Management of Headache and Facial Pain Haley Burke, MD, DABPN

Historical Perspective

- Trepanation has been found on skulls from 7000 BC.
- Earliest surgical procedure for which archeological evidence exists (1)
- Intended to treat headache, epilepsy, psychiatric disorders (2)
- First recorded HA Classification was published by Arateus of Cappadocia (1st century CE)
 - Cephalagia (short lasting)
 - Cephalea (chronic)
 - Heterocrania (paroxysmal, unilateral) (3)



Epidemiology

- 50% of the population will experience a headache during any given year
- Affect > 28 million Americans (migraine alone)
- > 90% report a lifetime history of headache
- Average lifetime prevalence of Migraine: 18%
- 3% of the population with have a chronic headache (>15 days per month)
- Sex ratio for migraine: 3: 1
- Sex ratio for TTH: 1:1 (4)
- Prevalence of migraine: peaks age 25-55 yo (5)

Migraine Impact on Lost Productivity

Total costs of disability attributed to migraine:

- > \$13 Billion annually (1998)
- \$19.6 Billion attributed to any headache type (2002)
- Impact of migraine on the labor force likely to increase as more women continue to enter the workforce.

Current Headache Classification

- International Classification of Headache Disorders - ICHD 3-Beta
- www.ICHD-3.org
- I. Primary headaches
 - No associated underlying etiology
- II. Secondary headaches
 - Due to other pathology
- III. Painful cranial neuropathies, other facial pains and other headaches





IHS CLASSIFICATION ICHD-3 BETA

I: Primary Headaches

MIGRAINE

- * Without aura
- * With aura
- * Chronic
- * Complications
- * Probable
- * Episodic syndrome

TENSION TYPE

- * Infrequent episodic
- * Frequent episodic
- * Chronic
- * Probable

TACs

- * Cluster
- * Paroxysmal Hemicrania
- * Short-lasting unilateral neuralgiform headache attacks
- * Hemicrania Continue
- * Probable TAC

OTHER PRIMARY

- * Cough HA
- * Exercise HA
- * Coital
- * Thunderclap
- * Cold stimulus
- * External pressure
- * Primary stabbing
- * Nummular
- * Hypnic
- * New daily Persistent



Neuronal Pathways In Primary Headache Pathophysiology

- Activation and sensitization of the trigeminovascular
 - Spans from nuclei of the brainstem, to the diencephalon (thalamic structures) to cortex.
- Trigeminal ganglion has central afferent projections to the Trigeminal Nucleus Caudalis (medullary spinal cord).
- Central afferent projections, including those from the occipital nerve, travel through cervical ganglia to synapse on 2nd order neurons.
- Trigeminovascular system also has peripheral projections, such as those from the ophthalmic division of CNV, innervating cranial blood vessels and dura mater.
- All together, this known at the Trigeminocervical complex.
- Continuum from the trigeminal nucleus to the cervical spinal cord
 - Inputs to the TCC which may explain common distribution of pain in the frontal, temporal, parietal, occipital and superior cervical regions. (11).





Migraine Diagnosis

- Lasts at least 4-72 hr if left untreated
- > \geq 2 of the following:
 - Unilateral
 - Throbbing or Pulsating
 - Moderate or severe intensity
 - Aggravated by or causing avoidance of routine physical activity
- Must have Nausea and/or Vomiting or Photophobia AND phonophobia

- Aura: focal, temporary, fully reversible phenomenon
 - Visual field disturbance
 - Paresthesias
 - Focal weakness
 - Vertigo
 - Confusion
 - Aphasia (6)
 - Cortical Spreading depression

Cluster Headache Diagnostic Criteria

- At least 5 attacks fulfilling the following
- Severe/very severe unilateral orbital, supraorbital, and/or temporal pain lasting 15-180 min untreated
- Attacks have a frequency from 1 every other day to 8/day

- Accompanied by at least one:
 - Ipsilateral conjunctival injection and/or lacrimation
 - Ipsilateral nasal congestion and/or rhinorrhea
 - Ipsilateral eyelid edema
 - Ipsilateral forehead and facial sweating
 - Ipsilateral miosis and/or ptosis
 - Sense of restlessness or agitation
- May see Lionized facies

Headache	Location	Duration	Autonomic Fx
Cluster	Unilateral	15-180 min	Yes
Paroxysmal hemicrania	Unilateral	2-30 min	Yes
SUNCT	Unilateral	5-240 sec	Yes

II: Secondary Headaches: attributed to:

- Trauma or injury to the head and/or neck
- Cranial or cervical vascular disorder
- Non-vascular intracranial disorder
- Substance or its withdrawal
 - Includes Medication Overuse Headache
- Infection
- Disorder of homeostasis
 - E.g. hypoxia/hypercapnia, pheochromocytoma, thyroid dysregulation
- Disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cervical structure
- Psychiatric disorder



Medication Overuse Headache

- Secondary chronic daily headache
- Worsening and transformation of episodic migraine into daily or near-daily HA, associated with overuse of acute analgesics.
- Butalbital <u>></u> 5 days/mo
- Opioids <u>></u> 8 days/mo
- Triptans <u>></u> 10 days/mo*
- NSAIDs > 10 days/mo*
- Caffiene <u>></u> 200mg/day (frequency undetermined) (8)
- Prevention is Key:
 - Consider Daily prophylactic Rx if <u>>6 HA/mo</u>
 - Mandatory prophylactic Rx if <a>> 10 HA/mo (9)

III: Painful Cranial Neuropathies and other Facial Pains

- Trigeminal Neuralgia
- Glossopharyngeal neuralgia
- Nervus Intermedius neuralgia
- Occipital neuralgia
- Optic neuritis
- HA attributed to ischemic ocular motor nerve palsy
- Tolosa-Hunt Syndrome

- Paratrigeminal oculosympathetic syndrome
- Recurrent painful ophthalmoplegic neuropathy
- Burning Mouth Syndrome
- Persistent idiopathic facial pain
- Central neuropathic pain

Treatment Options

- Lifestyle changes
- Prophylactic Medications
- Abortive medications
- Procedural Intervention
- Surgical Intervention
- Psychologic/Psychiatric treatment

Prophyalctic and Abortive Medications

Migraine Prophylaxis

▶ BB, ACEi, CCB, AEDs, TCAs, Botox, *CGRP inhibitors

Migraine Abortive

Triptans, Ergots, NSAIDs, VPA, Steroids

Cluster Prophylaxis

► Verapamil, Lithium

Cluster Abortive

► O2, Triptans, Ergots, Octreotide, ONB

► TAC Tx

Indomethacin, Lamotrigine

Dietary Intervention

- Nitrates
 - ▶ Hot dogs, salami, bacon
- Dairy
- MSG
- Tyramine
 - Aged cheese
 - ► Figs
 - Citrus
 - Bananas
 - Red wine

Fish

- Onion
- Histamine
 - Seafood
- Caffeine
- EtOH
- Fermented food (7)

Dietary Intervention for Migraine

Intervention	Study Design	Dietary Results	HA results	Reference
Low-fat vs. normal fat	Random order cross- over trial	Calories from fat: 35.2, 27.6, 23.5% during the run-in, normal and low fat phases. Participants lost avg 1.2kg weight	HA decreased $6.8 \rightarrow$ 2.9 per 2 months diet phase. Severity decreased (scale 1- 3) $1.7 \rightarrow 1.2$.	Ferrara et al. 2015.
Standard Low-calorie diet (6 mo) vs. ketogenic diet (1 month) + 5 month standard low-calorie diet	Prospective, open- label, parallel group	Ketogenic status confirmed by urine testing	HA day/mo decreased $5.1 \rightarrow 0.9$. SD: HA days/mo decreased $6.4 \rightarrow 4.2$	Lorenzo et al. 2015
Low-fat plant-based diet vs. placebo supplement	Randomized crossover trial	BMI decreased 1.3 in treatment group	VAS decreased $6.4 \rightarrow$ 2.1. % HA requiring Rx: 65% \rightarrow 46%.	Bunner et al. 2014
Personalized elimination diet based on IgG Ab blood results	Double blind, randomized, controlled cross-over trial	Mean IgG reaction count: 24 <u>+</u> 11	Reduced HA days from 10.5 \rightarrow 7.5.	Alpay et al. 2010

Refractory Headache

- Headache leading to decreased functionality and quality of life, after failing both acute and preventative medication trials
 - Fail at least 2: Beta-blockers, Anticonvulsants, antidepressants, CCB
 - Consider therapeutic doses X ≥ 2 months
 - Failed triptans, Ergotamines, NSAIDs
- When to consider interventional headache treatment?
- No set criteria
- Failed acute and/or prophylactic methods
- Bare some degree of disability related to HA (severe or very severe) (6)
- No definitive surgical options



Interventional Management of Head and Face Pain

- Most commonly observed with:
 - Refractory migraine
 - ► Cervicogenic HA
 - Cranial neuropathies and neuralgias
 - Cluster HA
 - Trigeminal Autonomic Cephalalgias
 - Focal pain in specific nerve branch distribution
 - Malignancy

Pain referral patterns C1-C3

- > Periorbital pain often coexists with occipital and cervical pain in HA pt.
- Periorbital/frontal pain may be produced by stimulation/pathology in posterior cranial fossa and rostral, superior c-spine.
- Longstanding assumptions about the trigeminovascular system and trigeminocervical complex.
- Role of upper cervical spinal nerves: Presumed signaling based on the convergence of cervical and trigeminal afferent pathways in the TNC.
- C2 and C3 have been relatively well studied
 - Dermatomal distribution: occiput, parietal to vertex, peri-auricular, lateral cheek, submental region, cervical region.



Anatomy of C1

- Generally considered to have no significant sensory function
- No reported dermatomal or cutaneous branches
- Cadaveric studies indicate C1 Dorsal roots are present in 47% of specimens
- > 28% of those with dorsal roots have a DRG.



C1 Anatomy





(22)

Referral Patterns of C1-C3

- ▶ Johnston et al. 2013
- ► N = 10
- Patients with known occipital pain underwent C1, C2, C3 stimulation to evaluate therapeutic procedures for chronic occipital pain.
- All patients failed conservative treatments
 - Anticonvulsants, NSAIDs including indomethacin, physical therapy.
 - All patients had pain reproduced by pressure over GON.
- C1: RF needle was placed at posterior superior edge of the arch of the atlas by the C1 spinal nerve, inferior to vertebral artery.
- C2: needle placed next to C2 DRG in the intervertebral foramen.
- C3: Targeted transforaminally

Targeting C1-C3



(20)

Targeting C1-C3

- Motor responses (2Hz, 1.5-2mA) confirmed needle placement.
- C1 motor response: contraction of rectus capitis lateralis, rectus capitis anterior and longus capitis.
- Sensory stim (50Hz, 0.5-1.0mA) was then recorded
- Sensation from mechanical pressure due to needle tap and pressure through injectate administration were also recorded.
- Pain referral patterns were reported by the patient.
- Patients then underwent perineural injection of 2% chloroprocaine or 0.5% bupivacaine with 10mg Dexamethasone.

Results of C1-C3 Stimulation

- All 6/6 patients with concomitant Dx of Migraine experienced periorbital and frontal pain with C1 stim.
- Remaining patients (4) had pain in the parietal or occipital pattern with C1 stim.
- In all patients:
 - \triangleright C2 \rightarrow pain in occipital and parietal distribution
 - ► C3 → pain in occipital, periauricular, submental, and/or lateral cervical distributions



C1-C3 Pain Referral

- Demonstrated periorbital and frontal distribution of pain elicited by direct stimulation of C1 spinal nerve in subjects with migraine.
- Findings suggest sensory fibers innervating periorbital and frontal regions, which has not previously been described.
- > Alternative explanation: sensory input from C1 \rightarrow referred pain
 - C1 has been reported to innervate the dura mater of posterior fossa and upper c-spine.
 - Stimulation of these regions has been reported to \rightarrow periorbital pain.
- Again answer may reside in the TNC.
- Implications: C1 may be an important therapeutic target.

Headaches and the Lower C-spine

ICHD-3: addresses "upper cervical radiculopathy-induced headache"

Specified as presence of clinically or radiologically clear evidence of radiculopathy associated with the 2nd to 3rd cervical levels

Case reports of HA in context of:

Tumor infiltration of C2

- Schwannoma at craniocervical junction
- Trigeminal Neuralgia due to compression at the spinal nucleus of CNV
- Pathophysiology of headaches from middle-lower cervical levels?

Headache and the Lower C-spine

- Mechanism likely related to the spinal nucleus of CNV
 - Descends to C3 and synapses with C3 nerve.
- Most pain stimuli at lower levels pass through the dorsal horn of the cord via central gray matter
 - Signals ascend anterior spinothalamic tract on opposite side.
- Some stimuli ascend through the spinocervicothalamic tract.
 - Communicates with the TNC through some type of anastomosis.
- Spinal roots of CNXI with fibers from anterior branches of C2-C4 innervate SCM and trapezius.
 - Contain sensory nerves:
 - Proprioceptive and Noxious signals (26)

Headache and the lower C-spine: Alternative Mechanism

- Overlap of dermatome and myotome as underlying explanation
- Dykes and Terzis (1981) cutaneous region served by one spinal nerve is wider and more variable in location than generally recognized.
- Myotome territory is larger than the corresponding dermatome.
- Schirmer (2011) significant # of roots innervated a broader range of muscles than previously known during intraoperative nerve root stimulation
 - Ex: C5 and C6 contributed to all muscle of the upper extremity including trapezius.
 - 129 pts evaled c-spine.

Headache and the Lower C-Spine

- Persson et al 2006: evaluated effect of cervical SNRB on HA
- > 275 pts with cervical radiculopathy.
- 161 of these pts reported associated daily or recurrent HA in addition to neck pain
- ▶ 59% of pts had ≥ 50% reduction in HA 30 min post-procedure.
 - ▶ 69% of these had total relief
- Pathophysiology unclear
 - Authors suggest HA secondary to signals from disc capsule, cervical ligaments or muscles.
- Caution that HA as a singular symptom in not an indication for surgical decompression treatments.

Peripheral Nerve Blocks for HA and Facial Pain

- Few controlled studies regarding effect of LA procedures for HA and facial pain exist
 - Placebo effects often common
 - Complete or near complete pain relief after placebo 32.4% (10)
- Goal: Block C-fibers
- Mechanism: Reduce afferent input to decrease activity at the trigeminal Nucleus caudalis, cervical dorsal horn, and converging circuits.

Block Type	Indications
Supraorbital, Supratrochlear, Infraorbital nerves	Entrapment neuropathies Zoster Fractures malignancies
Inferior alveolar nerve	Posttraumatic and postop Neuralgias Intraoral malignancies
Mental nerve	Entrapment neuropathies Zoster Fractures Malignancies
Auriculotemporal nerve	Posttramatic neuralgia Atypical facial pain Temporomandibular joint pain Zoster involving esternal auditory meatus Malignancy
Greater auricular nerve	Posttraumatic and postoperative neuralgia Malignancies

Occipital Nerve Blocks

- ON is the primary branch of the C2 root
- Innervates the scalp from external occipital protuberance to the vertex.
- Helpful for conditions associated with scalp allodynia (6)
- Crosses semispinalis superiorly and becomes subcutaneous after crossing the Trapezius inferior to the superior nuchal line
- LON derived from C2 and C3, supplies inferior and lateral scalp and upper neck (13)

Indications for ONBs Occipital neuralgia Migraine Tension-type HA Cluster New Daily Persistent HA Hemicrania Continua Cervicogenic Posttraumatic HA Post Dural Puncture HA (6)



Occipital Nerve Block

- Palpate the occipital artery.
- Target the medial one third of the distance between the occipital protuberance and mastoid process.
- The Lesser Occipital nerve may be found in the lateral two thirds site from the protuberance to the mastoid (14).
- No consensus on benefit of addition of corticosteroids Unless treating cluster HA (6)
- Caution: bony defects



ONB Literature Outcomes

Occipital neuralgia: n= 86 ON alone and n=50 with Migraine associated with ON

- ON group 75/86 were "HA free" avg 31 days.
- Migraine +ON group: 44/50 were "HA free" avg duration 32 days.(15)
- Cervicogenic HA: evidence exists; main supportive article is highly flawed
 - No standardized treatments: e.g. # and frequency of blocks, combination with other peripheral blocks and Rx, no control group. (16)
- Chronic Migraine: n= 72.
 - 1 block per week X 4 weeks with either Bupivacaine or Saline.
 - ▶ Placebo group at 1 month: HA days decreased $16.9 \rightarrow 13.2$. (p=0.035)
 - ▶ Treatment group HA days decreased $18.1 \rightarrow 8.8$. (p< 0.001)
 - ▶ VAS in placebo: 8.1 \rightarrow 6.7 and 8.4 \rightarrow 5.3 in treatment group.
 - Crossover portion demonstrated similar results. (17)

ONB Literature Outcomes

Cluster HA: double blind, placebo-controlled study. 80% of treated group responded with benefit for > 2 weeks.

No subjects in the placebo group responded.

Evidence also exits for post-LP headache, refractory trigeminal neuralgia, and refractory hemicrania continua (13).

Glossopharyngeal Nerve Block

- Glossopharyngeal Nerve: mixed nerve
 - Sensory
 - Motor
 - Autonomic fibers
- Originates from superior Medulla
- Exits the Jugular Foramen with Internal Jugular vein and ICA
- Courses medially behind the styloid process (6)



Glossopharyngeal Nerve

- Sensation to:
 - Posterior third of tongue
 - Middle ear
 - Palatine tonsils
 - Mucous membranes of mouth and pharynx above the vocal cords
- Special afferents to taste buds of posterior third of the tongue
- Motor fibers to stylopharyngeus
- Postganglionic fibers provide secretory fibers to Parotid gland
- Hering's nerve branch that innervates the carotid sinus and carotid body.
 - Synapses with the Vagus and sympathetic chain. (6)



Glossopharyngeal Neuralgia

- Uncommon, unilateral.
- Neuralgic pain in ear, base of tongue, tonsillar fossa, or beneath angle of the jaw.
- Attacks last seconds -2 min
- Sx may be precipitated by swallowing, talking, coughing, chewing, yawning.
- Usually begins after 6th decade.
- May see bradycardia and asystole with glossopharyngeal neuralgia paroxysms. Up to 2% of pt may experience LOC (6)
- > Possibly secondary to microvascular compression by posterior cerebellar artery.
- Eagle syndrome
 - Elongated styloid and ossified stylohyoid ligament.
- Consider block if:
 - Diagnosis in question
 - Refractory to conservative management

Glossopharyngeal Nerve block



The Sphenopalatine Ganglion

- Largest collection of neurons outside of the brain
- Composed of parasympathetic ganglia from the greater petrosal nerve
- Resides in the pterygopalatine fossa (PPF) bilaterally
- Axons \rightarrow Lacrimal gland and nasal mucosa.
- Controls local blood flow
- Implicated in numerous headache and facial pain conditions
- Initially blocked with cocaine, followed by silver nitrate, 0.4% gaseous formaldehyde, and 5% phenol in 1908
- Studied for Cluster HA in the 1980s
- 2006: delivery devices on the market
- 2009: Stim Implants (23)

SPG Anatomy

- Located under 2mm of mucosa in the medial wall of PPF
 - PPF bordered by:
 - posterior wall of maxillary sinus (anteriorly)
 - Medial plate of the pterygoid process medially
 - Sphenoid sinus superiorly
 - Perpendicular plate of the palatine bone medially
 - Infratemporal fossa laterally
 - 3 inputs:
 - Sensory, Parasympathetic, Sympathetic



SPG Anatomy

- Sensory branches supplying:
- Bony palate
- Gingiva
- Mucosa of buccal cavity
- Uvula
- Tonsils
- Soft palate
- Orbit
- Connections to CN V blur sensory connections of SPG alone

SPG Block for CH

- Intranasal block:
- Robbins: N=30 using 4% lidocaine spray
 - ▶ 54% had mild-moderate relief
 - ▶ 46% no relief
- Barre: (open study) N=11 pts with Nitroglycerin-induced CH:
 - >80% pain relief in 91% of patients
- Kittrelle: (open study): N=5
 - 4 pts had >75% pain reduction within 3 min





SPG Block (Infrazygomatic)

- Usually Fluoroscopically guided
- May be CT guided
- Caution: Sphenopalatine Foramen (Medial)





SPG RFA

- Check for paresthesias behind the "root" of the nose at <0.5Hz</p>
- Evidence for chronic and intermittent cluster headache.
- Pulsed RFA: Akbas et al (2016) investigated for atypical facial pain, SPG neuralgia due to zoster, trigeminal neuralgia.
- Pulsed RF at 42°C X 120s.
 - 23% had no relief
 - 35% had excellent relief
 - 42% had "good" relief



SPG Block and RFA Complications

- Epistaxis
- Intravascular injection
- Hematoma formation
- Infection
- Reflex bradycardia
- Hypoesthesia/dysesthesia: palate, maxilla, posterior pharynx.
- Dry eye
- Diplopia injectate spread from PPF to inferior orbital fissure (limit injectate volume)

Gasserian Ganglion Anatomy

- Lies within middle cranial fossa
- Borders:
 - Medial: cavernous sinus
 - Superior: inferior temporal lobe
 - Inferior: CNV motor root
 - Posterior: brain stem
 - Lateral: petrous bone
- \blacktriangleright V1: craniomedial \rightarrow Superior Orbital Fissure
- \blacktriangleright V3: caudolateral \rightarrow Foramen Rotundum
- ► V2: in between \rightarrow Foramen Ovale



Gasserian Ganglion Anatomy

- Contains sensory cell bodies of all 3 branches
- ▶ V1 and V2: sensory only
- V3: sensory + Motor (mm. of mastication)
- Sympathetic fibers from carotid plexus
- CGRP release during Migraine
 - Sensitizes primary trigeminal nociceptive neurons (24)
 - May have implications in other Neuropathic pain states



CGRP action at peripheral receptors

Expert Reviews in Molecular Medicine © 2011 Cambridge University Press

Gasserian Ganglion Block: Indications:

- Diagnostic or therapeutic treatment for Trigeminal Neuralgia symptoms
- Trigeminal Neuropathy ?
- To predict prognosis prior to neuroablative or surgical procedure of the Trigeminal ganglion
- Malignancy
- Orofacial pain syndromes NOS

Gasserian Ganglion Block

- Role of sedation
- Optimize submental view with ipsilateral tilt
- Identify the Foramen Ovale
- Point of entry typically 1.5-3cm lateral to corner of the mouth
- Aim towards os surrounding foramen ovale for depth safety



Gasserian Ganglion Block

- Alternate submental and lateral views
- Once needle positioned, confirm lack of CSF/heme return
- Consider motor stim for mm. of mastication
- ▶ 0.5-1mL contrast → vascular spread may be seen commonly along the posterior skull base
- Consider DSA
- Injectate volume: 1-2mL



Gasserian Neurolytic Options

- ► Gamma Knife and Sterotactic Radiation Therapy
- Percutaneous Balloon Microcompression
 - V1 preferred
- Percutaneous Glycerol Rhizolysis
 - Cases of temporal lobe neurolysis
 - Less effective
- Percutaneous RFA
 - May be preferred for elderly patients
- Percutaneous Pulsed RFA
 - Efficacy in question



Gasserian RFA

- 2 RCTs exist
- > 1) Erdine et al: pulsed RF with conventional RF in TN
 - ► N= 40
 - 2/20 PRF patients had significant pain reduction > 3 mo
 - 19/20 CRF had significant pain reduction maintained > 6 mo.
 - ▶ 1 CRF patent developed anesthesia dolorosa treated pharmacologically
- > 2) Xu et al: Fluoro guided RF, N = 24
 - ▶ 95% documented relief
 - ▶ At 1, 2, and 3 years: 54, 40, 35%
- ▶ Wu et al: N= 1860 treated with Gasserian RFA
 - Excellent outcome 78.8%
 - Good 17.5%
 - **Poor 3.7** %
 - Pain recurrence 11.1% during first 12 mo and 25% after 24mo. (25)



Complications of Gasserian Block and RFA

- Anesthetic deposited to CSF
- Intravascular injection
- Anesthesia dolorosa
- Corneal Hypoesthesia
- Masseter weakness/paralysis
- Dysesthesia
- CN III and VI palsy (possibly permanent)
- CSF leakage
- Carotid-Cavernous fistula formation
- Infection/Meningitis
- Bleeding/hematoma

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SPG Anatomy

- Parasympathetic preganglionic cell bodies of SPG original in superior salivatory nucleus (of CNVII)
 - SSN efferents form the Vidian N
 - Vidian synapses in SPG
 - ▶ Fibers then run with V2 branches.
- ► Sympathetic cell bodies \rightarrow SPG
 - Original at T1-T2
 - Synapse in superior cervical ganglion (travel along Carotids)
 - Fibers joint Deep petrosal nerve in the Pterygoid canal
 - Joins Parasympathetic fibers to form the Vidian Nerve



Gasserian Ganglion Ablation

