RUSH

Management of Acute Facial Nerve Paralysis

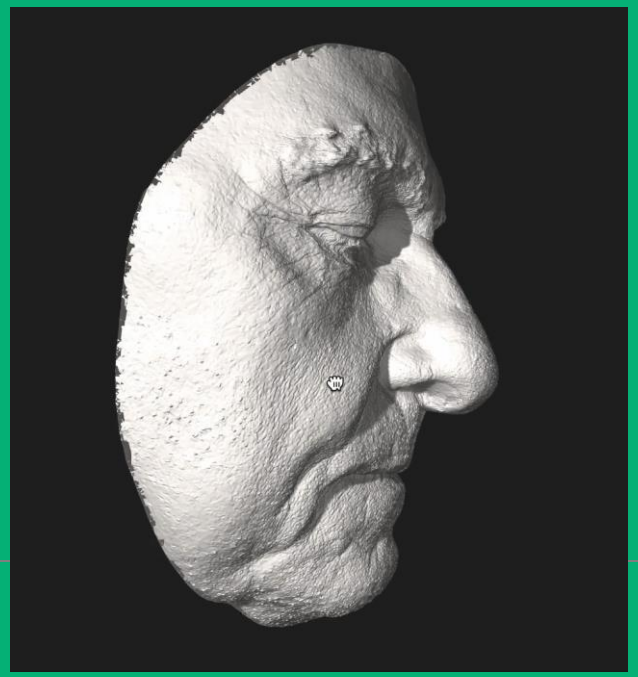
Ryan M. Smith, MD, FACS

Assistant Professor
Facial Plastic and Reconstructive Surgery
Director, Rush South Loop Otolaryngology
Co-Director, Rush Facial Nerve Disorders and Rehabilitation Program
Co-Director, Rush Acute Facial Paralysis Program
Department of Otorhinolaryngology-Head & Neck Surgery

RUSH Update in Otolaryngology 2023

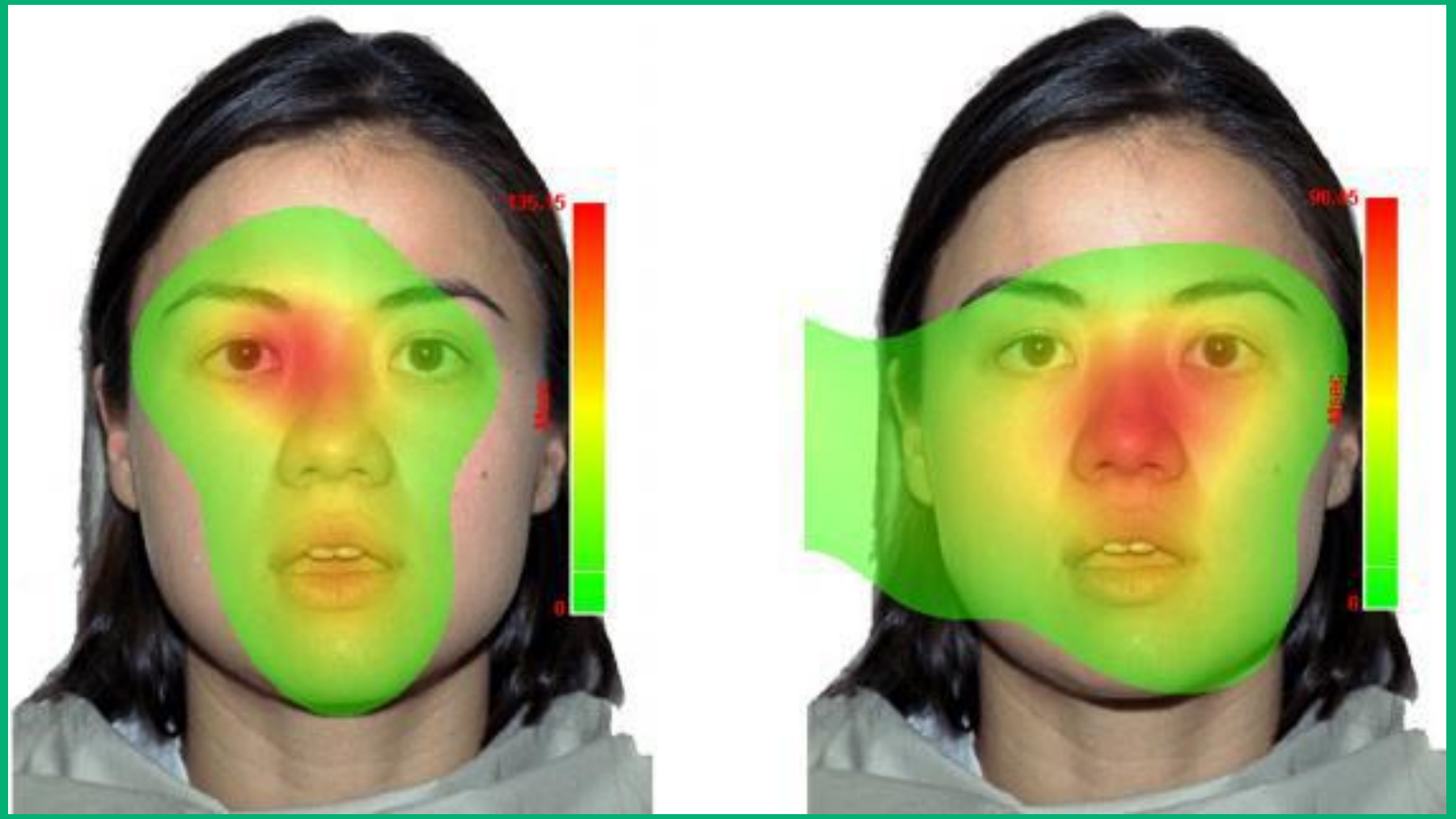
Introduction

- The human face is one of the most important surfaces in nature
- **9 minutes** after birth: babies prefer face patterns to non-face shapes
- **48 hours** after birth: newborns can recognize their mother's face
- monkeys raised in isolation identify photos of their own kind.

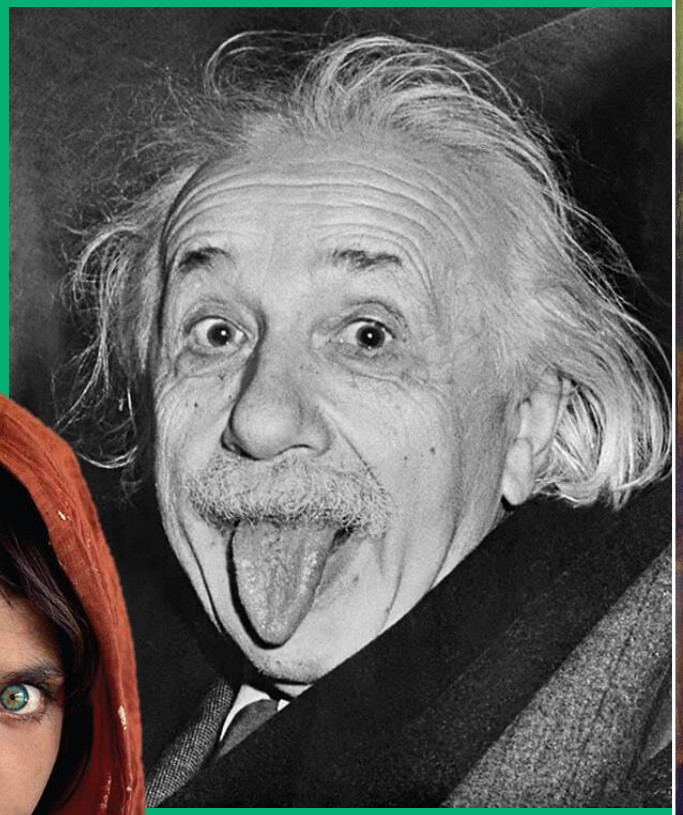


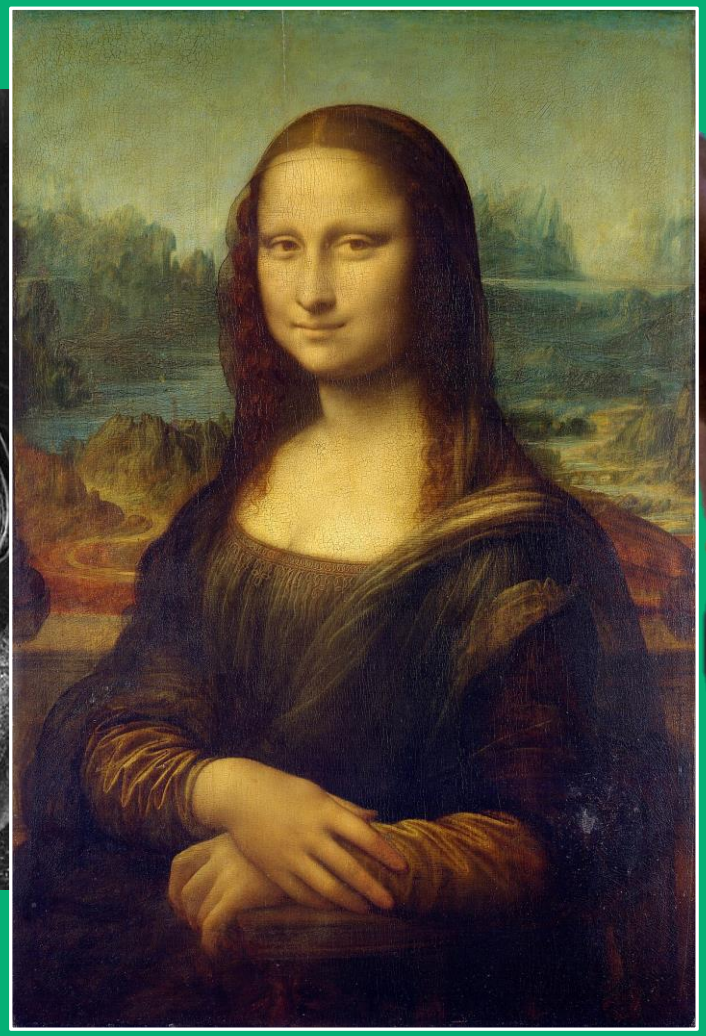
"You come into the world knowing what a face looks like."

Introduction



Introduction



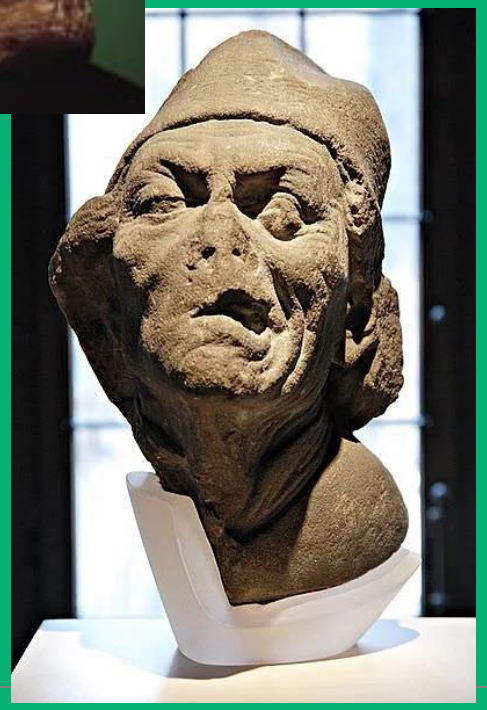


It takes only **100 milliseconds** to make judgements on a persons' **trustworthiness, competency, capability, and friendliness** when viewing the face alone.

It takes only **100 milliseconds** to make judgements on a persons' **trustworthiness, competency, capability, and friendliness** when viewing the face alone.

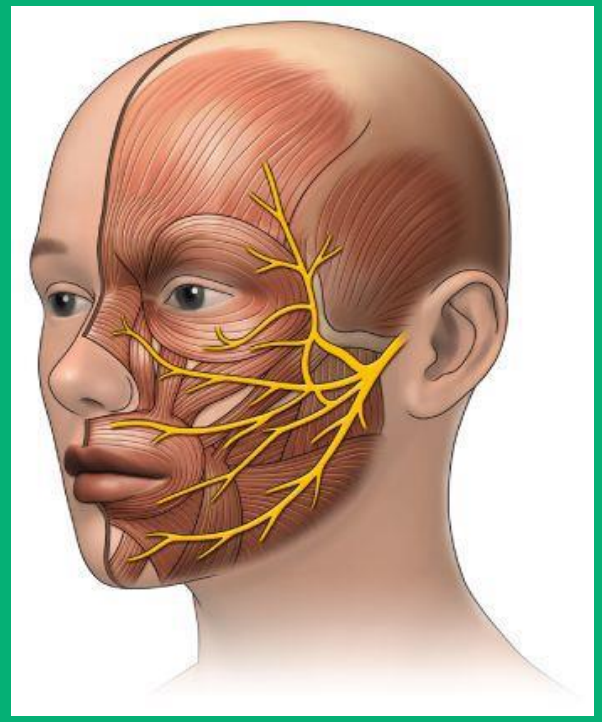
it takes 400 milliseconds to blink.

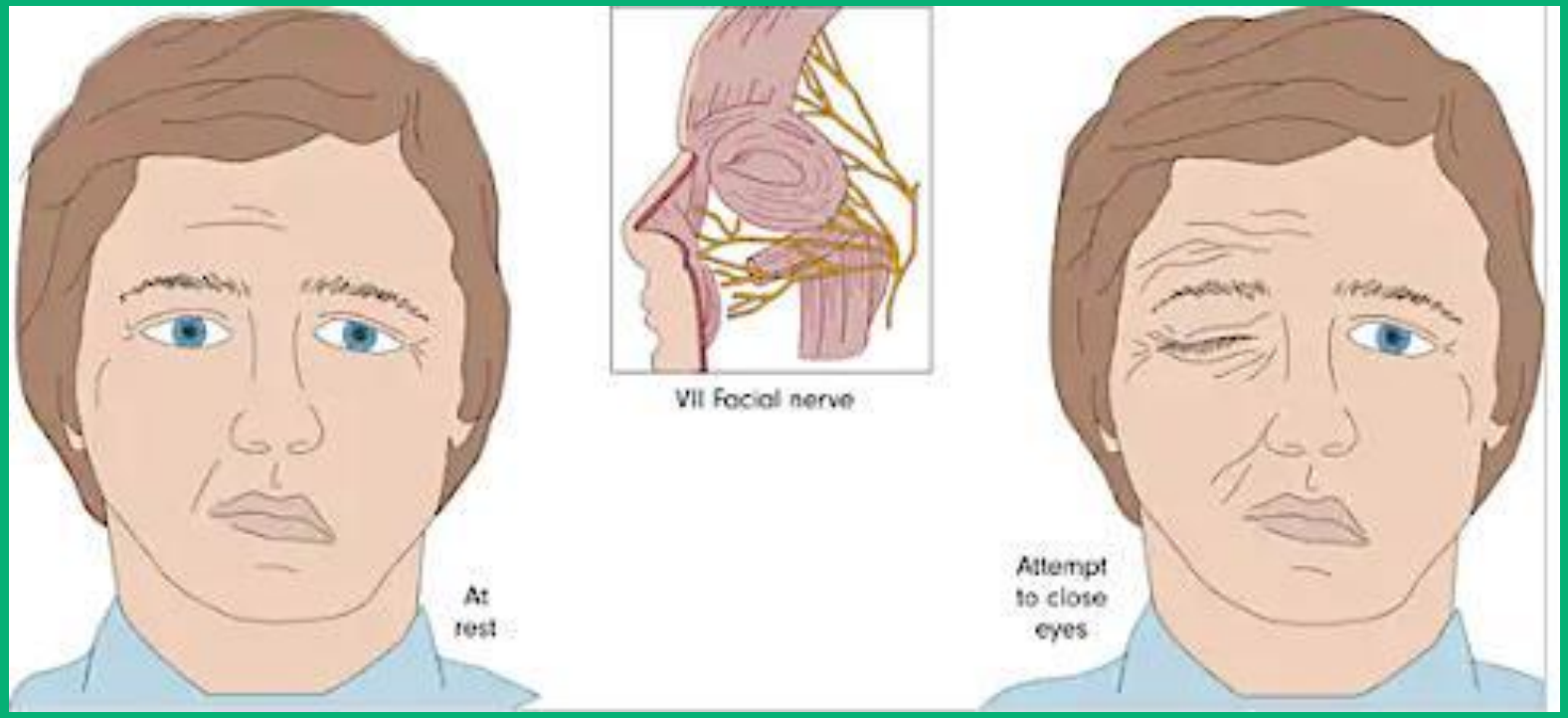
Acute Facial Nerve Paralysis



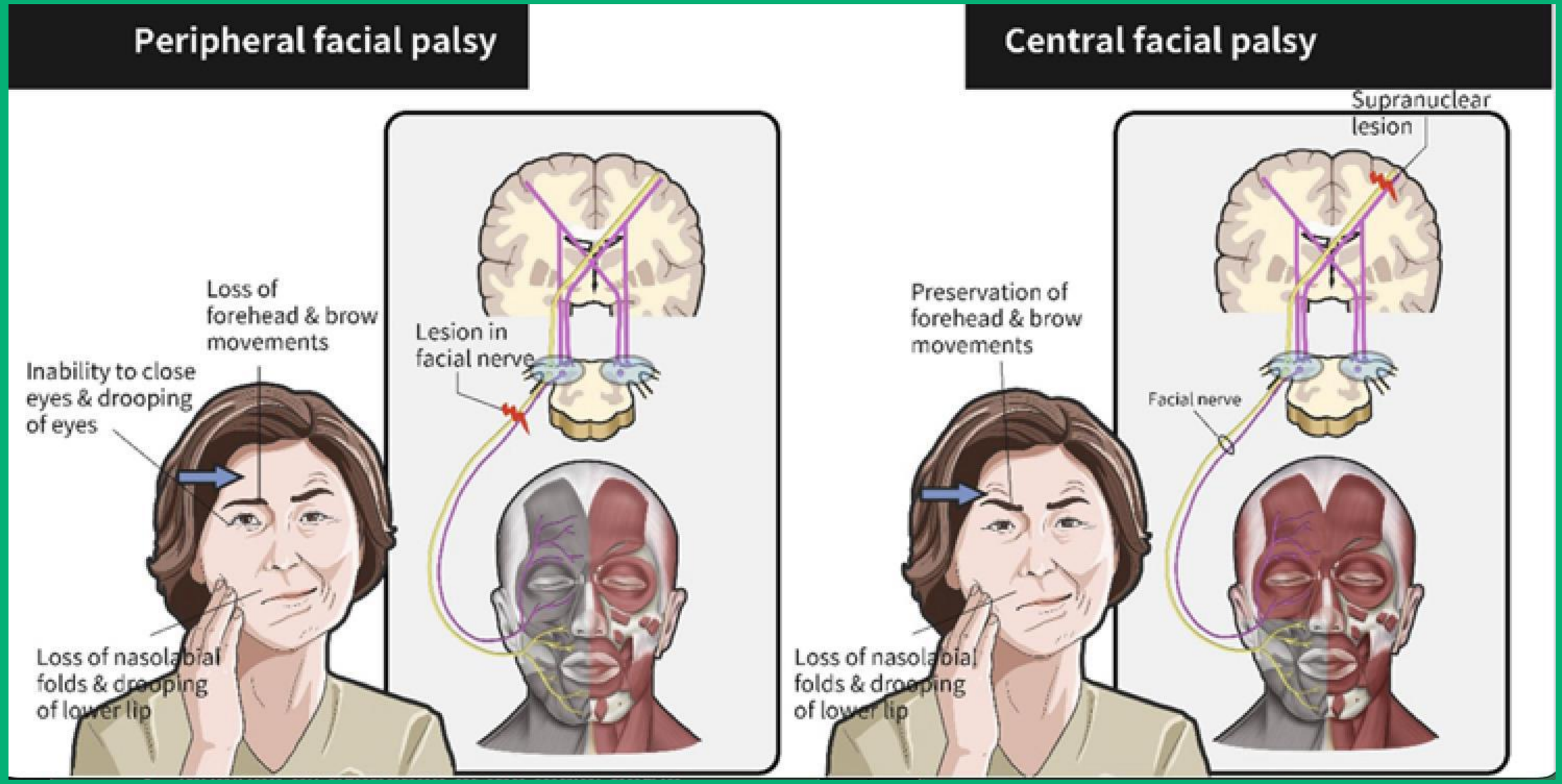
Acute Facial Nerve Paralysis

- sudden onset peripheral CN VII weakness
- involves all branches of facial nerve
- incidence: 1 in 60-70 lifetime risk





Acute Facial Nerve Paralysis



Acute Facial Nerve Paralysis

- reduced quality of life
- negative affect
- decreased attractiveness
- inability to communicate
- inability to integrate socially
- greater rate of depression
- loss of employment
- lower compensation

The Laryngoscope
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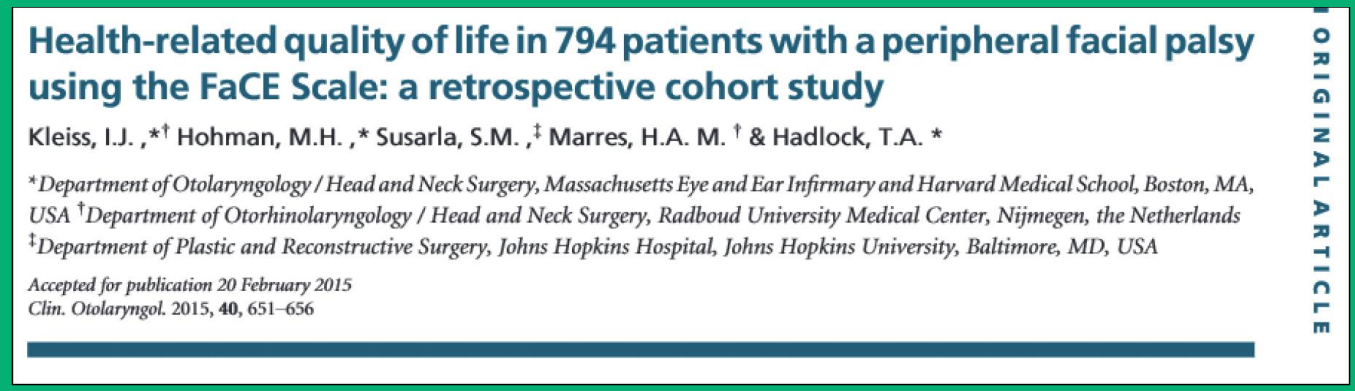
Not Just Another Face in the Crowd: Society's Perceptions of Facial Paralysis

Lisa Ishii, MD, MHS; Andres Godoy, MD; Carlos O. Encarnacion, BS; Patrick J. Byrne, MD; Kofi D. O. Boahene, MD; Masaru Ishii, MD, PhD



Health-related quality of life in 794 patients with a peripheral facial palsy using the FaCE Scale: a retrospective cohort study

Kleiss, I.J. ,*† Hohman, M.H. ,* Susarla, S.M. ,‡ Marres, H.A. M. † & Hadlock, T.A. *

*Department of Otolaryngology / Head and Neck Surgery, Massachusetts Eye and Ear Infirmary and Harvard Medical School, Boston, MA, USA †Department of Otorhinolaryngology / Head and Neck Surgery, Radboud University Medical Center, Nijmegen, the Netherlands ‡Department of Plastic and Reconstructive Surgery, Johns Hopkins Hospital, Johns Hopkins University, Baltimore, MD, USA

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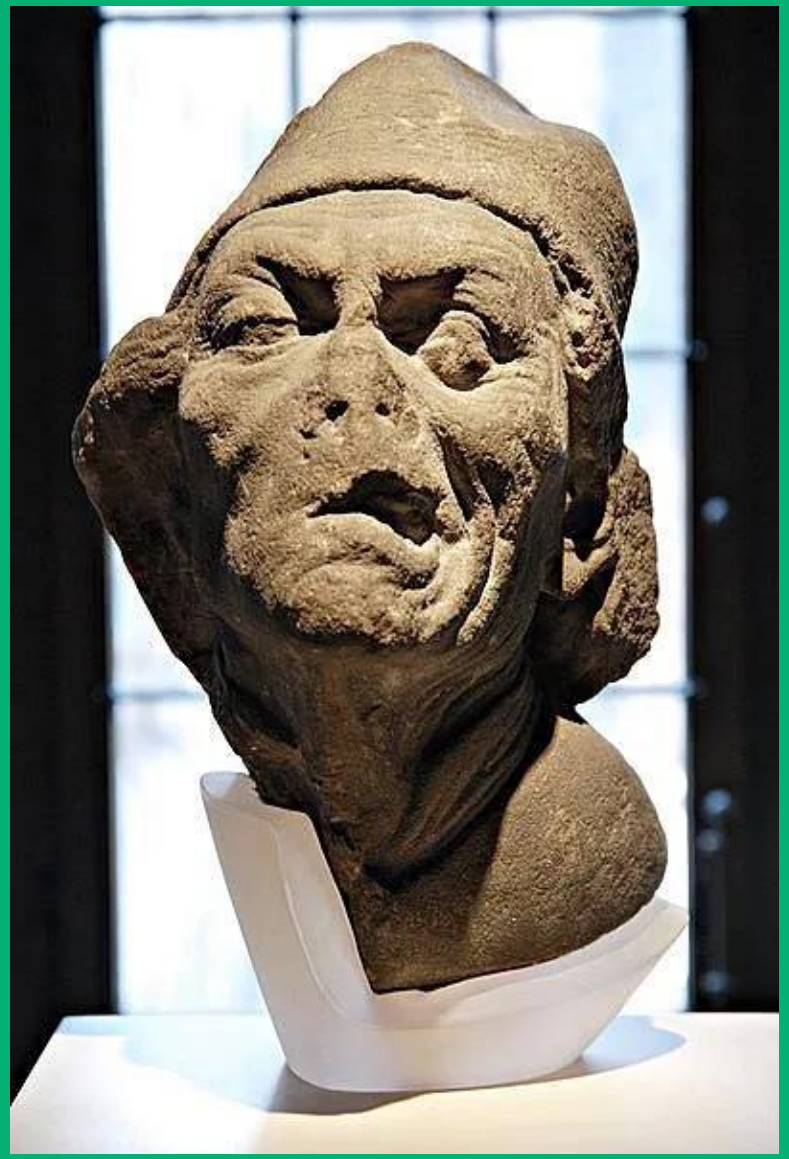
ORIGINAL ARTICLE

Acute Facial Nerve Paralysis

- brow weakness/ptosis
- incomplete eye closure
- lower lid ptosis
- scleral show
- smoothening of NLF
- ptosis of commissure
- oral incompetence

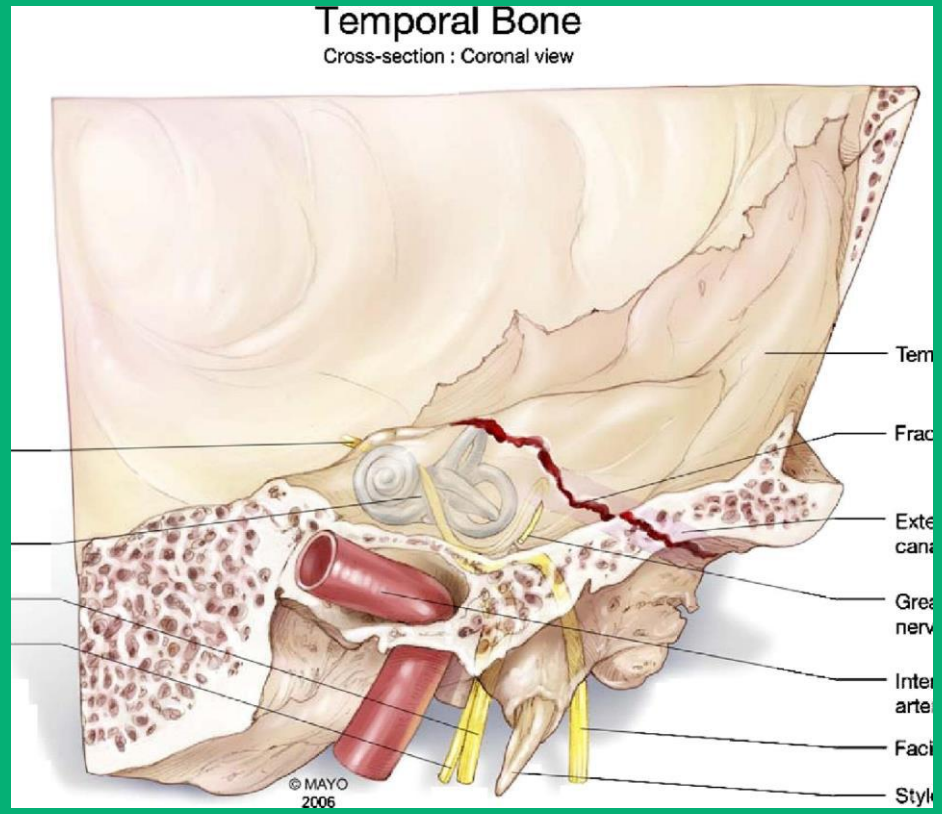
Acute Facial Nerve Paralysis

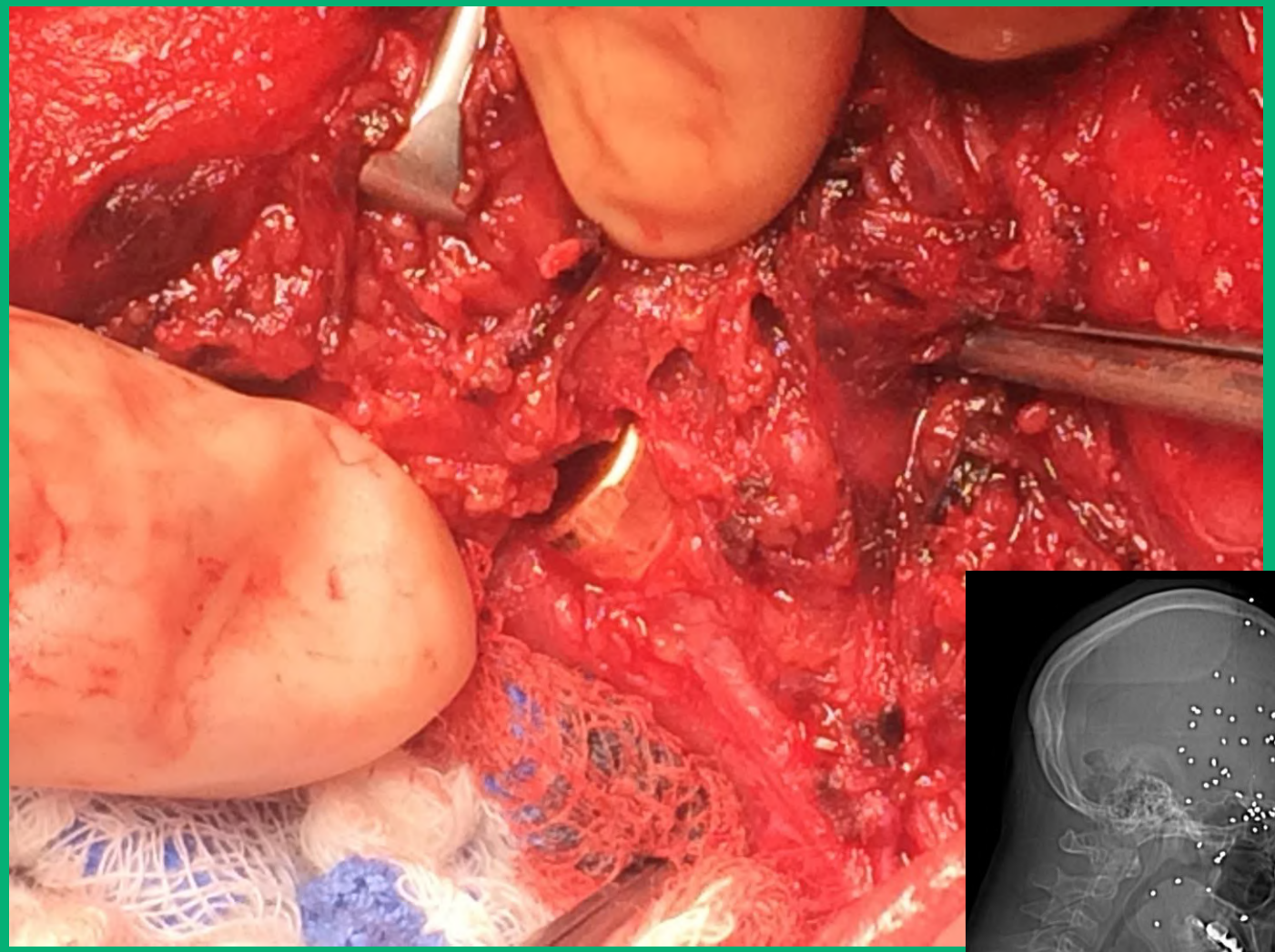
- Traumatic
- Iatrogenic
- Otologic
- Autoimmune
- Metabolic
- Infectious

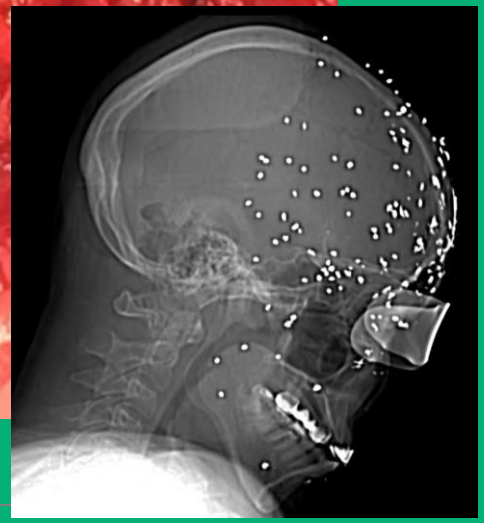


Acute Facial Nerve Paralysis

- Traumatic

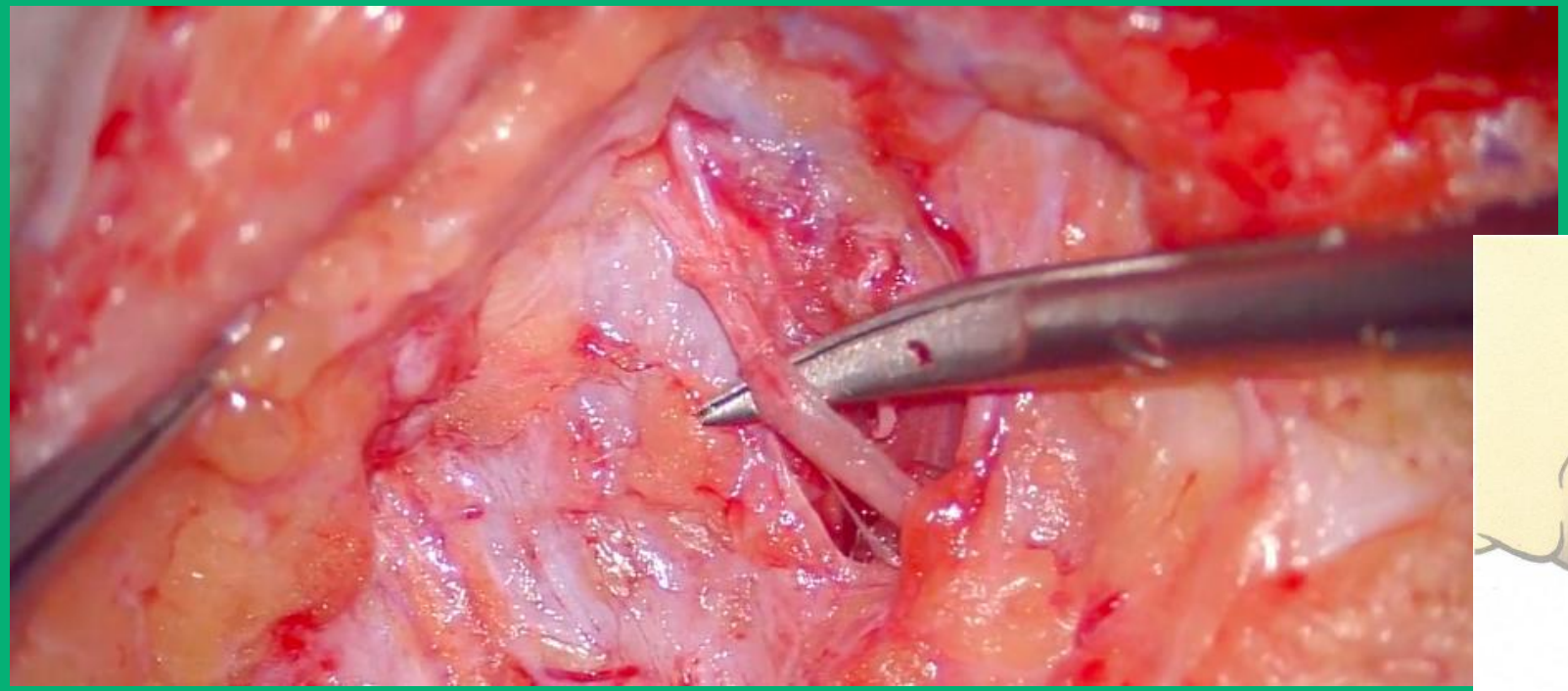


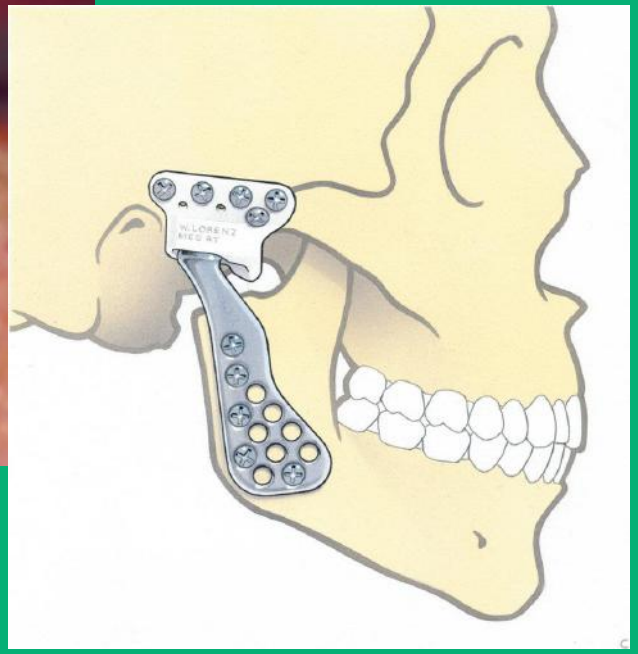




Acute Facial Nerve Paralysis

- Iatrogenic





Acute Facial Nerve Paralysis

- **Iatrogenic**

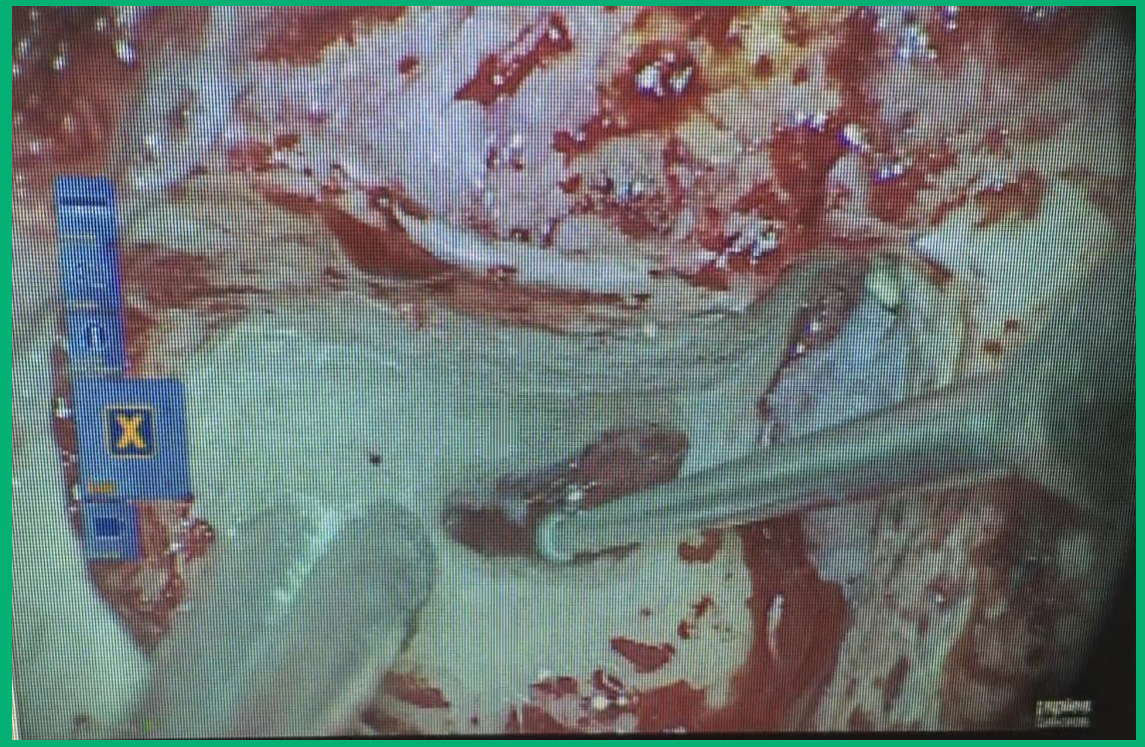
Hadlock, 2014:

- 40% OMFS
- 25% HNS
- 17% otologic
- 11% cosmetic

Hadlock et al. 2014. Etiology, diagnosis, and management of facial palsy: 2000 patients at a facial nerve center. *Laryngoscope*. 2014 Jul;124(7):E283-93. doi: 10.1002/lary.24542.

Acute Facial Nerve Paralysis

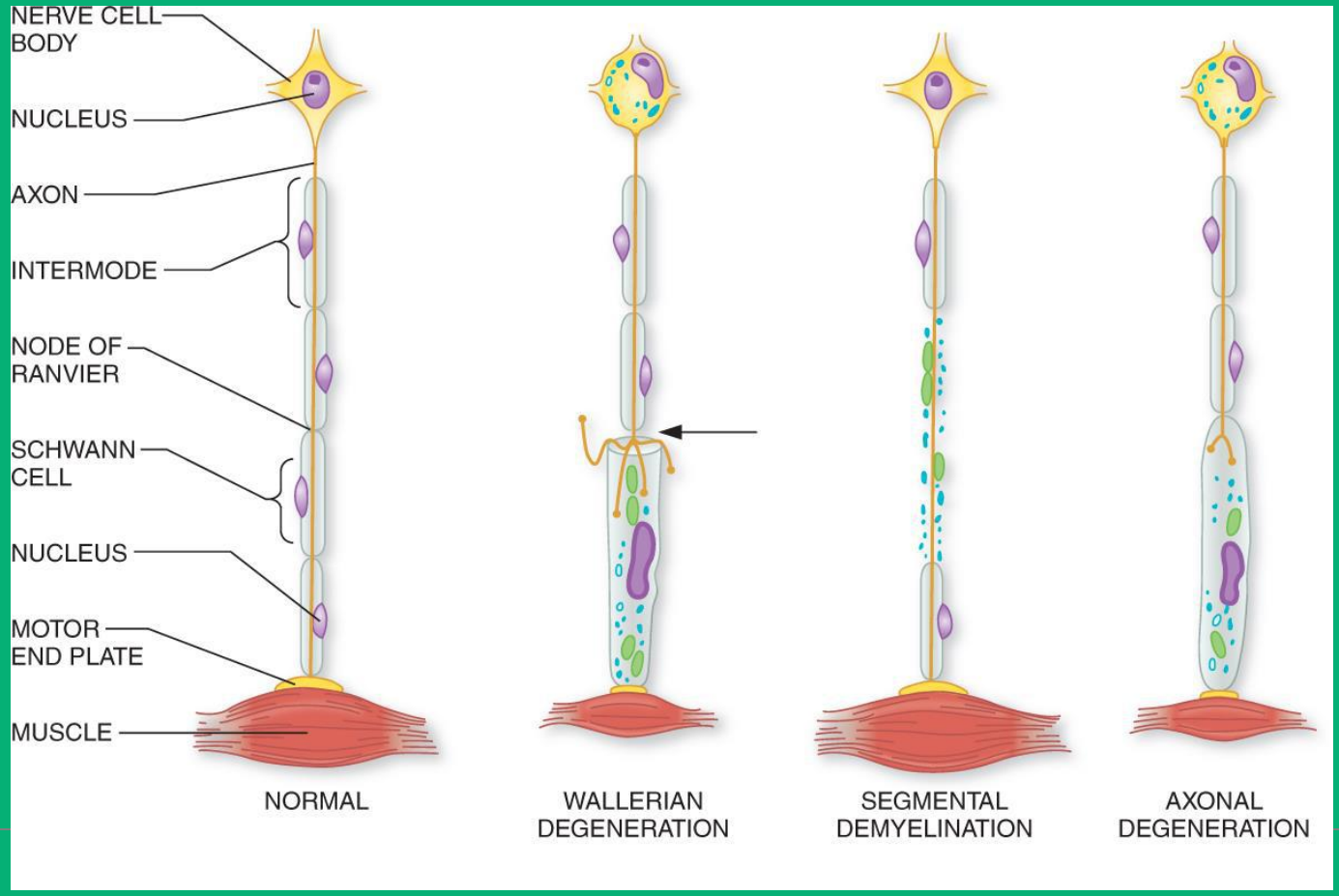
- Otologic



Acute Facial Nerve Paralysis

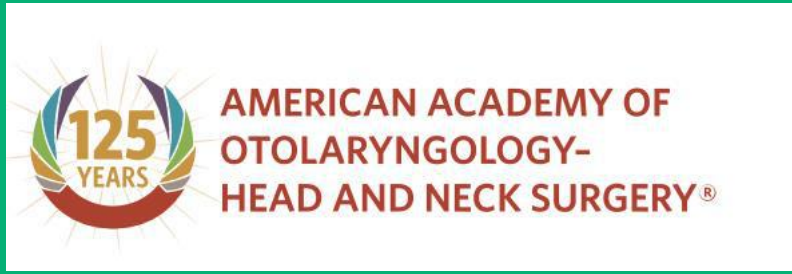
- **Immunologic:** autoimmune de-myelinization & axonal degeneration

  - GBS
  - SLE
  - Sarcoidosis
  - HIV



Acute Facial Nerve Paralysis

- **COVID-19 Infection**



- increased rates in COVID-19 + patients
- mimicry of host molecules by the vaccine antigen
- bystander activation of dormant autoreactive T-cells
- higher risk of recurrence in those with prior AFP
- unvaccinated COVID-19+: increased RR of 6.8

Acute Facial Nerve Paralysis

- **COVID-19 Vaccination**

- 40,000 participants (Pfizer and Moderna)
- 7 in vaccinated vs. 1 in placebo arm
- COVID vaccine may be associated with higher risk
- recommend vaccination without preference for type

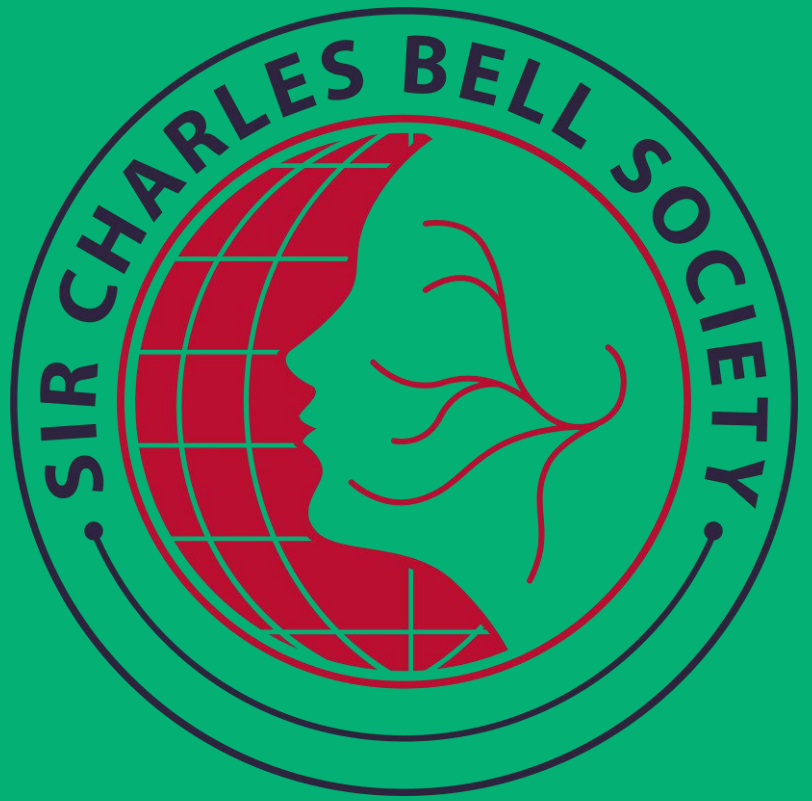
Acute Facial Nerve Paralysis

- **Metabolic:** Pregnancy Associated Facial Palsy (PAFP)
  - women have 2-4 times risk of same aged men
  - pregnant women 3.3 times risk of non-pregnant
  - high ECF content and immunosuppression

  - **Phillips, 2017:** 51 PAFP versus 58 non-PAFP

    - PAFP had worse outcomes regardless of treatment
    - significantly worse facial function scores
    - pregnant state is independent risk and prognostic factor

Acute Facial Nerve Paralysis



- **Infectious**: Bell's Palsy

  - idiopathic diagnosis of exclusion
  - viral infection/reactivation with HSV1
  - accounts for 57% of AFNP
  - rapid development of flaccid facial paralysis
  - prodrome: post-auricular pain, headache, tingling, dysgeusia

Acute Facial Nerve Paralysis

- **Infectious**: Bell's Palsy
  - gradual recovery over 6-8 weeks
  - full recovery in 70%
  - 30% with post-paralysis facial palsy
  - varying degrees of residual weakness, hyperactivity, synkinesis

Acute Facial Nerve Paralysis

- **Infectious**: Ramsay-Hunt Syndrome
  - varicella zoster viral infection
  - accounts for 15% of AFNP
  - similar presentation to BP
  - painful eruption of vesicular rash

Zoster Sine Herepete (ZSH):

- Herpes Zoster reactivation without the hallmark rash.
- pain and weakness in dermatomal distribution.

Acute Facial Nerve Paralysis

- **Infectious**: Lyme Disease-Associated Facial Palsy

  - 300,000 cases of LD per year in US
  - infection with Borrelia burgdorferi bacteria from deer tick
  - 7-10% incidence of AFP in LD
  - previously thought no role for corticosteroid treatment
  - two retrospective studies: no difference in facial outcomes

    Clark, 1985: 101 patients

    Kalish, 2001: 31 patients

Acute Facial Nerve Paralysis

- **Infectious**: Lyme Disease-Associated Facial Palsy

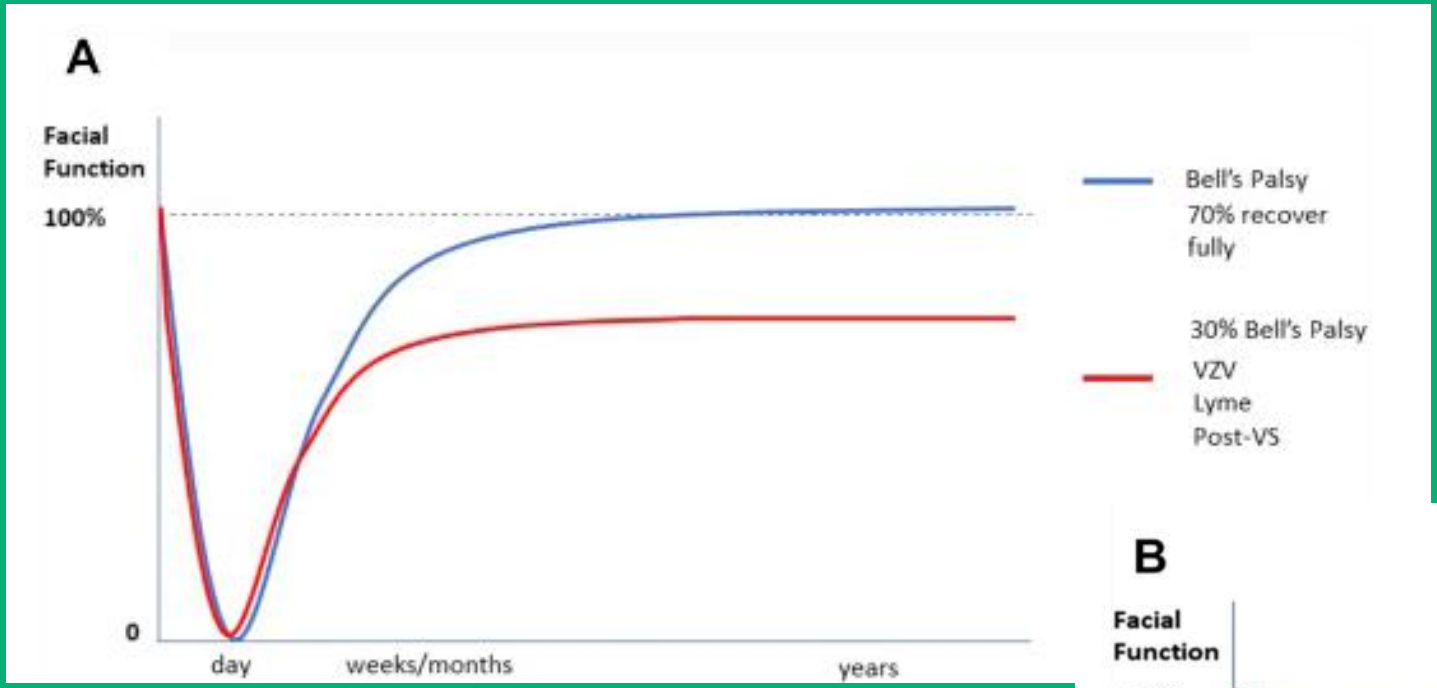
Jowett and Hadlock, 2016:

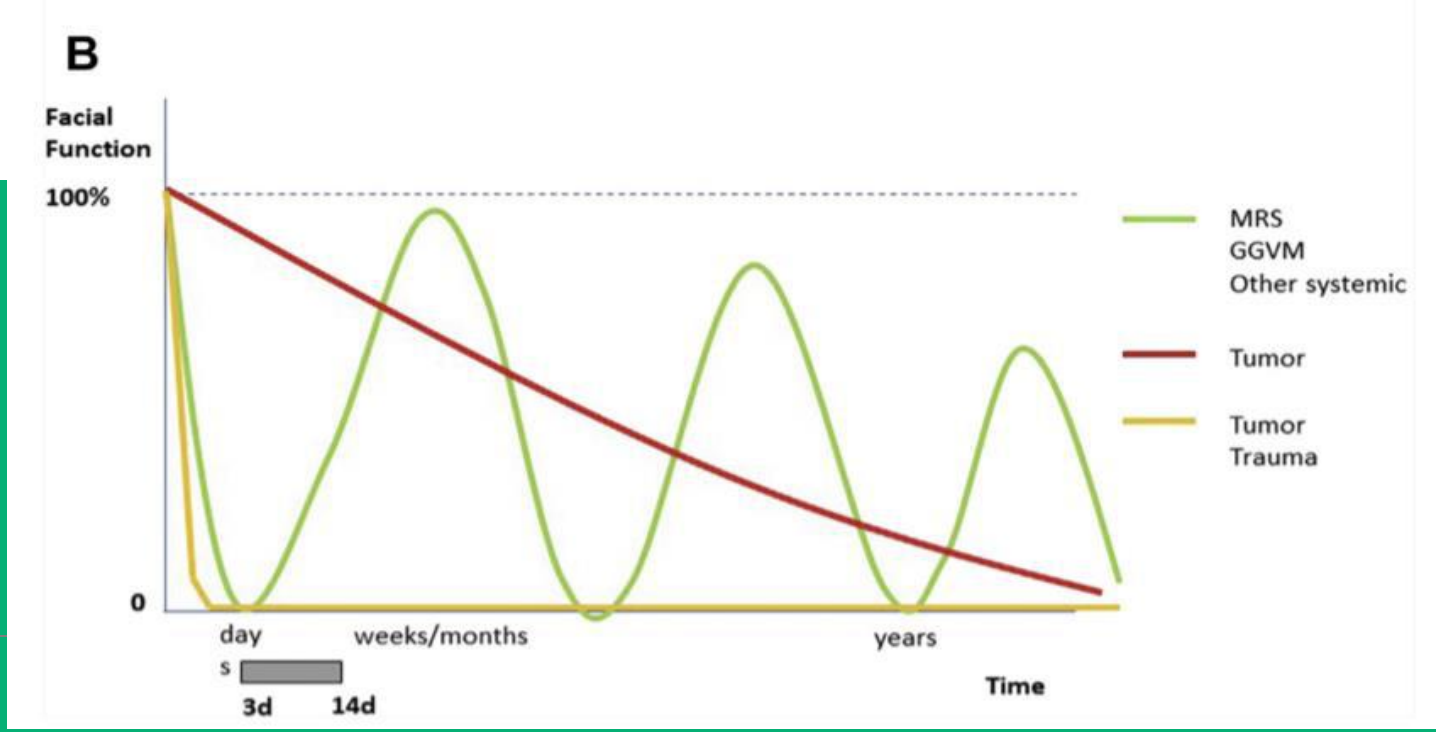
- 51 patients followed 15 months
- significantly worse outcomes in TT and DT versus MT
- corticosteroid treatment for LDFP should be used cautiously
- LDFP is a distinct entity and is not Bell's palsy

- humoral autoimmunity not compressive neuropathy
- steroids impair isotype switching; inhibit clearance of spirochetes

Jowett et al. Steroid use in Lyme disease-associated facial palsy is associated with worse long-term outcomes. *Laryngoscope*. 2016.

Acute Facial Nerve Paralysis



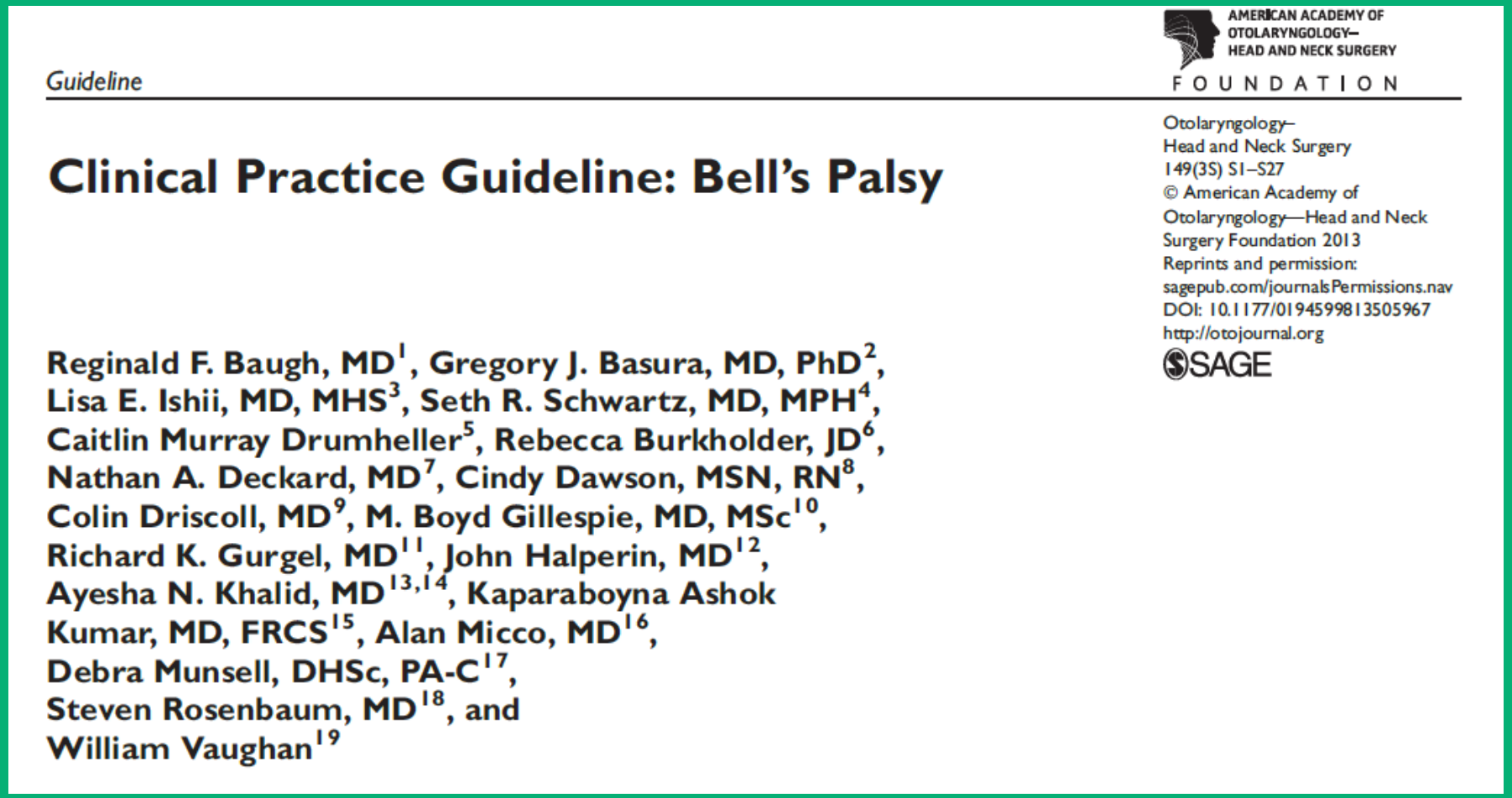


RUSH

Management Goals

- timely and correct diagnosis
- prompt treatment
- avoid unnecessary interventions
- protect the eye
- improve function during symptomatic period
- utilize adjuvant therapies
- plan in advance

AAO-HNS Clinical Practice Guideline



Guideline

AMERICAN ACADEMY OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY FOUNDATION

Clinical Practice Guideline: Bell's Palsy

Reginald F. Baugh, MD[1], Gregory J. Basura, MD, PhD[2], Lisa E. Ishii, MD, MHS[3], Seth R. Schwartz, MD, MPH[4], Caitlin Murray Drumheller[5], Rebecca Burkholder, JD[6], Nathan A. Deckard, MD[7], Cindy Dawson, MSN, RN[8], Colin Driscoll, MD[9], M. Boyd Gillespie, MD, MSc[10], Richard K. Gurgel, MD[11], John Halperin, MD[12], Ayesha N. Khalid, MD[13,14], Kaparaboyna Ashok Kumar, MD, FRCS[15], Alan Micco, MD[16], Debra Munsell, DHSc, PA-C[17], Steven Rosenbaum, MD[18], and William Vaughan[19]

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DOI: 10.1177/0194599813505967
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SAGE

Work-up

- History and physical examination: **strong recommendation**
  - exclude identifiable causes
  - establish time since onset
  - assess the deficit
- Laboratory testing: **recommended against**
  - exception may be LDAFP
- Imaging: **recommended against**
  - consider CT or MRI if recurrent or slow developing
- Electrodiagnostic testing: **against in partial, option in complete**
  - serial ENoG and EMG to detect >90% degeneration
  - was used to select patients for decompression

Treatment

- Corticosteroids: **strong recommendation**
  - high-quality evidence from several RCTs support CS therapy
  - faster recovery, less synkinesis, fewer long-term sequelae
  - weight-based dosing in pediatric patients
  - 10-day course with at least 5 days of high dose
  - start within 72 hours
  - evidence from sudden SNHL literature to suggest 3-week course

60 mg prednisolone daily x 5 days, followed by 5d taper

Gronseth et al. Evidence-based guideline update: steroids and antivirals for Bell palsy: reportof the Development Subcommittee of the American Academy of Neurology. *Otolaryngol Head Neck Surg.* 2014 MGuidelineay;150(5):709-11.

Treatment

- Antivirals**: recommendation against** as monotherapy
  - RCTs: antiviral treatment alone no better than placebo
  - Engstrom, 2008: valacyclovir failed in 207 patients

*** option for use** as dual therapy with CS
  - de Almeida 2009: 25% reduction of incomplete recovery in DT
  - NNT = 26 to achieve one better outcome
  - relatively low risk, BUN/Cr at start and end of treatment
  - evidence re: superiority of famciclovir > valacyclovir > acyclovir
  - famciclovir 250 mg BID x 3 months

Gronseth et al. Evidence-based guideline update: steroids and antivirals for Bell palsy: reportof the Guideline Development Subcommittee of the American Academy of Neurology. *Otolaryngol Head Neck Surg.* 2014 May;150(5):709-11.

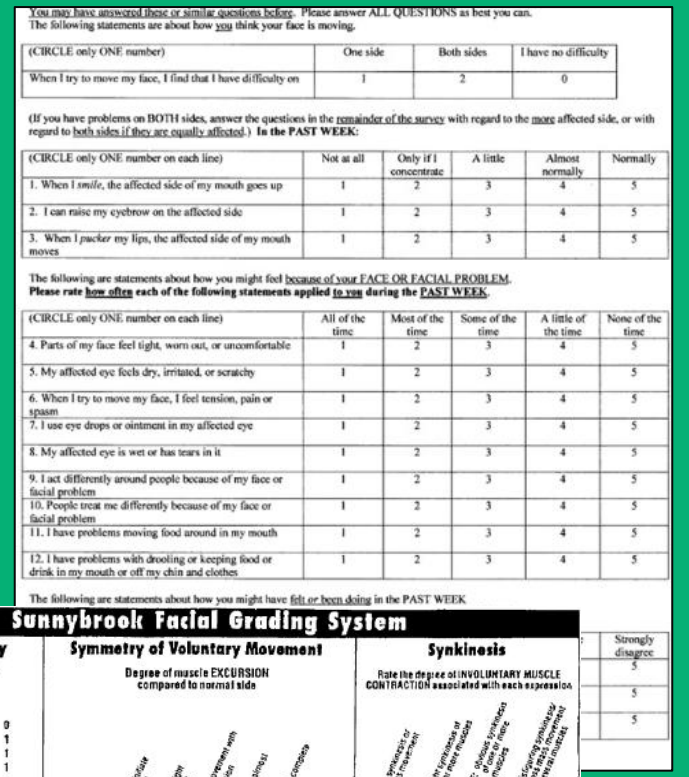
Treatment

- Nimodipine: **no recommendation**
  - calcium channel blocker
  - 2019 meta-analysis: effect on recovery of FN & RLN stretch injury
  - risk of orthostatic hypotension, dizziness
  - 60 mg QID for 12 weeks has been proposed
- Physical therapy: **no recommendation**
  - observed improvement in QOL and function in some studies
  - maintains pliability and elasticity of facial musculature
- Acupuncture: **no recommendation**

Outcome Measures

- **Patient Reported Outcome Measures (PROMs)**
  - NOSE scale
  - Facial Clinimetric Evaluation (FaCE) Scale

- **Clinician Graded Outcome Measures**
  - Facial Nerve Grading Instrument 2.0
  - Sunnybrook Facial Grading Instrument
  - not House-Brackmann (meant for post AN resection)



You may have answered these or similar questions before. Please answer ALL QUESTIONS as best you can.
The following statements are about how you think your face is moving.

(CIRCLE only ONE number)	One side	Both sides	I have no difficulty
When I try to move my face, I find that I have difficulty on	1	2	0

(If you have problems on BOTH sides, answer the questions in the remainder of the survey with regard to the more affected side, or with regard to both sides if they are equally affected.) **In the PAST WEEK:**

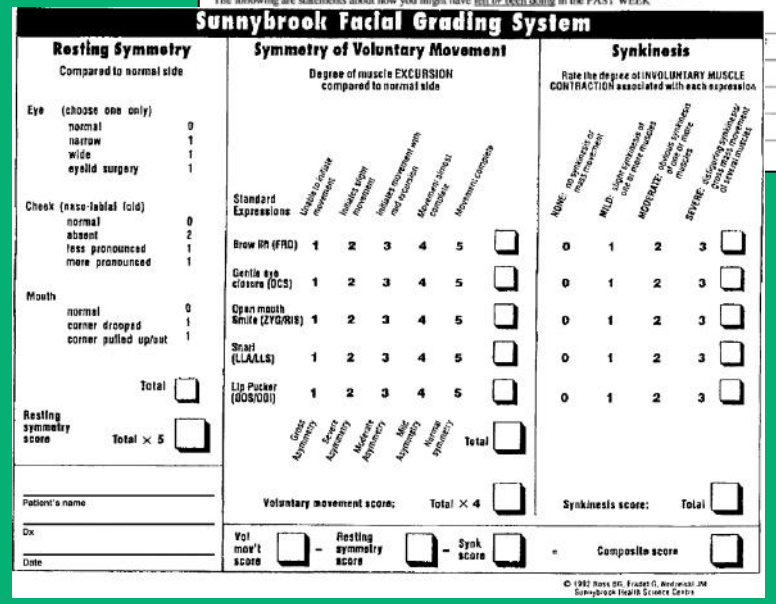
(CIRCLE only ONE number on each line)	Not at all	Only if I concentrate	A little	Almost normally	Normally
1. When I *smile*, the affected side of my mouth goes up	1	2	3	4	5
2. I can raise my eyebrow on the affected side	1	2	3	4	5
3. When I *pucker* my lips, the affected side of my mouth moves	1	2	3	4	5

The following are statements about how you might feel because of your FACE OR FACIAL PROBLEM.
Please rate how often each of the following statements applied to you during the PAST WEEK.

(CIRCLE only ONE number on each line)	All of the time	Most of the time	Some of the time	A little of the time	None of the time
4. Parts of my face feel tight, worn out, or uncomfortable	1	2	3	4	5
5. My affected eye feels dry, irritated, or scratchy	1	2	3	4	5
6. When I try to move my face, I feel tension, pain or spasm	1	2	3	4	5
7. I use eye drops or ointment in my affected eye	1	2	3	4	5
8. My affected eye is wet or has tears in it	1	2	3	4	5
9. I act differently around people because of my face or facial problem	1	2	3	4	5
10. People treat me differently because of my face or facial problem	1	2	3	4	5
11. I have problems moving food around in my mouth	1	2	3	4	5
12. I have problems with drooling or keeping food or drink in my mouth or off my chin and clothes	1	2	3	4	5

The following are statements about how you might have felt or been doing in the PAST WEEK

	Strongly disagree
	5
	5
	5



Sunnybrook Facial Grading System

Resting Symmetry
Compared to normal side

Eye (choose one only)
normal 0
narrow 1
wide 1
eyelid surgery 1

Cheek (naso-labial fold)
normal 0
absent 2
less pronounced 1
more pronounced 1

Mouth
normal 0
corner drooped 1
corner pulled up/out 1

Total
Resting symmetry score: Total × 5

Patient's name
Dx
Date

Symmetry of Voluntary Movement
Degree of muscle EXCURSION compared to normal side

Standard Expressions	Unable to initiate movement	Initiates slight movement	Initiates movement with mild excursion	Moderate/ almost complete	Movement complete	
Brow lift (FRO)	1	2	3	4	5	
Gentle eye closure (OCS)	1	2	3	4	5	
Open mouth smile (ZYG/RIS)	1	2	3	4	5	
Snarl (LLAALS)	1	2	3	4	5	
Lip Pucker (dOS/OOI)	1	2	3	4	5	
	Gross Asymmetry	Severe Asymmetry	Moderate Asymmetry	Mild Asymmetry	Normal symmetry	Total

Voluntary movement score: Total × 4

Synkinesis
Rate the degree of INVOLUNTARY MUSCLE CONTRACTION associated with each expression

	NONE: no synkinesis or mass movement	MILD: slight synkinesis of one or more muscles	MODERATE: obvious synkinesis of one or more muscles	SEVERE: disfiguring synkinesis or mass movement of several muscles	
Brow lift (FRO)	0	1	2	3	
Gentle eye closure (OCS)	0	1	2	3	
Open mouth smile (ZYG/RIS)	0	1	2	3	
Snarl (LLAALS)	0	1	2	3	
Lip Pucker (dOS/OOI)	0	1	2	3	

Synkinesis score: Total

Vol mov't score − Resting symmetry score − Synk score = Composite score

© 1992 Ross BG, Fradet G, Nedzelski JM
Sunnybrook Health Sciences Centre

Exposure keratopathy

- aggressive eye care: **strong recommendation**

- corneal dryness
- scarring and vision loss
- lower lid laxity
- loss of lacrimal pump
- lagophthalmos

lubrication
ointment
humidification chamber
taping

Paradox of epiphora + dry eye

Exposure keratopathy

Upper eyelid weight placement

- platinum or gold weight
- low profile

Canthoplasty

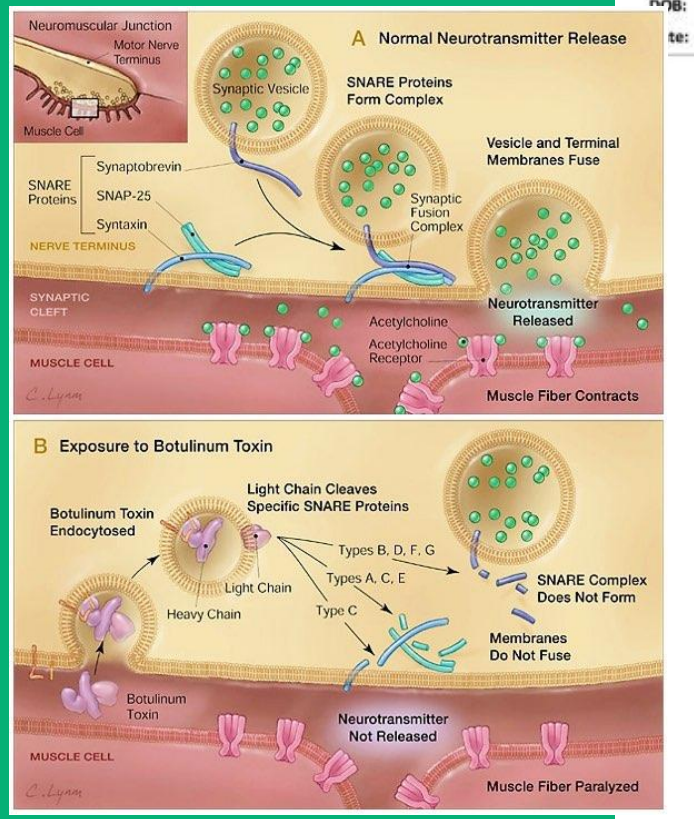
- lower eyelid tightening/repositioning

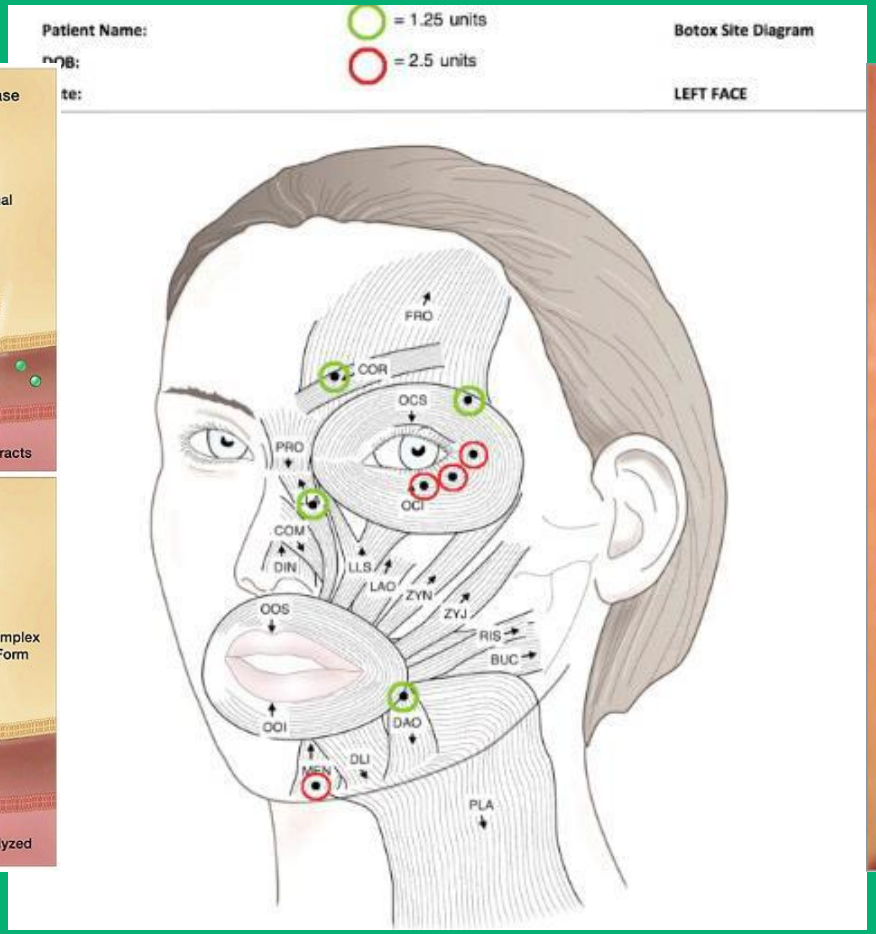
Lateral tarsorrhaphy

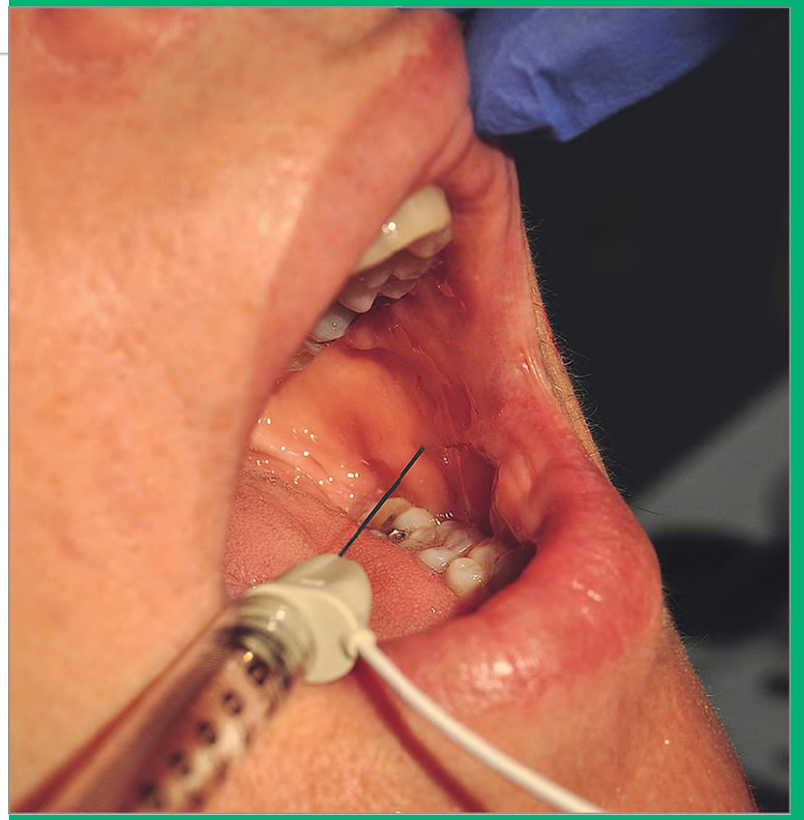
- poor aesthetic result
- lateral visual field deficit

Exposure keratopathy

Botulinum-Toxin Injection (BoTN





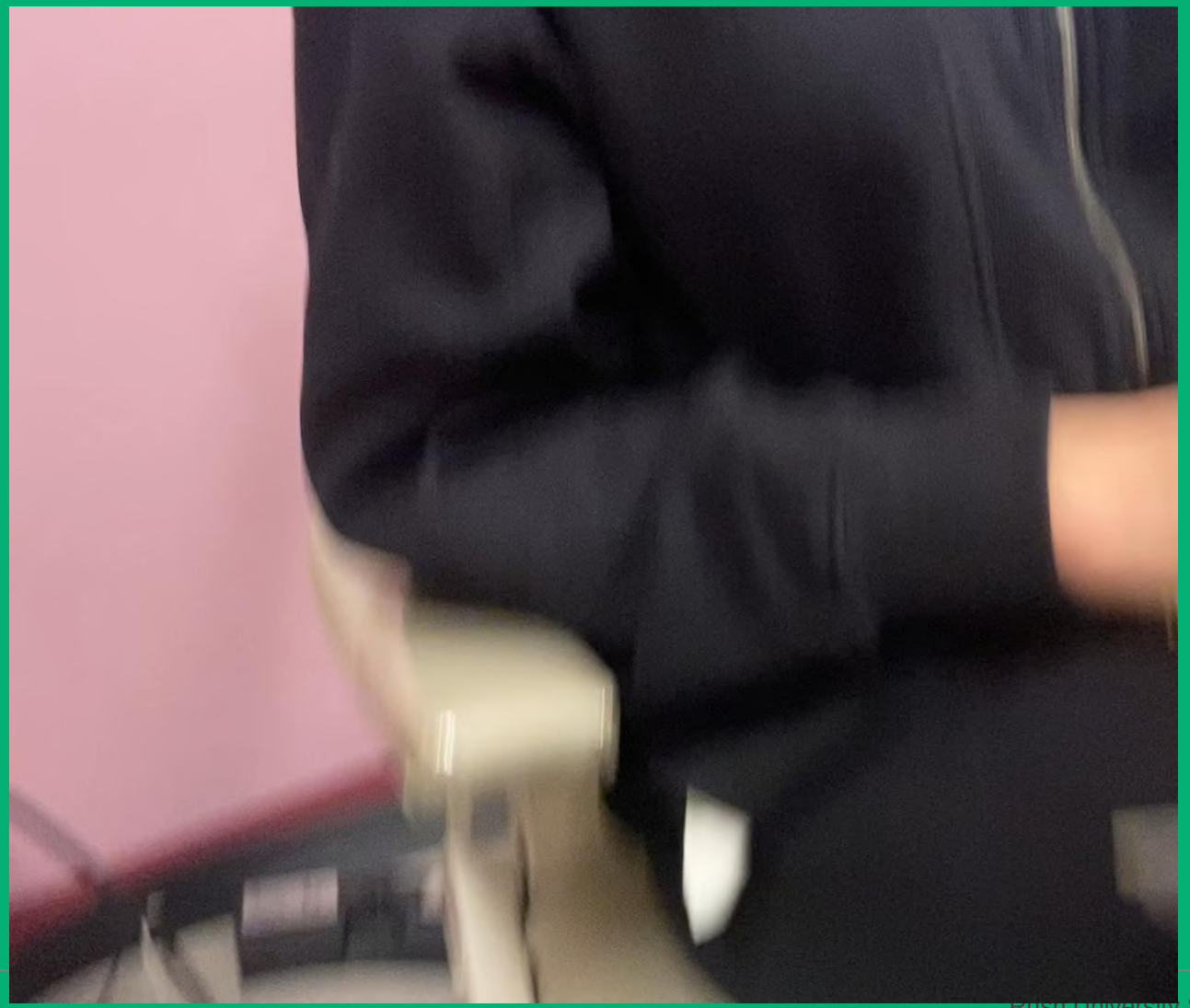


Injectable Dermal Filler

- **useful for oral incompetence**
  - improves apposition of the lips
  - better consonant pronunciation
  - improves drooling while drinking liquids

Masseteric nerve transfer (V-to-VII)

Masseteric nerve transfer (V-to-VII)

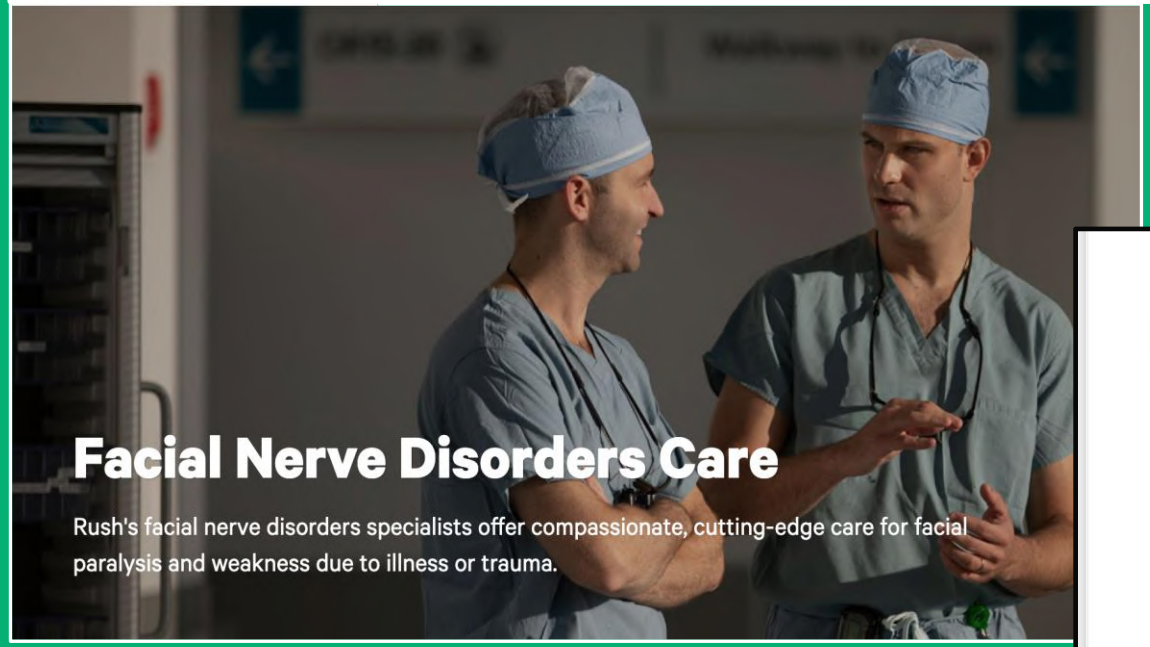


Team approach

Rush University Medical Center, Chicago

Facial Nerve Disorders and Rehabilitation Program

RUSH



RUSH

Acute facial paralysis patients are seen within 72 hours of initial contact. To refer patients or request a consult, call (312) 947-BELL (2355).

RUSH Acute Facial Paralysis Program

Acute Facial Nerve Paralysis