





WHAT IS BOTULINUM TOXIN?

- Purified form of naturally occurring toxin of *C. botulinum*, a sporulating gram positive bacteria most often found in soil or spoiled canned goods, honey
- “Deadliest substance ever recorded in the chemical literature” – Wikipedia
- Early outbreak of botulism linked to blood sausage in Germany in early 19th century, isolated by Justinus Kerner between 1817-1822

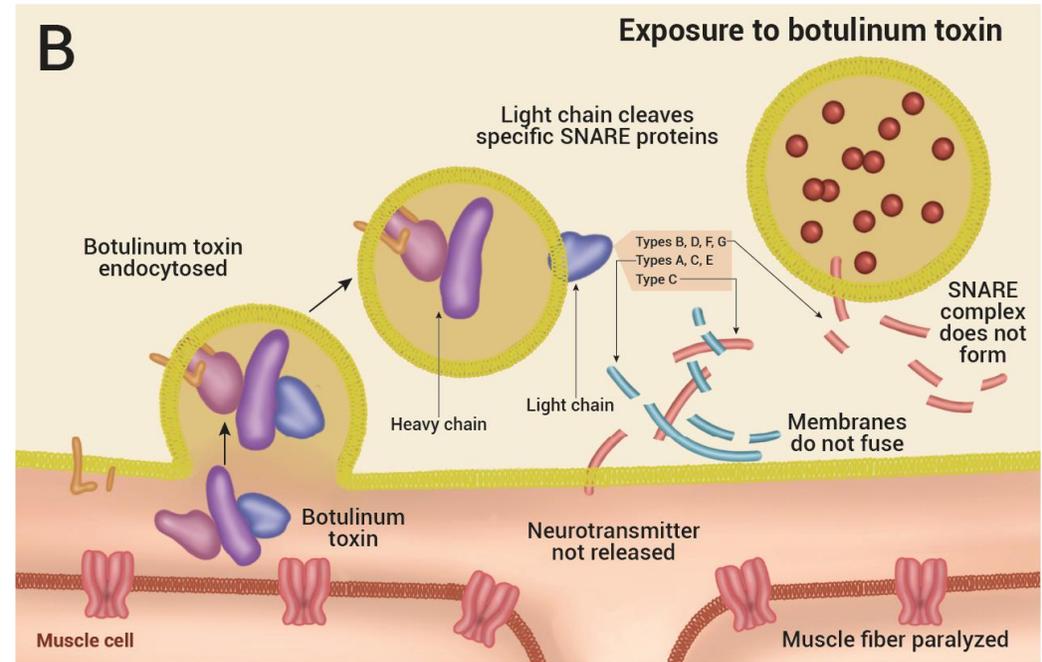
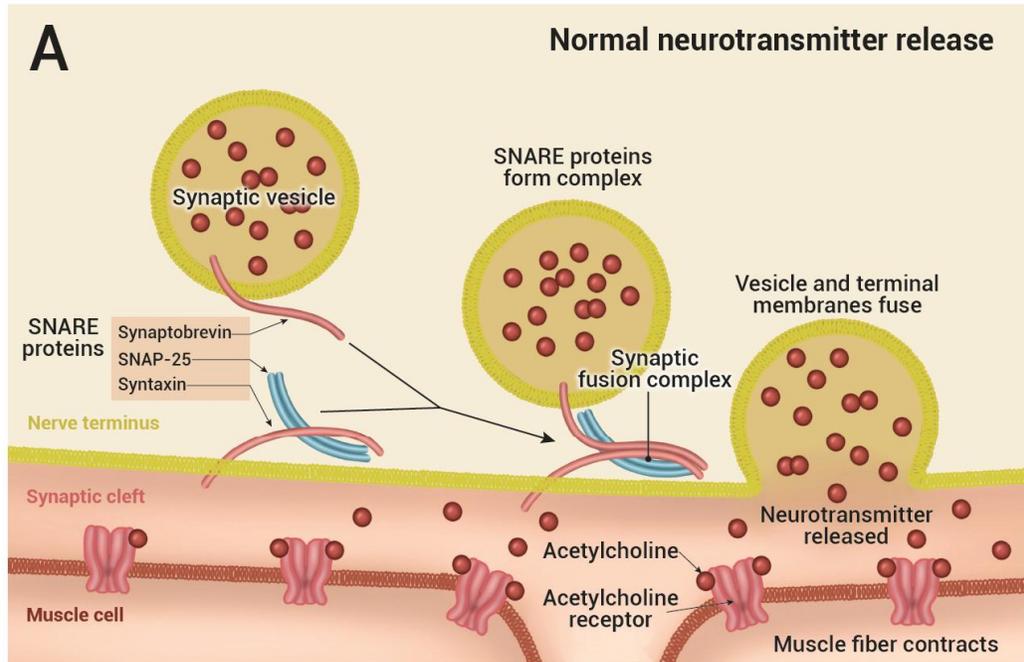
Botulus = sausage

HOW DID IT BECOME COMMERCIALIZED?

- Developed as a chemical weapon during World War II by the US but not used → became a research chemical
- First used for strabismus in the 1970s/1980s as “Oculinum” → liability insurance issues → bought by Allergan
- Original FDA approval under 1983 Orphan Drugs Act

Now millions of injections a year with billions of dollars of market value

HOW DOES IT WORK?





WHAT CAN WE USE IT FOR?

Facial Plastics

- Synkinesis/aberrant regeneration syndrome
- Hemifacial spasm/blepharospasm

Head and Neck

- Frey's syndrome
- Trismus?

Pediatrics

- Sialorrhea

Laryngology

- Spasmodic dysphonia
- Esophageal dysmotility/spasm

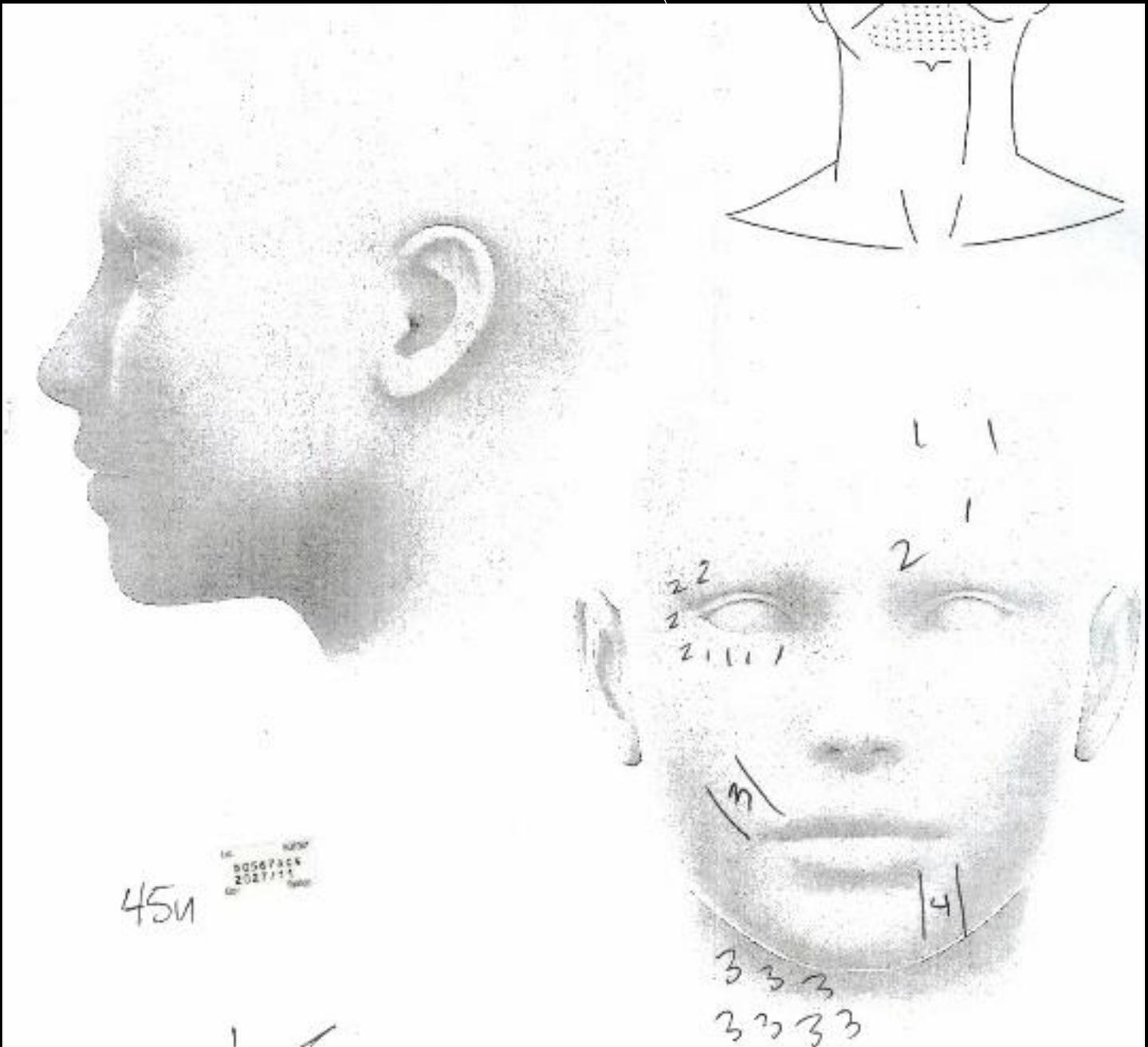
General ENT

- TMJ?
- Cervical dystonia



DEEPER DIVE: FACIAL MOVEMENT DISORDERS

- Toxin can be very helpful for **hypertonic/non-flaccid** facial movement disorders
- FDA approved for hemifacial spasm/blepharospasm, long term use for synkinesis but technically “off label”
- Lots of evidence that this improves function and quality of life



HOW DO YOU GET IT COVERED?

CPT 64612 (CHEMODENERVATION FACIAL MUSCLES)

ICD-10 CODES FOR SPASM (G51.39, G24.5)

DETAILED PLAN OF MUSCLES/UNITS

STATEMENT OF BENEFIT?

DYNAMIC DELIVERY

Learn to infuse energy into your delivery to leave a lasting impression

One of the goals of effective communication is to motivate your audience

METRIC	MEASUREMENT	TARGET	ACTUAL
Audience attendance	# of attendees	150	120
Engagement duration	Minutes	60	75
Q&A interaction	# of questions	10	15
Positive feedback	Percentage (%)	90	95
Rate of information retention	Percentage (%)	80	85



DEEPER DIVE: SWEATING/SALIVATING

Frey's Syndrome

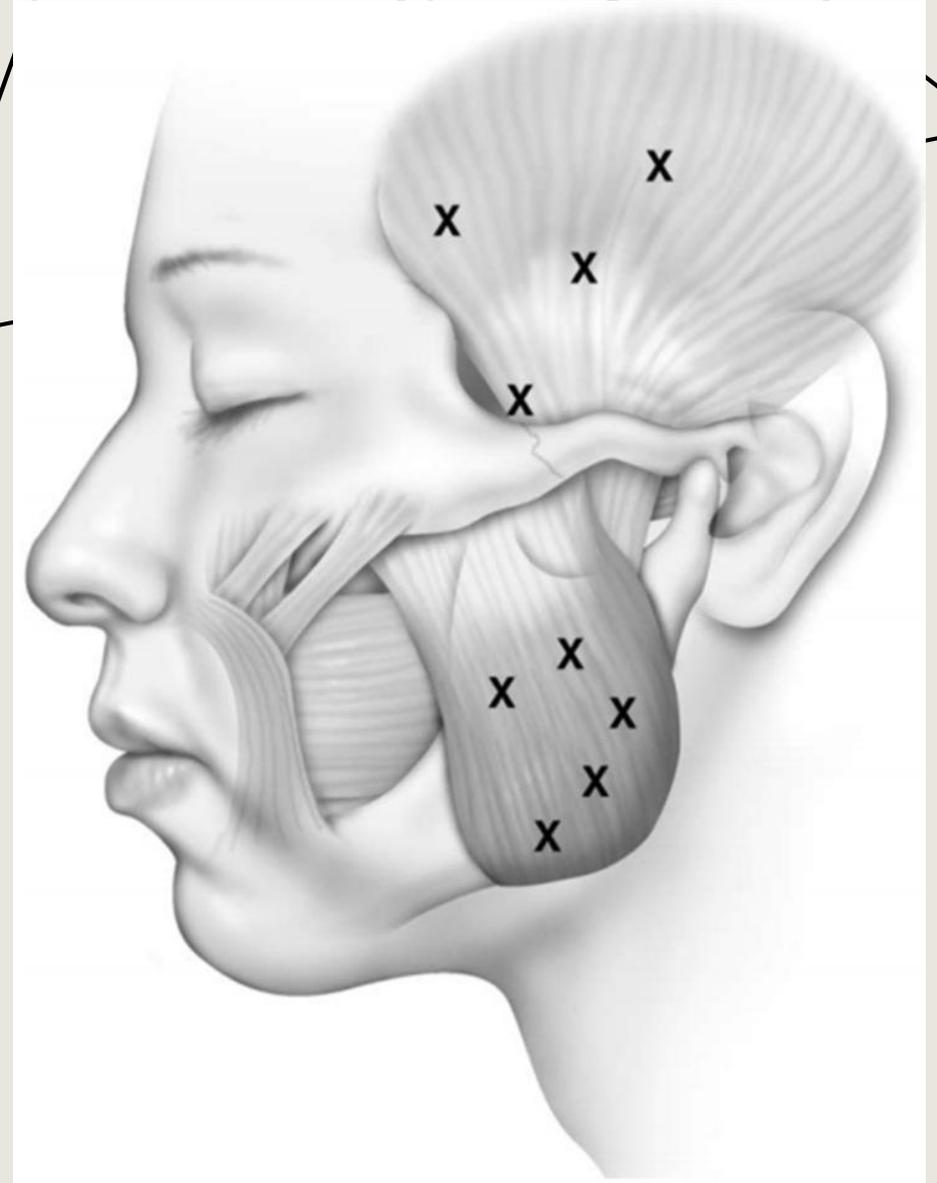
- Gustatory sweating after “parotid demolition” due to postganglionic parasympathetic nerve fibers innervating the skin sweat glands
- Injections into the skin in a grid, variable dosing
- CPT 64653 chemodeneration of eccrine glands

Sialorrhea

- Many possible causes
- Toxin generally injected into parotid and sometimes submandibular glands, maybe with ultrasound?
- Dosing 50-100 unit range for children
- CPT 64611 chemodeneration of salivary glands

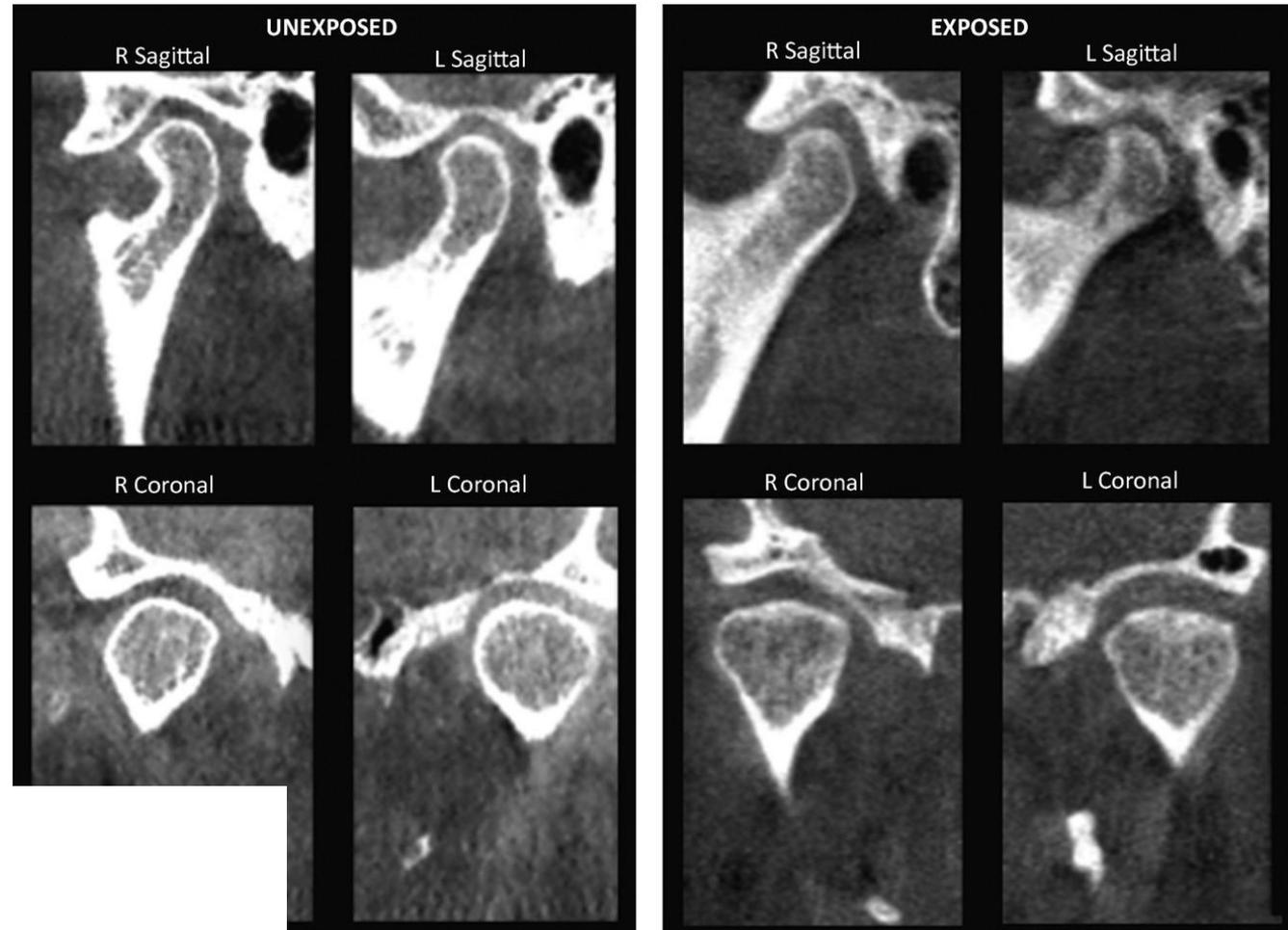
DEEPER DIVE: TMJ

- Somewhat ill-defined diagnosis – jaw pain, clicking, stiffness, locking, headaches, earaches, chewing difficulty, teeth grinding
- Injections into the masseters, sometimes temporalis/pterygoids
- Evidence is pretty conflicting – maybe helpful for masseter hypertrophy and pain
- Not FDA approved – CPT 64615 used (chemodenervation facial/neck muscles)



MAYBE NOT SO GOOD?

- Concern for “disuse” osteopenia of condyle (1 study)
- Big market for cash pay, frustrated or desperate patients



 Dallas Dermatology Partners
<https://www.dallasdermpartners.com> > botox > tmj-botox

TMJ Botox

Botox for TMJ breaks the chronic pain cycle, improving symptoms in more than 90 percent of people who have not responded to traditional treatments. [Read more](#)

Raphael et al, 2014.

OTHER USES

- Migraine
- Strabismus
- Dystonia
- Hyperhidrosis
- Achalasia/dysphagia
- Overactive bladder

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