

HEADACHE

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CAMPUS

DISCLOSURES

- Nil major
- Don't accept from industry (equipment or pharmaceuticals)
 - Flights / Accommodation
 - Honorariums
- Do accept
 - Education
 - Meals

OUTLINE

- Classification(s)
- Foundational Knowledge
- Assessment
- Specific Diagnoses and Treatments
 - Headache
 - Orofacial pain
 - Cervicogenic pain
- Interventions

CLASSIFICATION

CLASSIFICATION – FPM SYLLABUS

- Primary Headache

- Migraine

- Transformed migraine

- Cluster Headache

- Variants

- Secondary Headache

- Medication Related

- Post Traumatic

- Intracranial Pressure

- Referred Headache

LEARNING OUTCOMES

- Describe classifications of headache and orofacial pain (ICD-11, ICDH)
 - Appraise social, cultural, psychiatric and substance use factors
- Examination of cranial nerves, cervical spine
- Exclude major pathologies (vascular conditions, space occupying lesions)
- Specific knowledge of these pain conditions and treatment options

ICD-11 CLASSIFICATION

- Primary Headaches

- Migraine
- Tension Headache
- Trigeminal Autonomic Cephalgias
- Others

- Secondary Headache

- Trauma Related
- Other

- Cranial Neuropathies

- Trigeminal Neuralgia
- Burning Mouth Syndrome

3.7.13	<p>Distinguish between the clinical features of the following <i>primary</i> chronic daily headache syndromes:</p> <ul style="list-style-type: none">• Migraine (with and without aura)• Transformed migraine• Cluster headache and variants
3.7.14	<p>Distinguish between the clinical features of the following <i>secondary</i> chronic daily headache syndromes:</p> <ul style="list-style-type: none">• Medication-related<ul style="list-style-type: none">○ Medication overuse headache○ Medication-induced side effects• Post-traumatic<ul style="list-style-type: none">○ Headache attributable to head injury○ Headache attributable to neck injury or whiplash• Disorders of intracranial pressure<ul style="list-style-type: none">○ Increased intracranial pressure○ Decreased intracranial pressure• Headache referred from other structures<ul style="list-style-type: none">○ Tension-type headache○ Cervicogenic headache

HEADACHE - ICHD

FUNCTIONAL CLASSIFICATION

■ Things we treat

- Most chronic headaches
 - Tension type headaches
 - Migraine
 - Post surgical
 - Medication overuse
- Orofacial pain
 - Trigeminal neuralgia
 - Post herpetic neuralgia

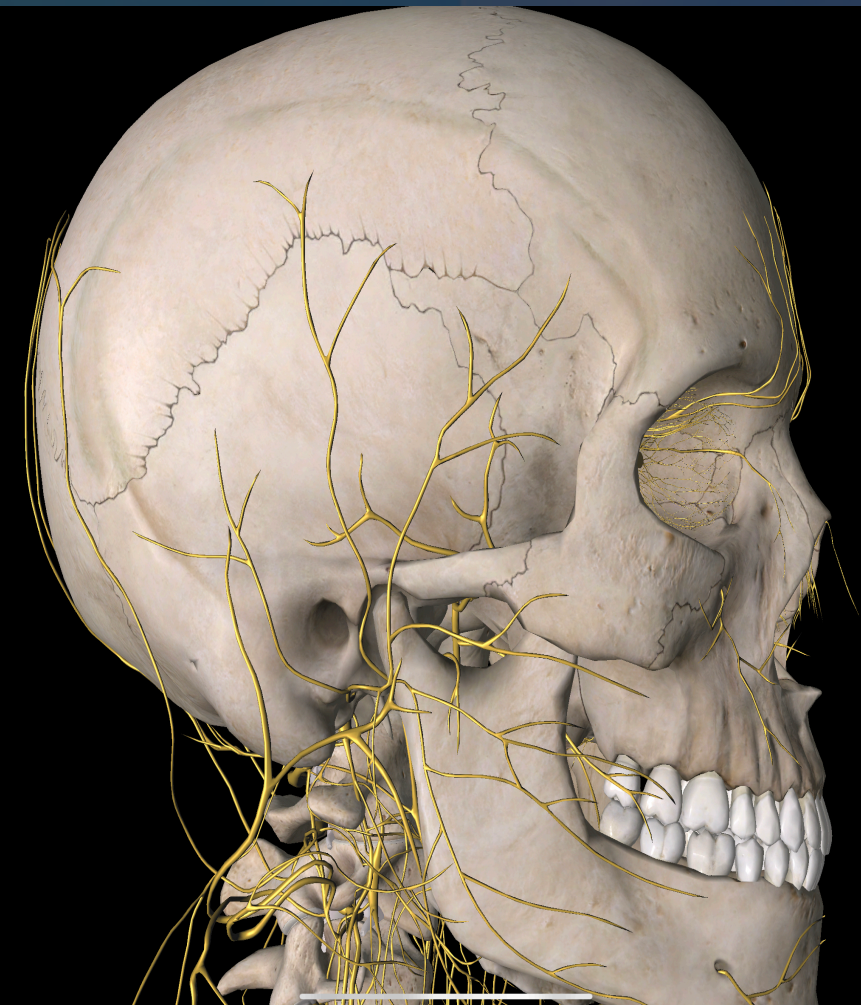
■ Headaches we refer (Red Flag)

- Tumours
- Altered ICP (esp Raised)
- Sudden onset (SAH)
- Raised ESR
- Pregnancy related
- Infection related
- Hypertension related

FOUNDATIONAL KNOWLEDGE

FOUNDATIONAL KNOWLEDGE

3.7.7	Describe the pathophysiology and clinical features of the following primary headache syndromes: <ul style="list-style-type: none"> • Migraine. • Tension-type headache. • Cluster headache.
3.7.8	Describe the pathophysiology and clinical features of the following <i>secondary</i> headache syndromes: <ul style="list-style-type: none"> • Medication-related headache. • Post-traumatic headache. • Headache associated with disorders of intracranial pressure. • Headache referred from the cervical spine. • Headache associated with sinus pathology.
3.7.9	Describe the pathophysiology and clinical features of: <ul style="list-style-type: none"> • Trigeminal neuralgia. • Other cranial neuralgias. • Post-herpetic neuralgia. • "Burning mouth" syndrome. • Temporomandibular joint disorders. • Idiopathic facial pain.
3.7.10	Critically discuss the concept of "atypical facial pain" and its implications for assessment and management.



ASSESSMENT

MANAGEMENT OF HEADACHES

- General principles:
- Some of the most distressed patients in the pain clinic
- Is heavily medicalised by our current system
- Gets worse with aggressive opioid management
- Can still benefit from good allied health interventions

ASSESSMENT

- History
 - Full history
 - Nature of pain, associated features, triggers
 - Medication use
 - Pain Diary
- Examination
- Investigation(s)

EXAMINATION & INVESTIGATIONS

- Cranial nerve evaluation
- Cervical spine assessment
- Role of imaging
 - MRI
 - Bone scan
- Role of pathology

SPECIFIC DIAGNOSES & MANAGEMENT

SPECIFIC CONDITIONS

- Migraine
- Tension Type Headache
- Orofacial pain
 - Trigeminal Autonomic Cephalgias
 - Trigeminal Neuralgia
 - Burning Mouth
 - Eagle Syndrome

MIGRAINE

MIGRAINE

- One of the most common pain syndromes - Lifetime prevalence 18%
 - Women 15-18%, Men 6-8%
 - Most are without aura (60-80%)
- Features disabling attacks lasting 4-72 hours
 - Usually with nausea, vomiting, photo/phonophobia
 - May be preceded by an aura
 - Unilateral, fully reversible visual/sensory or other CNS symptom
 - Cortical spreading

FEATURES OF MIGRAINE

- Nausea 90%
- Vomiting 30%
- Sensory hyperexcitability
- Autonomic symptoms common
 - Diarrhoea, polyuria, pallor sweating
- Localised edema and tenderness
- Concentration and mood changes

ACUTE TREATMENT

- Aspirin often very effective (900-1000mg)
 - NSAIDS better than paracetamol
- Metoclopramide effective and standard care
- Triptans
 - SC and nasal more proven than oral
 - Chest pain is not cardiac
 - Probably ok in pregnancy
- Avoiding caffeine is preferable

PREVENTION

- 50% reduction in attacks in success
- Betablockers - use a lipid soluble agent (propranolol commonly)
 - Candesartan non inferior to beta blocker
- Ca ++ blockers
- Anticonvulsants
 - Topiramate
 - Valproate (care if pregnancy potential)

OTHER OPTIONS FOR PREVENTION

- Botox
- Anti-CGRP antibodies
- Gabapentin
- TCA's
- Methysergide
- Magnesium
- Coenzyme Q

ANTI CGRP DRUGS

- Multiple drugs have been designed for this including
 - Aimovig (Erenumab) Monoclonal antibody for CGRP receptor
 - Emgality (Galcanezumab) Monoclonal antibody for CRGP itself
- Stop most attacks in 25% of patients, moderate improvement in 50%
- Different side effect profile (eg constipation, alopecia)
 - Some concern regarding long term cardiovascular effects
- Raise interesting question as they don't cross BBB. (? glial effect)
- May help post traumatic headaches, cluster headache

TENSION TYPE HEADACHE

TENSION TYPE HEADACHE

- Most common form of headache, classify on frequency
 - Infrequent < 12 per year
 - Frequent 12- 180 days per year
 - Chronic TTH > 180 days per year
- Chronic TTH often has lack of benefit with most treatments
 - Greater medication overuse
 - More disability
 - Higher personal and socioeconomic costs

DIAGNOSIS

- Bilateral pressing tightening pain of mild to moderate intensity
 - Episodes of short duration or continuous
 - No migraine features usually
 - Only 1 of vomiting photophobia phonophobia allowed
 - Mild nausea accepted
- Other organic disorders need excluding
- Diary (at least 4 weeks) for triggers and medication use.

EPIDEMIOLOGY

- Lifetime prevalence is 78%
 - Often short term
- 2-3 % of population had chronic TTH for years
 - Men equal women
 - Age 25-30 yrs at onset, peak prevalence 30-39 years
 - Decreases with age a little

OTHER FEATURES

- Examination findings:
 - Pericranial muscles are consistently more tender
 - Sensitisation of myofascial sensory afferents is consistently demonstrated
- Anxiety and catastrophising, avoidance are common.
- Depression also associated

MANAGEMENT

- Education of patient
- Avoid triggers where identified
 - Caffeine
 - Stress
 - Irregular meals
 - Dehydration
 - Sleep disorders
 - Menstrual triggers (HRT)

MANAGEMENT

- Some benefit and limited evidence for with
 - Physical therapy
 - Psychological therapies
- Medical
- NSAIDS and/or panadol
- Risk of MOH
 - > 14 days per month
 - Triptans and combo's > 9 days per month

PROPHYLAXIS

- Amitriptyline 75mg reduces headache index by 30% versus placebo
 - Should work in a week
 - Venlafaxine/ Mirtazepine are alternatives
- Multidisciplinary treatment
 - Improves episodic TTH by 50-75%
 - Improves chronic by 30-40 %

TRIGEMINAL AUTONOMIC CEPHALGIAS

TRIGEMINAL AUTONOMIC CEPHALGIAS

- Cluster headache
- Hemicrania Continua
- SUNCT (Short lasting Neuralgiform Headache with conjunctival injection and Tearing)
- Note - can see similar symptoms in pituitary tumours.

CLUSTER HEADACHE

CLUSTER HEADACHE

- Diagnostic criteria - at least five attacks within 10 days (max 8/day)
 - Severe or very severe unilateral orbital, supraorbital and/or temporal pain lasting 15 – 180 minutes if untreated.
 - Accompanied by conjunctival injection, lacrimation, nasal congestion, forehead and facial sweating, ipsilateral eyelid oedema, ipsilateral miosis and / or ptosis, restlessness and / or agitation
- Episodic - lasting a week to a year, with pain free period > 1 month
- Chronic - cluster if > 1 year without remission or < 1 month pain free.

CLUSTER HEADACHE

- Affects about 0.1% of the general population
- Males are affected 4x more often than females.
- Usually starts between the ages of 20 and 50 years
 - Can occur at any age.
 - 20% have onset of between 10 and 19 years
- May run in some families with autosomal dominant inheritance
 - Having first degree relative with cluster increases risk 14–48 times
 - 8 to 10% of persons with CH have a positive family history

CLUSTER HEADACHE TREATMENT

- Verapamil medium to high dose - mean 240mg/day max 960 mg per day
 - Takes weeks to work (1.7 weeks for episodic, 5 weeks chronic)
- Oxygen therapy 100-200%
- Triptans - Sumatriptan 6mg (injection only), Zolmitriptan nasal 5mg
- CGRP inhibitors may have benefit
- Occipital and/or frontal nerve stimulation may help.

HEMICRANIA

HEMICRANIA

- Unilateral headache for more than 3 months
 - Continua: Daily and continuous, Moderate to severe intensity
 - Paroxysmal: 5-30 minutes, multiple times per day
- Autonomic features
 - Conjunctival Injection/lacrimation
 - Nasal Congestion and Rhinorrhoea
 - Ptosis and/or Miosis
- Response to Indomethacin

HEMICRANIA

- Other Features
 - Stabbing headaches (superimposed over persistent headache)
 - Migrainous features
 - Throbbing pain
 - Phono/photophobia
 - Nausea and Vomiting
- Compared with cluster headache - Much less common, shorter but more frequent attacks, neck movement can precipitate, can affect whole head.

EPIDEMIOLOGY

- Much less prevalent than cluster (1:50000 people vs 1:1000)
- More common in women - 2:1
- Onset usually in adult life - median onset in third decade of life

TREATMENT

- Essentially universal response to indomethacin
 - 25-150 mg/day
 - Median dose 75mg/24 hours
- COX-2 inhibitors may also work if indomethacin not tolerated
- Lamotrigine 50-200mg /day also effective
- Topirimate also effective
- Stimulation may benefit.

SUNCT's

SUNCT

- Unilateral burning, stabbing, or electrical headaches mainly near the eye
 - Associated autonomic symptoms (lacrimation, ptosis, oedema, conjunctival injection, nasal blockage)
- Attacks are brief but frequent
 - Last from 5 seconds to 6 minutes
 - Up to 200x per day (average 60)
- Majority are male, age > 50

SUNCT

- Does not respond to oxygen, indomethacin, sumatriptan
- Main options:
 - Lamotrigine
 - Topiramate
 - Gabapentin
- Short term treatment:
 - IV lignocaine, methylprednisolone

TRIGEMINAL NEURALGIA

TRIGEMINAL NEURALGIA

- Episodes of severe facial pain in distribution of trigeminal nerve
 - Electric shock or neuropathic pain
 - Typically minutes to hours in duration, but can be prolonged
 - Usually unilateral, can be bilateral occasionally
- Incidence 0.0125% of population per annum
- Usually after age 50, women more than men.

PATHOPHYSIOLOGY

- Cause is not fully understood
 - Probable loss of myelin of trigeminal nerve.
 - Either in Gasserian ganglion, or dorsal root.
 - Often due to compression by blood vessel
 - Aberrant branch of superior cerebellar artery
 - Can be caused by tumour, AV malformation
 - More common in multiple sclerosis (3-4% of patients)
- DDx - above, also post herpetic neuralgia, TMJ disorder pain

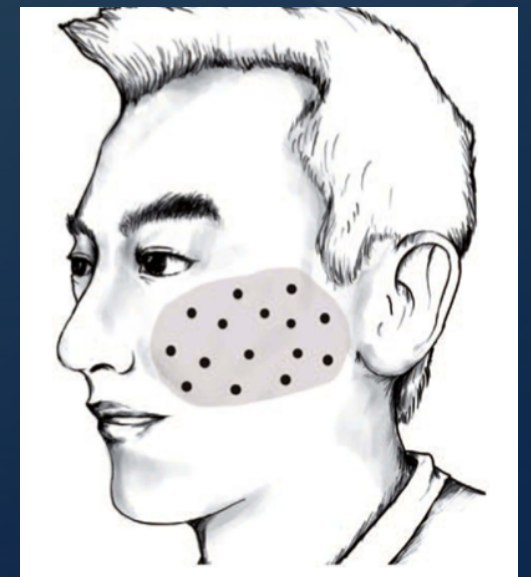
TREATMENT

- Medication
 - Carbamazepine effective in most people (90%), but side effects preclude use in about a quarter of these
 - Gabapentin/pregablin second line
 - Lamotrigine, baclofen, amitripyline may be of benefit.
- Radiotherapy
- Procedural intervention
- Surgery

PROCEDURAL INTERVENTIONS

- Direct interventions of trigeminal ganglia are rarely done.
- Botox may be of value
 - Dose may be lower (20-50 units?)

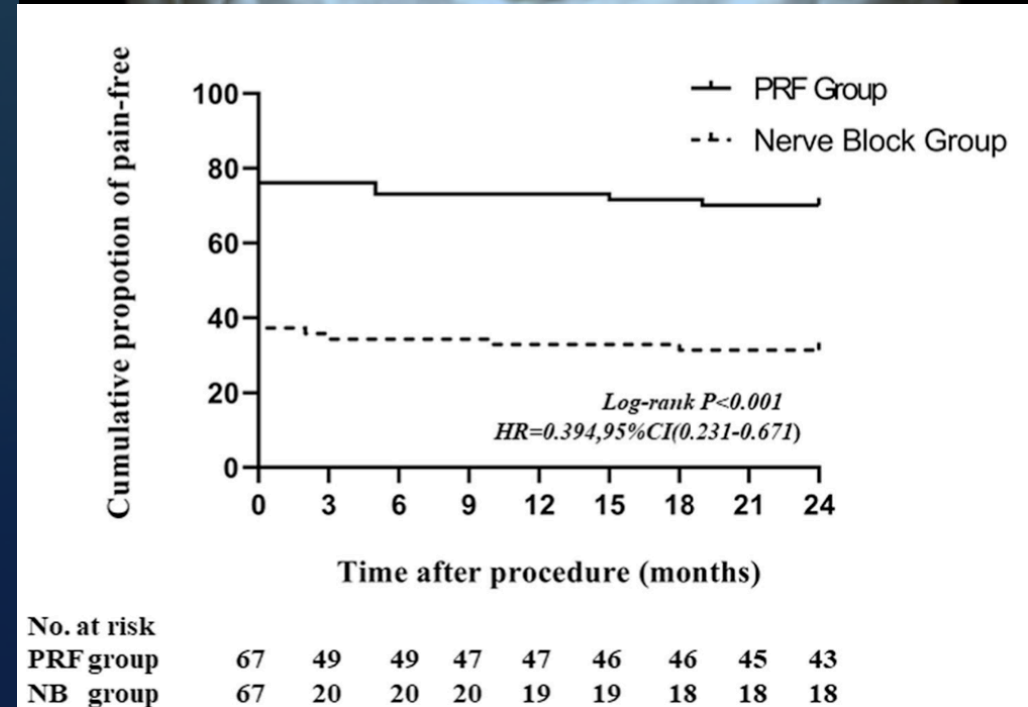
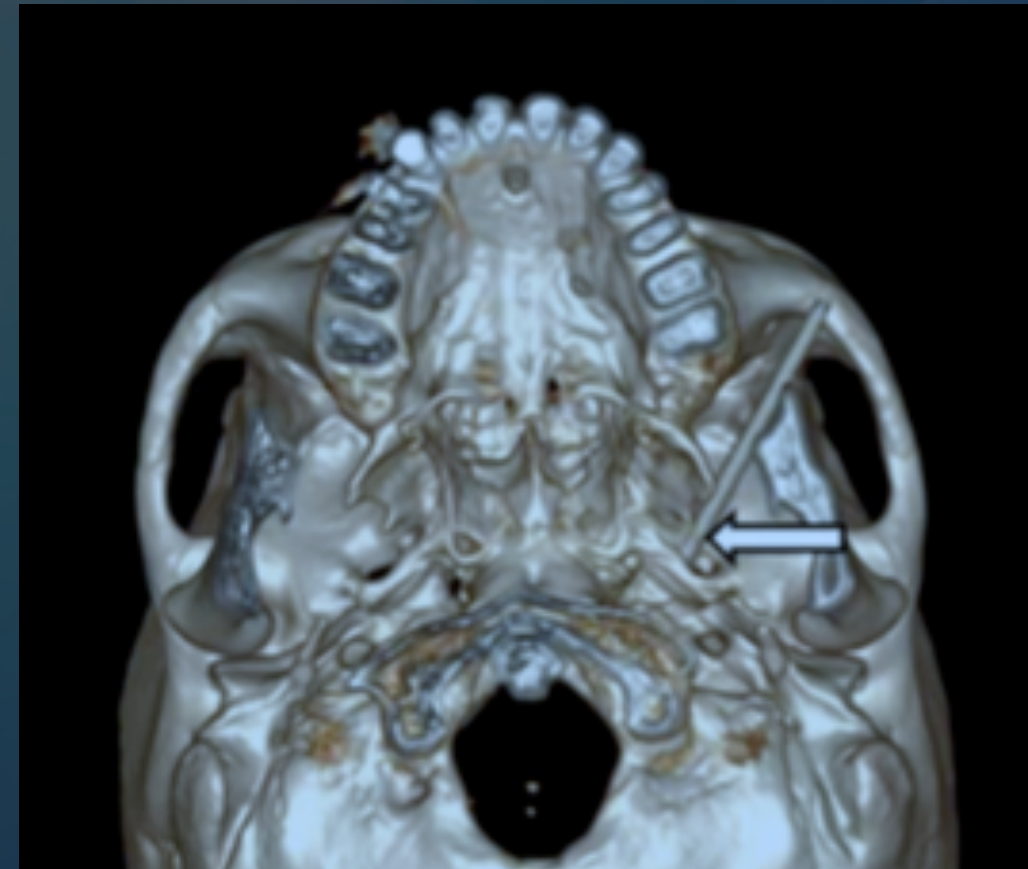
The Use of Botulinum Toxin A in the Management of Trigeminal Neuralgia: a Systematic Literature Review
Rubis A, Juodzbalys G. J Oral Maxillofac Res 2020 (Apr-Jun) | vol. 11 | No 2 | e2



PULSED RF?

- Potentially of benefit for intractable pain
- Fairly impressive results compared with a nerve block

Jia et al. The Journal of Headache and Pain (2023) 24:91
<https://doi.org/10.1186/s10194-023-01629-7>



POST HERPETIC NEURALGIA

PHN: EPIDEMIOLOGY

- Common condition, due to herpes zoster virus
 - 99% of adults > 40 years have serology positive for zoster
 - About 1 in 3 adults will have symptomatic zoster
 - 5-20% of these people will get post herpetic neuralgia
- Risk factors for pain:
 - Prodrome of symptoms prior to rash
 - Severe pain during acute phase
- Generally worse PHN in older people

FEATURES

- Defining feature is a rash
 - Unilateral
 - Erythematous maculopapular rash
- Progresses to vesicles
 - Pustules form over 72h
- Scab falls off after 2-3 weeks



MANAGEMENT

- Best is not to get it - vaccination.
 - Reduced incidence of around 60% with vaccination
- Early Treatment
 - Antivirals (acyclovir, famciclovir, valacyclovir) within first 72 hours of diagnosis
- Later treatment
 - Medications
 - Other options

MANAGEMENT – MEDICATIONS

- First line
 - Calcium channel $\alpha 2$ - δ ligands: Gabapentin, pregabalin
 - Tricyclic antidepressants (Nortriptyline, desipramine, amitriptyline)
 - Topical agents (Lidocaine 5% patch)
- Second line
 - Opioids (Suggest atypical agents: Tapentadol, Tramadol)
 - Capsaicin (patch 8%, 0.075A% cream)
- Other - vaccination

BURNING MOUTH SYNDROME

BURNING MOUTH SYNDROME

- Normal anatomy with pain over mouth/lips/tongue
 - Burning or tingling pain, usually bilateral
 - Affected by eating - generally better, although worse with hot foods
 - Chronic pain, usually continuous, from waking up throughout day.
- Excluded if explained by another disease
- Prevalence 5 per 100 000 individuals.
- Most common in postmenopausal women (3-7x more likely in women)

AETIOLOGY

- Primary BMS (50%) of cases have no identifiable cause.
- Oestrogen or progesterone deficit thought to be implicated.
- Autoimmune cause
 - 50% have abnormal ANA and RF (obviously not specific to BMS)
- Other associations (? Causal)
 - Chronic trauma (rubbing tongue against teeth or palate)
 - Depression / Anxiety

DIFFERENTIAL DIAGNOSIS

- ❏ Hypothyroidism
- ❏ Medications (ACEI, Protease inhibitors)
- ❏ T2DM / neuropathy
- ❏ Multiple myeloma
- ❏ Infection - HIV, Candidiasis, HSV

MANAGEMENT

- ❏ No good effective treatment
- ❏ Consider antidepressants, anxiolytics, anticonvulsants.
- ❏ Consider CBT, Reassurance.

Cochrane Database Syst Rev. 2016 Nov; 2016(11): CD002779. Published online 2016 Nov 18.

EAGLE SYNDROME

EAGLE SYNDROME

- Rare syndrome due to elongation of styloid process or calcification of ligament
 - Sharp shooting pain in jaw, throat, base of tongue, usually unilateral
 - Pain from chewing/swallowing/turning neck.
 - Tinnitus
- Incidence is around 0.16% of population
- Surgical treatment - styloidectomy, also medical or procedural
 - Can have vascular involvement of ICA

OROFACIAL PAIN

SPECIFIC CONDITIONS

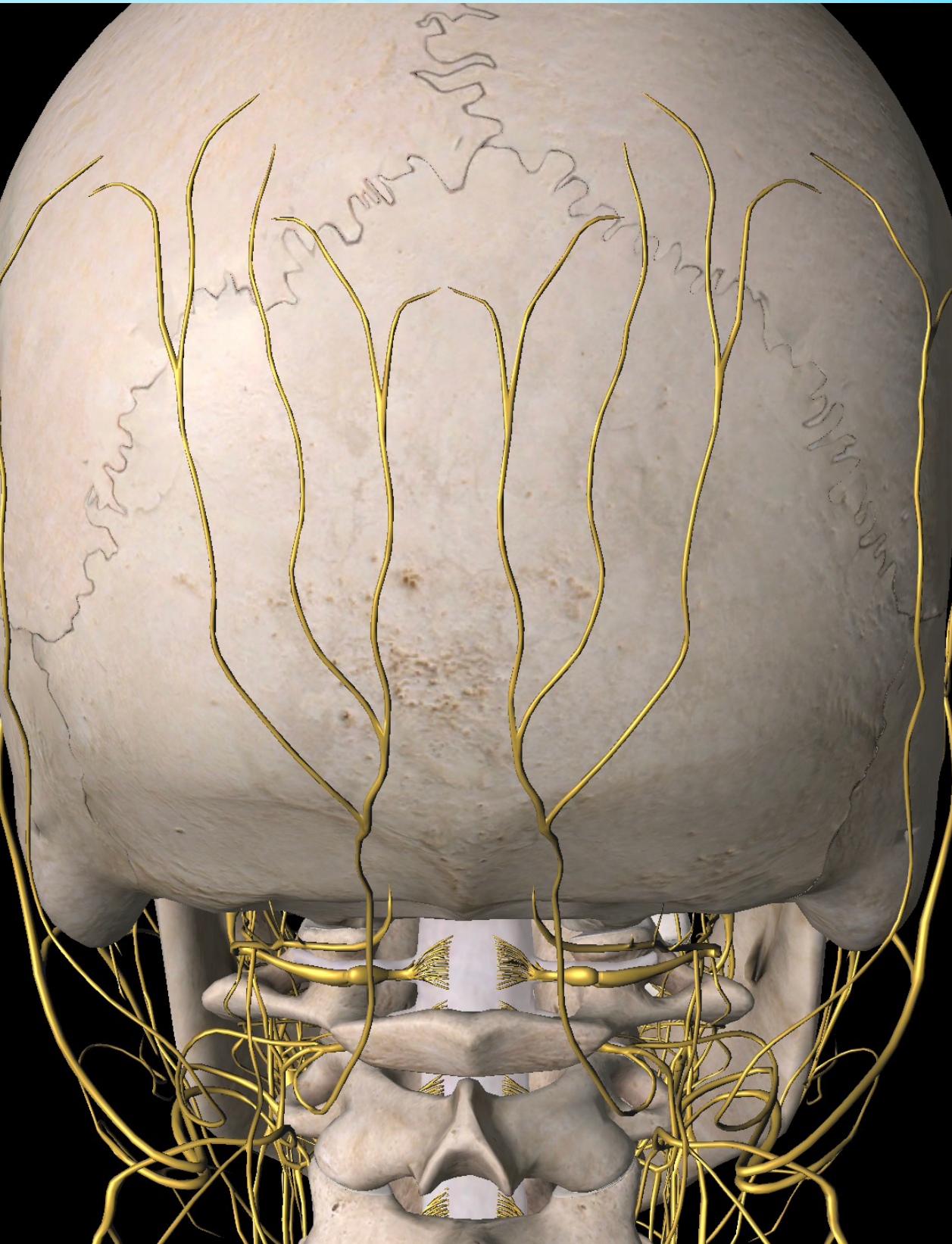
- Trigeminal Neuralgia
- Other Neuralgias
- Post herpetic neuralgia
- "Burning mouth" Syndrome
- Eagle Syndrome

CERVICOGENIC HEADACHE

- Referred headache from cervical spine or neck soft tissues.
 - Worse with neck movement / limited neck movement.
 - Often seen following trauma / whiplash (often workplace/ vehicle)
- DDx - Migraines, traumatic brain injury
- Most management is symptomatic / medical
- Can consider GON / cervical facet joint steroids.

PROCEDURES FOR HEADACHE

- Greater occipital nerve block
- Botox
- Cervical facet joint injections
- Neuromodulation

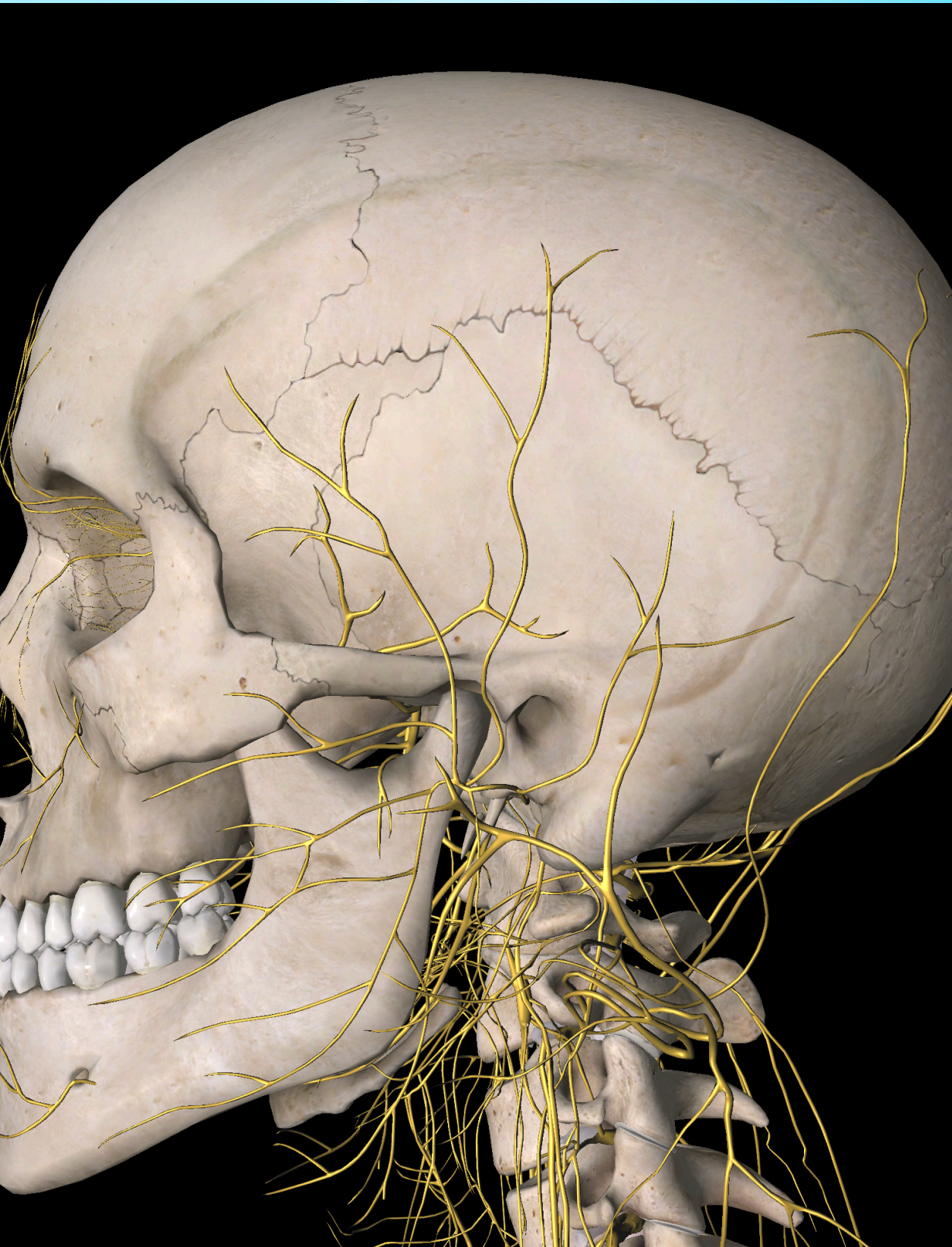


GREATER OCCIPITAL NERVE BLOCKS

Simple, low risk procedure.

Local anaesthetic + steroid, can also
do pulsed RF

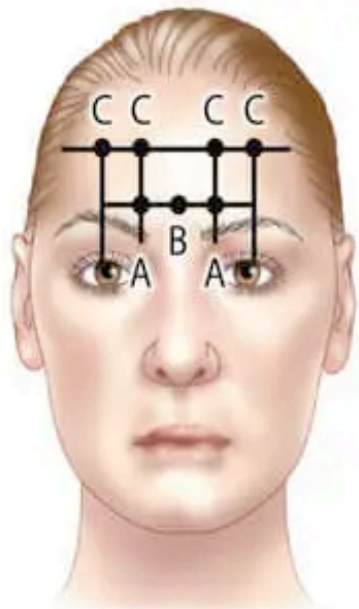
Can be done as field block, or with
US or X-Ray guidance.



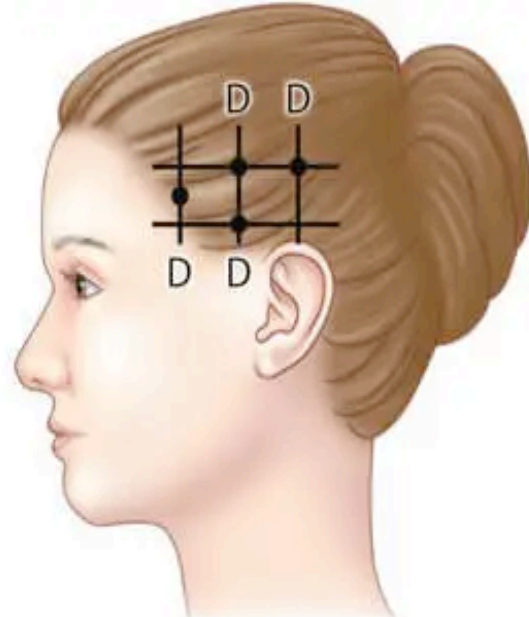
SCALP INNERVATION

Temporal region is innervated by Greater auricular nerve (posterior to ear) and Auriculotemporal nerve (anterior to ear)

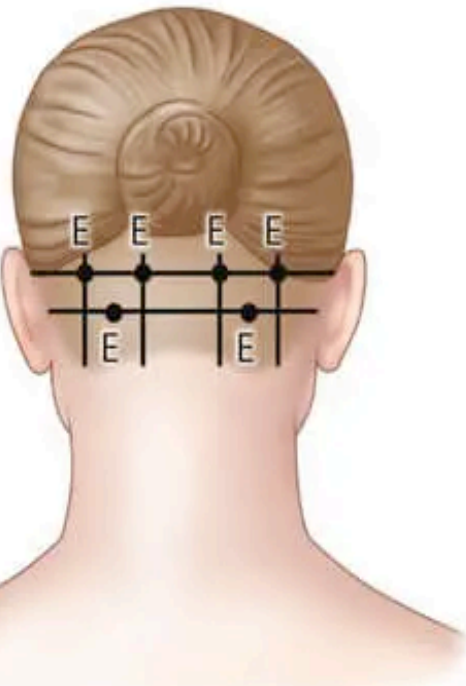
Can do blocks +/- Pulsed RF



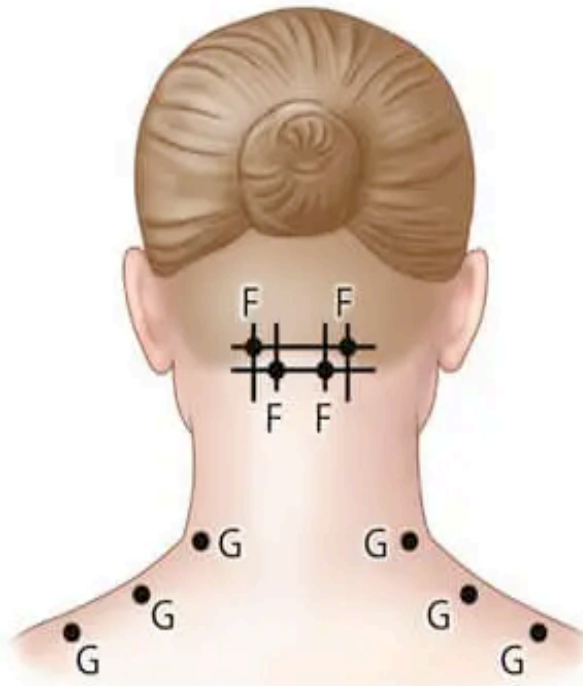
A. Corrugator: 5 U each side
B. Procerus: 5 U (one site)
C., Frontalis: 10 U each side



D. Temporalis: 20 U each side



E. Occipitalis: 15 U each side



F. Cervical paraspinal:
10 U each side
G. Trapezius: 15 U each side

BOTOX FOR MIGRAINES

PBS limitation is for neurologists to prescribe

- Can still potentially do as day case
- May get some fund rebates

Typically use 100 units



RHIZOTOMY

Pulsed RF (non destructive)

- Most evidence is for the DRG
- Optimising settings.

Eg:

42° 20ms 5Hz 240 seconds.

NONINVASIVE NEUROMODULATION

- Vagal nerve stimulation
 - Chronic / Episodic migraine
64% pain relief, 40% pain free. Superior to sham
- TMS - Only gets medicare in Australia for depression
 - 39% got pain relief (vs 22% with sham) 2.75 less headache days/mth
- TNS - (Cefaly) 38% responder rate versus sham 12%.
- Peripheral Electrical Stimulation
50% reduction in pain in 64% of treated patients.



NEUROMODULATION FOR HEADACHE

Invasive neuromodulation

Approach	CCH	Other TACs	MIG	ON	cTTH	Others
Occipital nerve stimulation	++	+	+ (CM)	+	?	(+) (ICHD-II 13.12, NDPH)
Hypothalamic deep brain stimulation	++	+	?	?	?	- (PIFP), + (sTN)
Sphenopalatine ganglion stimulation	+	?	(+) EM	?	?	?
High cervical spinal cord stimulation	(+)	?	?	?	?	?
Vagal nerve stimulation	(+)	?	(+) (CM + EM)	?	(+)	(+) (CDH)

Abbreviations and symbols: ++ sound evidence; + moderate evidence; (+) only anecdotal reports or ambiguous results; ?: no studies found; -, lack of efficacy; CCH, chronic cluster headache; CDH, chronic daily headache; CM, chronic migraine; cTTH, chronic tension-type headache; EM, episodic migraine; ICHD-II 13.12, constant pain caused by compression, irritation, or distortion of cranial nerves or upper cervical roots by structural lesions; MIG, migraine; NDPH, new daily persistent headache; PIFP, persistent idiopathic facial pain; ON, occipital neuralgia; sTN, symptomatic trigeminal neuralgia affecting the ophthalmic division; TAC, trigemino-autonomic cephalalgia.

SUMMARY

- Classification(s)
- Foundational Knowledge
- Assessment
- Specific Diagnoses and Treatments
 - Headache
 - Orofacial pain
 - Cervicogenic pain
- Interventions