Management of Antenatal & Intrapartum Headache

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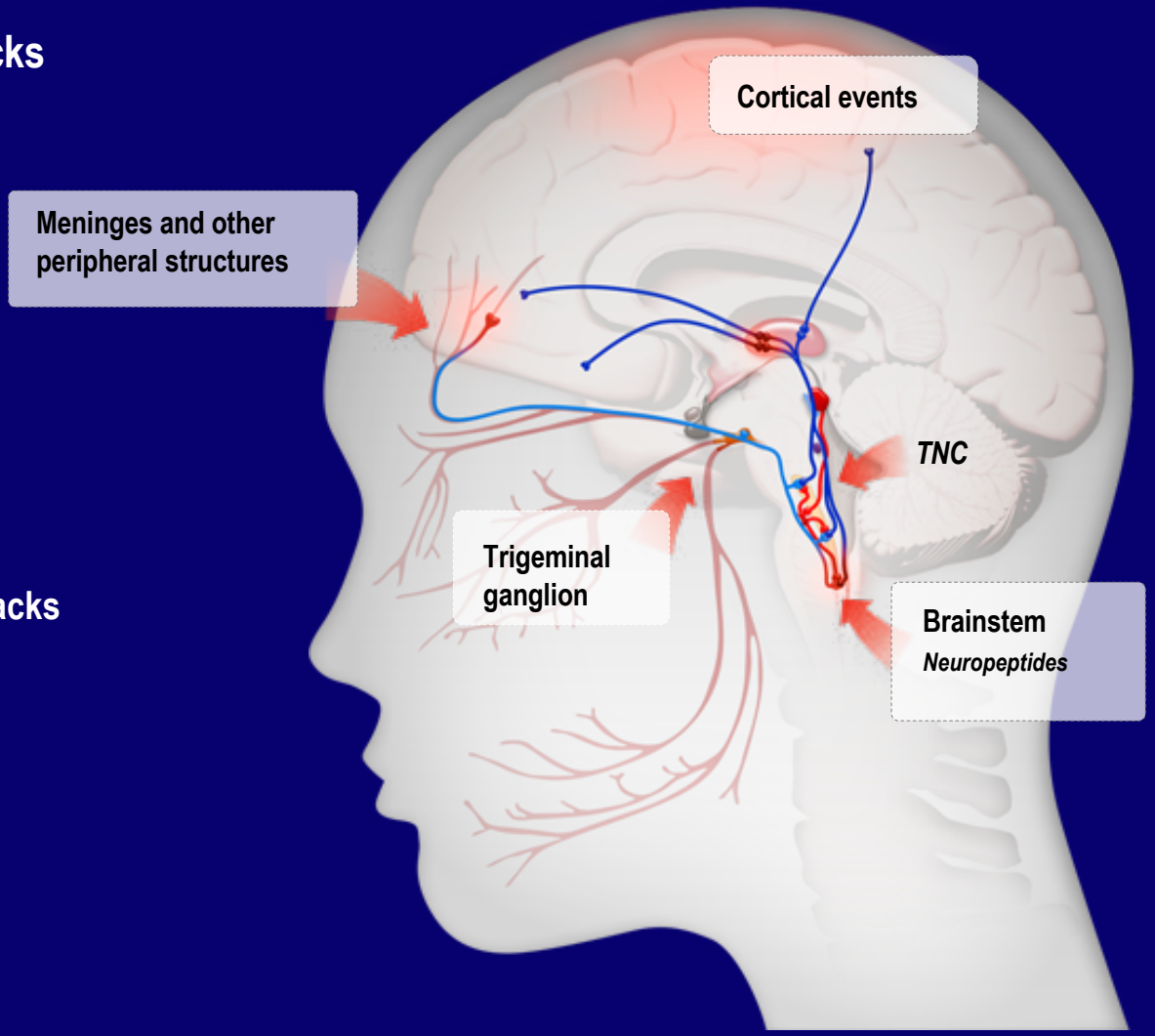
What Is Migraine?

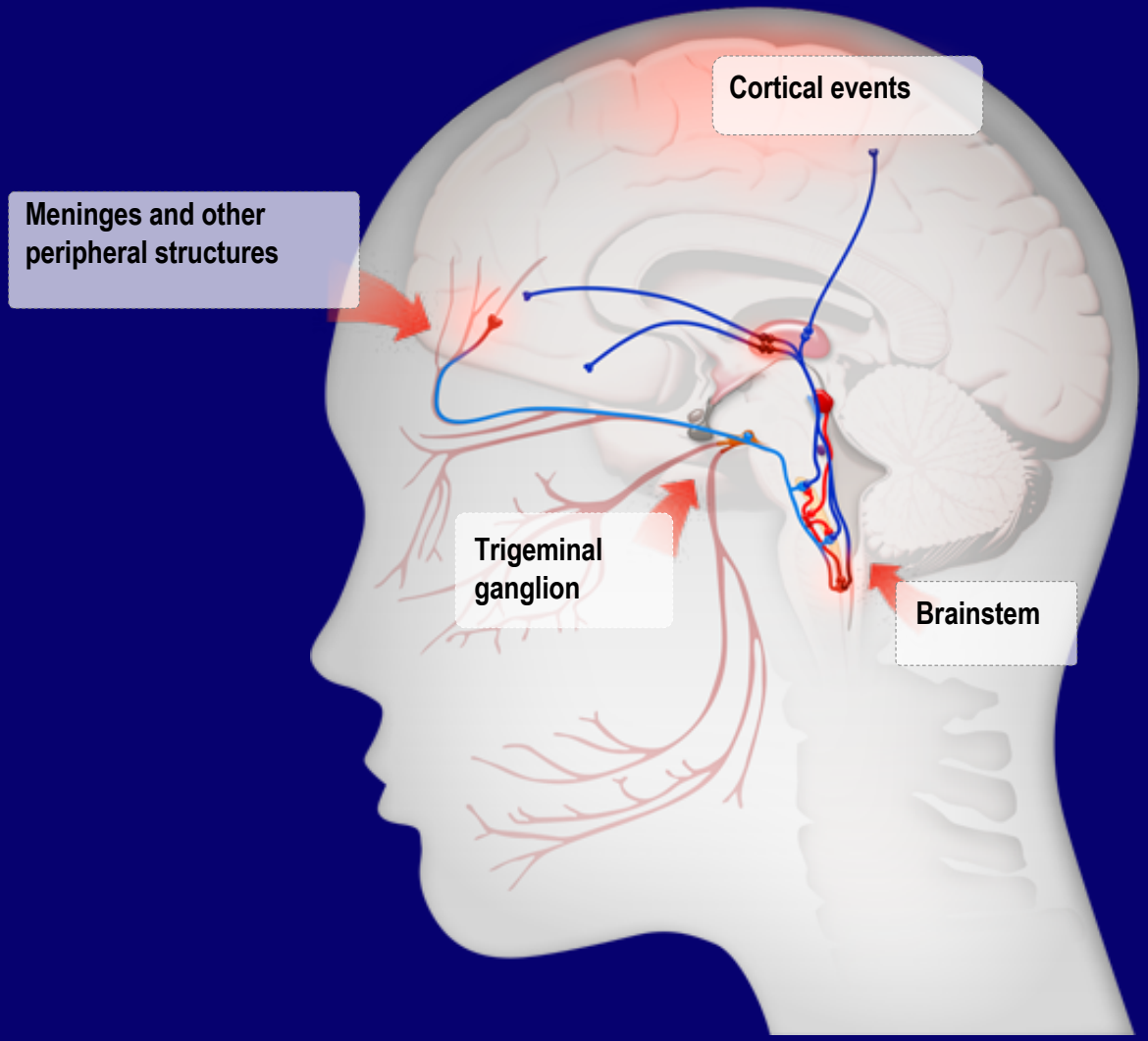
- A chronic disorder with episodic attacks
- Integrated mechanisms and complex pathophysiology
- During attacks
  - Headache
  - Several associated symptoms
  - Functional disability
- In-between attacks
  - Enduring predisposition to future attacks
  - Anticipatory anxiety
  - Changes in brain function, eg,
    - Lack of habituation
    - Reduced nociceptive threshold



TGS = trigeminal system; TNC = trigeminal nucleus candalis; Bigal ME et al. *Neurology*. 2008;71:848–855; Brandes JL. *Headache*. 2008;48:430–441; Coppola G et al. *Cephalalgia*. 2007;27:1429–1439; Goadsby PJ et al. *N Engl J Med*. 2002;346:257–270; Haut SR et al. *Lancet Neurol*. 2006;5:148–157; Lovati C et al. *Headache*. 2008;48:272–277; Pietrobon D. *Neuroscientist*. 2005;11:373–386.

Migraine Overview

- The lining of the brain (meninges) becomes inflammed and activate pain through the trigeminal system
- Central brain structures increase activity and contribute to associated symptoms of migraine
- Headache
- Photophobia / phonophobia
- Nausea

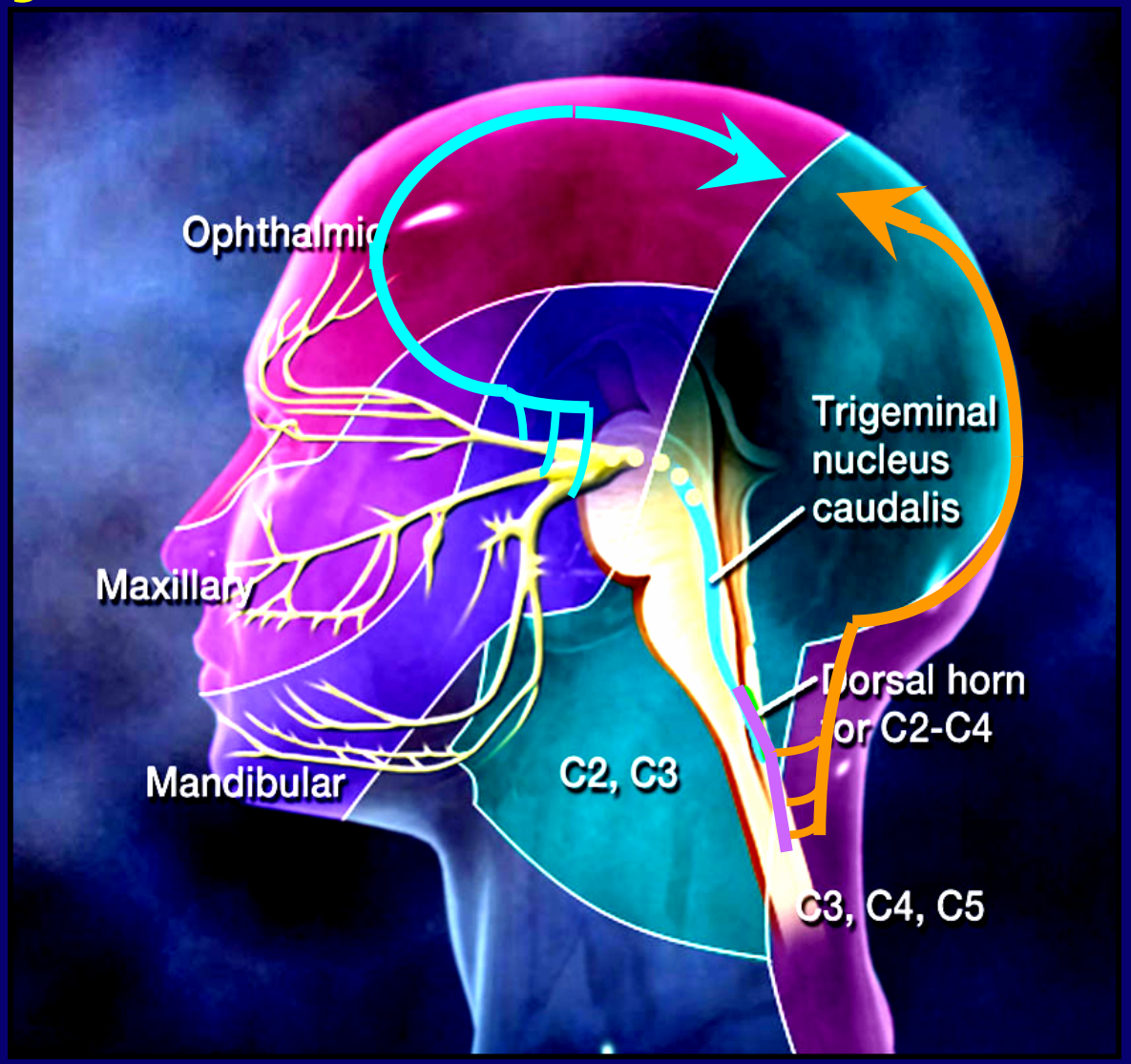


Trigeminal System in Headache

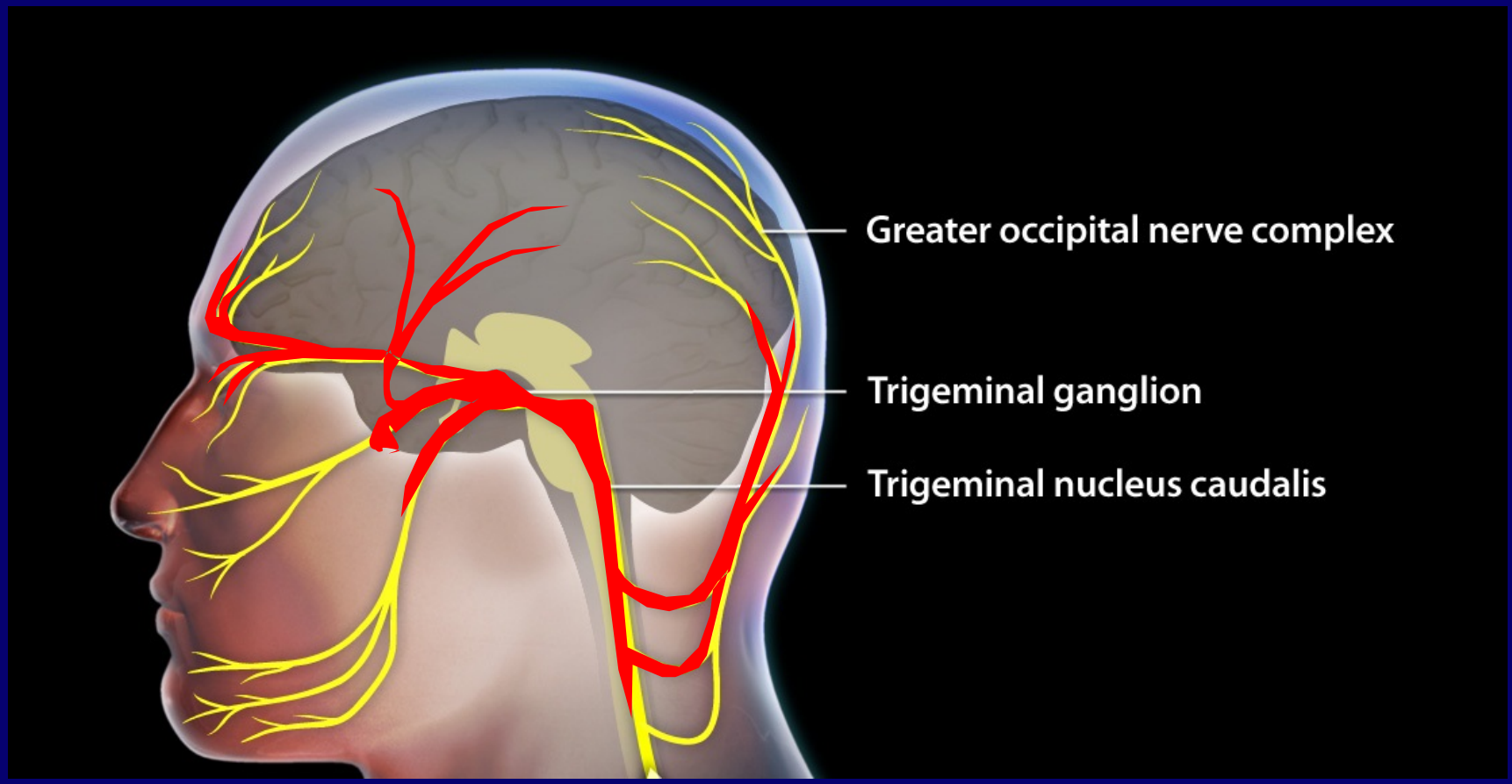
Meningeal Nerves
- First division of V1
- First division of V2
- First division of V3

Trigeminal Nucleus descends into neck

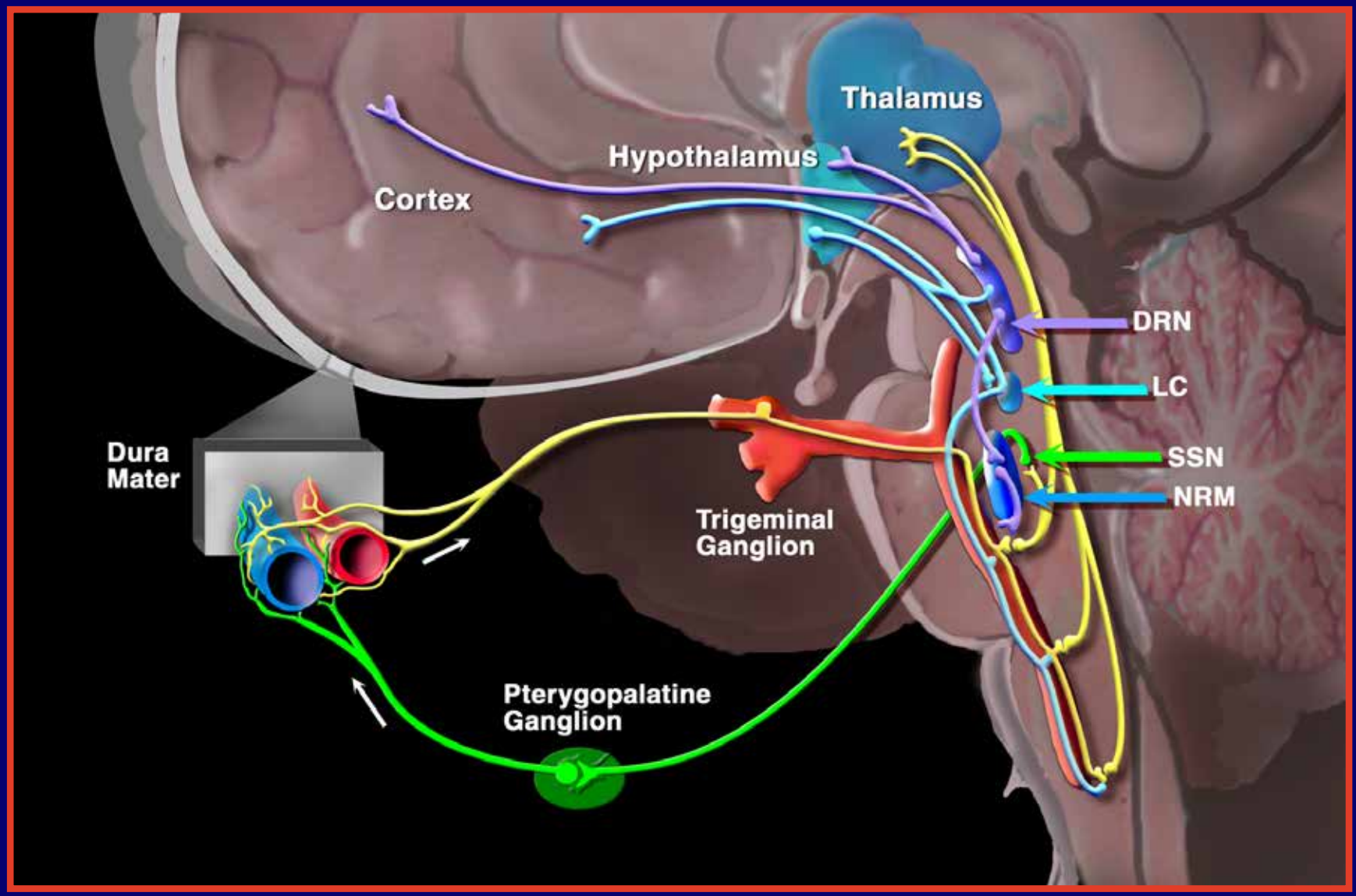
C2, C3, C4 form Greater Occipital Nerve complex



Trigeminal Nucleas Caudalis



Migraine Pathways



(Goadsby, 2000)

How you help makes a lasting impression

Migraine Management in Pregnancy

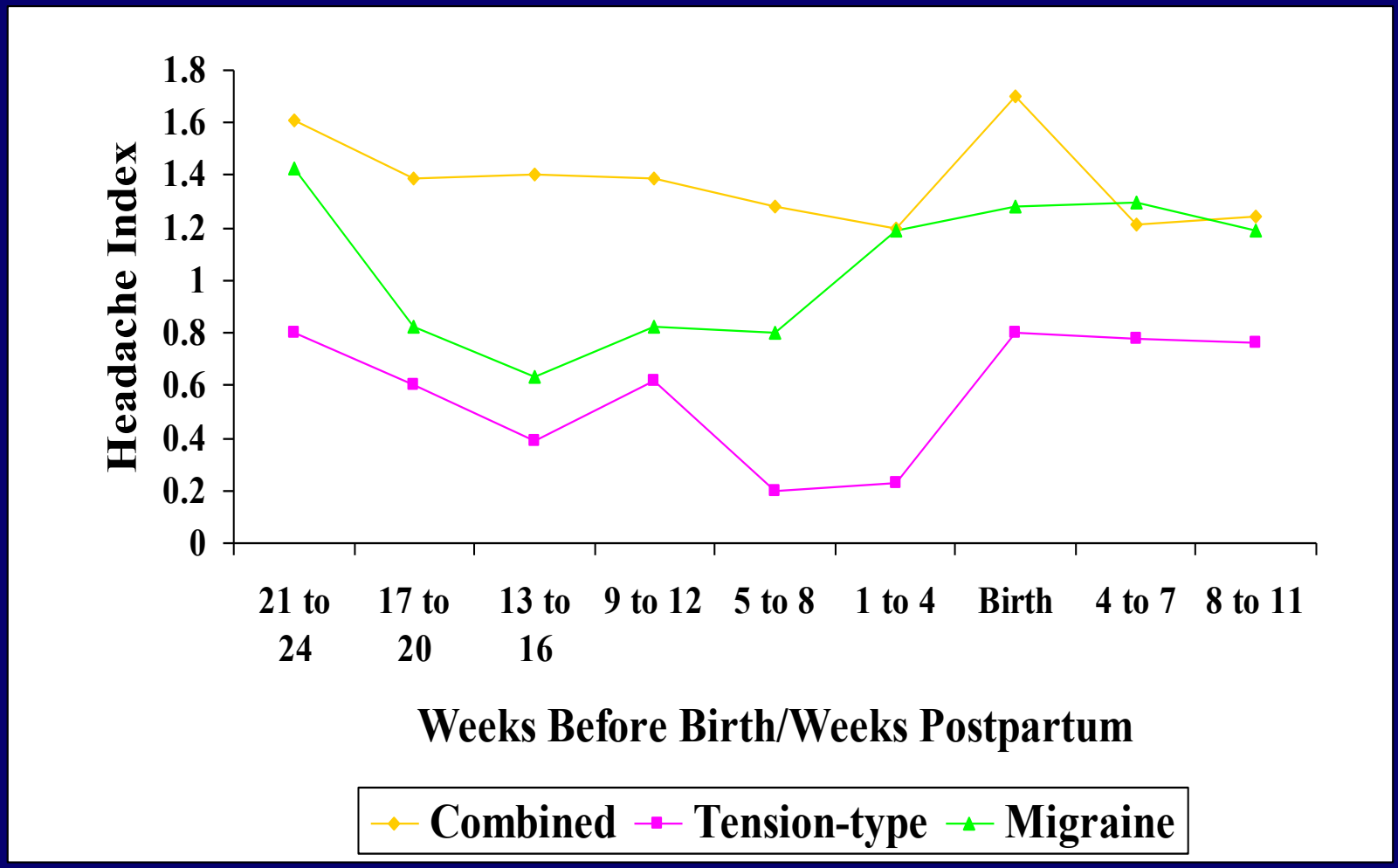
- Migraine affects 25% of the female population during childbearing years (18-49)
- 60-70% improve in the frequency of migraines (particularly in 2nd and 3rd trimesters)
- 4-8% of women worsen
- Approximately 10% of migraine cases start during pregnancy
- Pre-pregnancy headache pattern returns almost immediately postpartum
- 50% of pregnancies unplanned so inadvertent fetal exposure to medications likely

Aube M. Neurology. 1999;53(S1):S26-S28.
Silberstein SD. Neurologic Clinics. 1997;15(1):209-231.
Lipton, et al. Headache. 2000;41:646-657.

The Pregnant Migraineur

- A symptom-producing event
- Incidence of migraine in pregnancy is unknown
- Retrospective data showed 60% improvement during pregnancy
  - did not distinguish diagnostic categories
- Marcus study
  - patients with more frequent headaches may not improve during pregnancy

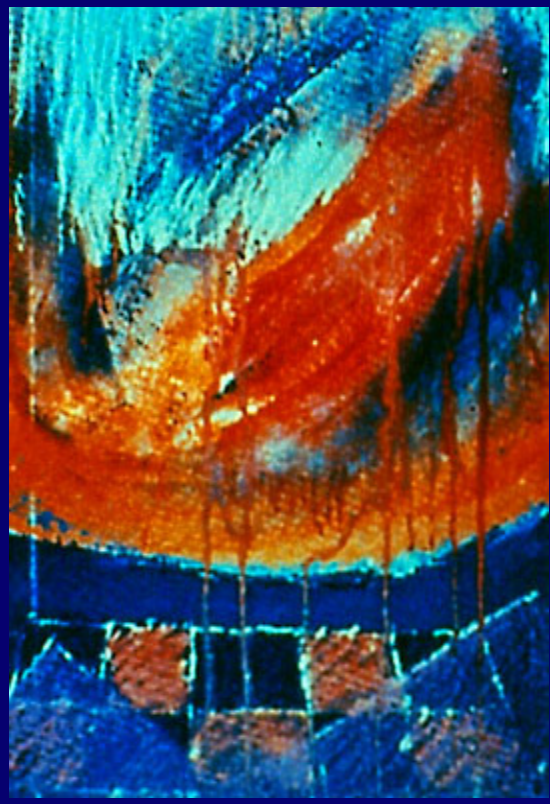
Headache Changes by Diagnosis



Scharff L, Marcus D, Turk D. Headache During Pregnancy and in the Postpartum: A Prospective Study *Headache* 1997; 37:203-210.

Impact of Pregnancy on Migraine

- 60-70% improvement in the frequency of migraines, particularly in the 2nd and 3rd trimesters
- 4-8% of women experience worsening of symptoms
- Approximately 10% of migraine cases start during pregnancy
- Pre-pregnancy headache pattern returns almost immediately postpartum
- Independent of migraine type



Aube M. Neurology 1999; 53(S1):S26-S28.

Impact of Migraine on Pregnancy

- No evidence of altered fertility rates
- No increased incidences of toxemia, abnormal labor, miscarriage, congenital malformations, or stillbirths were reported in a study comparing 777 migraineurs versus 182 non-migraineur controls

Aube M. Neurology 1999; 53(S1):S26-S28.

Silberstein SD. Neurologic Clinics 1997;15 (1): 209 -231

Migraine and Pregnancy

- 50 % to 85% of migraine patients report an improvement in headache during early pregnancy, particularly when[1]
  - Migraine is not accompanied by an aura
  - Migraine began at menarche
  - Migraine is related to menses
- Women with ongoing headache at the end of the first trimester are unlikely to experience further reduction of headache[2]
- Migraine headache generally recur soon after delivery[1]

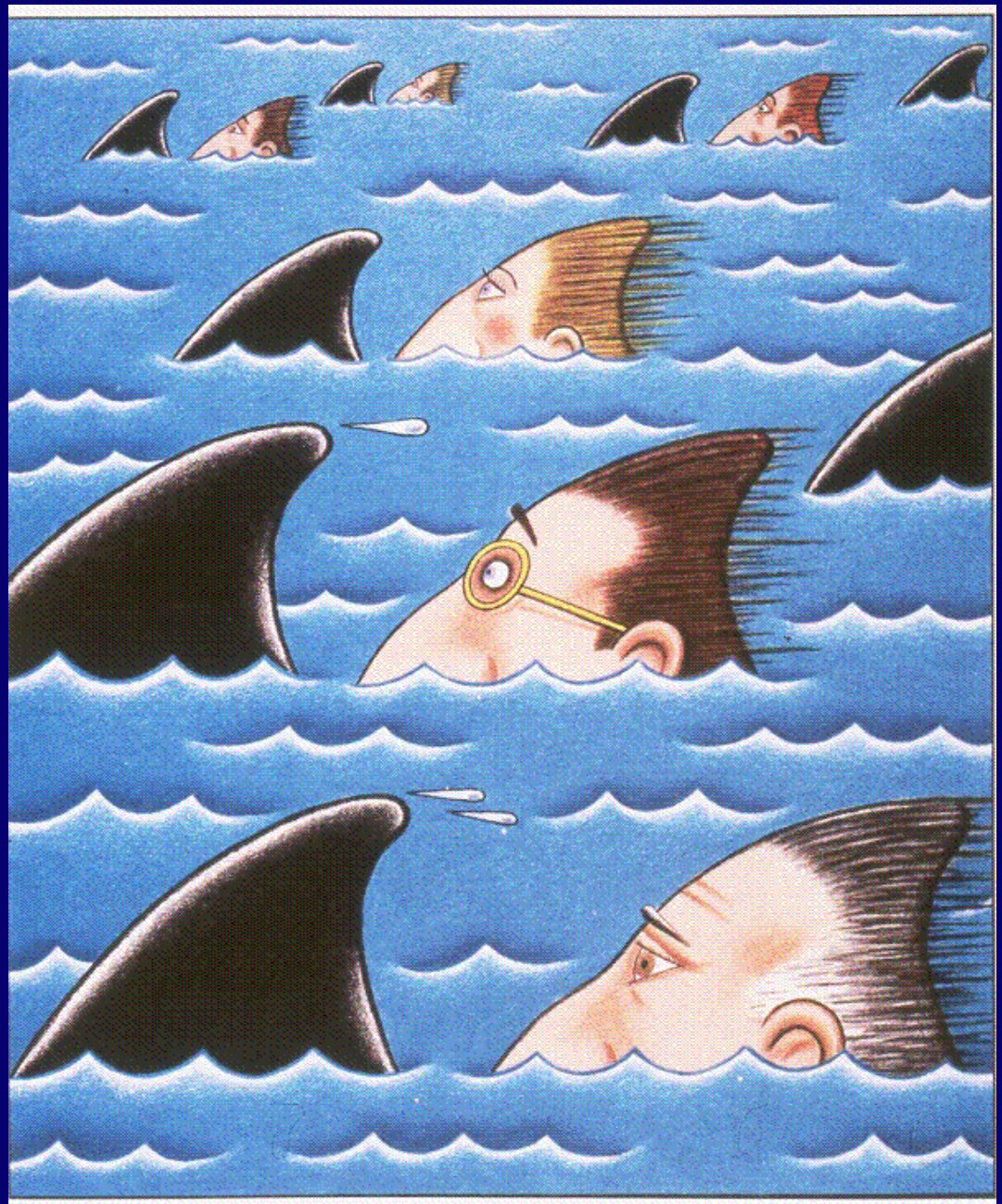
1. Brandes JL et al. Migraine in Women. BC Decker Inc; 2004.
2. Marcus DA et al. Headache. 1999; 39: 625-632.

Maternal Use of Medications

- Pregnancy is a symptom-producing event
- Drug consumption during pregnancy is increased
- WHO study of 14,778 women
  - 86% took prescription drugs during pregnancy
    - 73% from their obstetrician
    - Did not include over-the-counter medications
- 50% of pregnancies are unplanned

WHO

"Drugs may be considered safe in pregnancy if they have not been proven dangerous."



Lawyers riding to work


cvs/ harmacy
STOP

Medications In Pregnancy

- 10% of congenital abnormalities are thought to be due to environmental exposures
- Retrospective study from 8 HMO's 60% of women were prescribed a medication during pregnancy
- Use of OTC's may even be higher

Cragen J, Matern Child Health J.2006 Sept:10 (Supple7) 129-135

Migraine Treatment During Pregnancy

For the most disabled migraineur and chronic daily headache patient, a 9-month vacation from medical therapy may not be indicated.

- Risk/Benefit
  - Most will self-medicate
  - Dehydration
  - Exacerbation of comorbid disorders
  - Addiction (maternal/fetal)
- Safety

Nonpharmacological Options

- Rest
- Biofeedback
- Ice/Heat
- Massage
- Avoidance of trigger
- Exercise
- Folate

FDA Pregnancy Categories

Pregnancy Category	*Description*
A	Controlled human studies show no risk
B	Controlled studies show no evidence of risk in humans, despite adverse findings in animals. Chance of fetal harm is remote but remains a possibility.
C	Risk to humans cannot be ruled out. Adequate well controlled human studies are lacking, and animal studies that have shown risk to the fetus or mother are lacking as well.
D	Positive evidence of risk to humans from human studies or post-marketing data.
X	Contraindicated

Preventive Treatments

Pregnancy Category	*Medication*
B	Metoprolol Some SSRIs (fluoxetine, sertraline)
C	Other beta blockers and SSRIs Calcium channel blockers Topiramate, gabapentin Some tricyclics (protriptyline, doxepin)
D	Other tricyclics (amitriptyline, nortriptyline) Divalproex sodium

Acute Treatments

Pregnancy Category	*Medication*
B	Acetaminophen Caffeine NSAIDs (after implantation and before 32 weeks) Codeine (hydrocodone, oxycodone) Butorphanol Metoclopramide
C	Aspirin Butalbital Codeine (hydrocodone, oxycodone) Isometheptene mucate Phenothiazines Triptans
X	Ergots

Treatment of Migraine in Pregnancy

- Caffeine
  - FDA category: C
  - High doses may be associated with infertility, spontaneous abortion, or low birth weight

Silberstein SD. Neurologic Clinics 1997;15(1):209-31.
Physician Desk Reference, 2002
Silberstein SD, Lipton RB, Goadsby PJ. Headache in Clinical Practice. 2nd Ed. New York, NY: Martin Dunitz; 2002: 257-267

Sumatriptan / Naratriptan Pregnancy Registry

- ***Sumatriptan:*** **Risk of birth defects for first trimester exposure 4.3% (95% CI 2.5-7.1%) [1]**
- ***Naratriptan:*** **Sample size insufficient to calculate a risk [1]**
- **Risk for general population 2-5% [2]**
- **Risk for migraineurs reported in literature 3.4% vs. 4.0% for controls [3]**

[1] Registry Interim Report (1 Jan 1996 through 30 April 2005)
[2] CDC unpublished data
[3] Wainscott et al. 1978

Emergency Migraine Interventions

- Fluid resuscitation
- Pain control
  - -IV metoclopramide
  - -IV diphenhydramine
  - -IV opioid
  - -IV MgSO4
  - -Consider occipital nerve blocks
- If recurrent frequent episodes consider prophylaxis and more aggressive management

Contraindicated for Use in Pregnancy

(§)

- Ergotamine
- Phenytoin
- Valproic Acid
- Lithium Carbonate

Physician's Desk Reference, 2002

Treatment of Migraine in Pregnancy

(§)

- Acetaminophen
  - FDA category: B
  - No evidence of teratogenicity[1]
  - Transient adverse effects on uterus and on platelet function

Physician Desk Reference, 2002

[1]TERIS rating

Silberstein SD. *Neurologic Clinics* 1997;15(1):209-31.

Use of OTC Pain Medication in Pregnancy

Drug Name	FDA Pregnancy risk classification by trimester (1st, 2nd, 3rd)	Drug Class	Crosses Placenta?	Use in Pregnancy
Acetaminophen (Tylenol)	B/B/B	Non-narcotic analgesic/antipyretic	Yes	Pain reliever of choice
Aspirin	D/D/D	Salicylate analgesic/antipyretic	Yes	Not recommended except for specific indications*
Ibuprofen (Advil, Motrin)	B/B/D	NSAID analgesic	Yes	Use with caution; avoid in third trimester†
Ketoprofen (Drudis)	B/B/D	NSAID analgesic	Yes	Use with caution; avoid in third trimester†
Naproxen (Aleve)	B/B/D	NSAID analgesic	Yes	Use with caution; avoid in third trimester†

OTC = over-the-counter; FDA = U.S. Food and Drug Administration; NSAID = nonsteroidal anti-inflammatory drug.

**--Associated with increased perinatal mortality, neonatal hemorrhage, decreased birth weight, prolonged gestation and labor, and possible teratogenicity.*

†*--Associated with oligohydramnios, premature closure of the fetal ductus arteriosus with subsequent persistent pulmonary hypertension of the newborn, fetal nephrotoxicity, and periventricular hemorrhage.*[6]

Information from Collins E. Maternal and fetal effects of acetaminophen and salicylates in pregnancy. Obstet Gynecol 1981;58(5 Suppl):57S-62S, and Macones GA,

OTC Decongestants, Expectorants, and Nonselective Antihistamines in Pregnancy

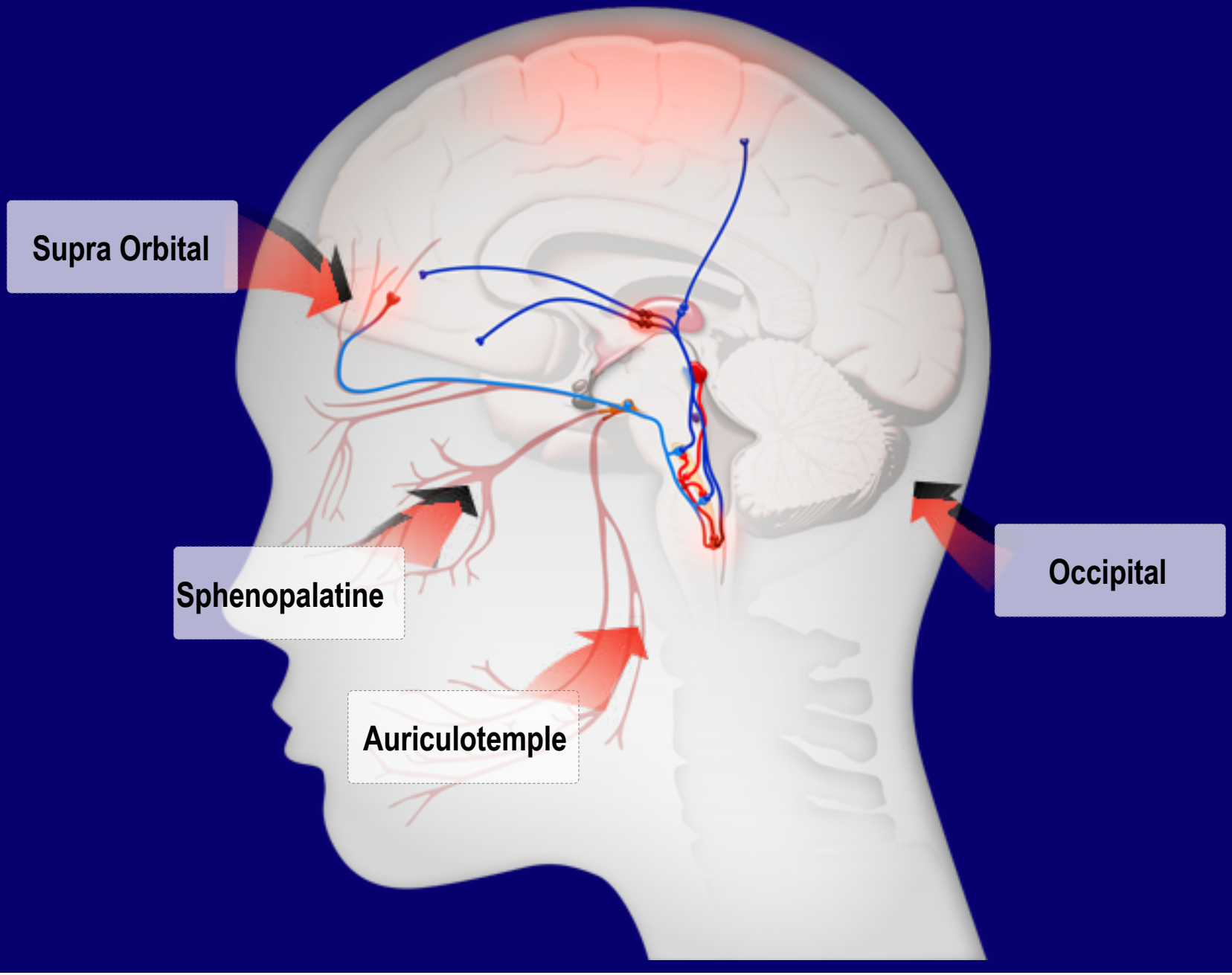
Drug Name	FDA pregnancy risk classification	Drug class	Crosses placenta ?	Use in Pregnancy
Chlorpheniramine (Chlor-Trimetron)	B	Antihistamine	Not known	Antihistamine of choice
Pseudoephedrine hydrochloride (Novafed)	B	Sympathomimetic decongestant	Not known	Oral decongestant of choice, possible association with gastrochisis
Guaifenesin (Humibid L.A.)	C	Expectorant	Not known	May be unsafe in first trimester*
Dextromethorphan hydrobromide (Benylin DM)	C	Nan-narcotic antitussive	Not known	Appears to be safe in pregnancy
Diphenhydramine (Benadryl)	B	Antihistamine/ antiemetic	Yes	Possible oxytocin-like effects at high dosages
Clemastine furnarate (Tavist)	B	Antihistamine	Not known	Unknown safety profile

OTC = over-the-counter; FDA = U.S. Food and Drug Administration.

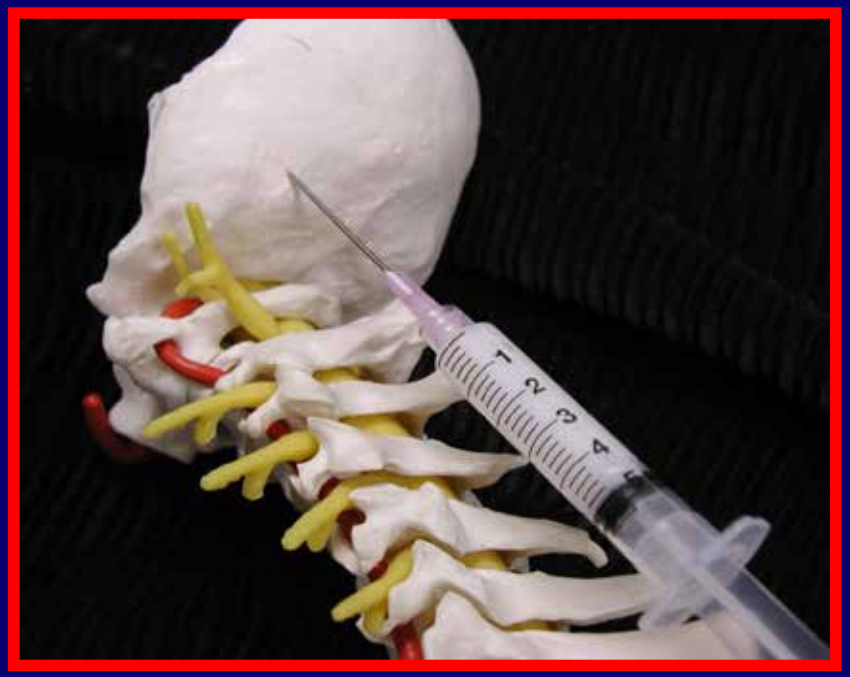
**--Possible increased risk of neural tube defects.*

Information from Werler MM, Mitchell AA, Shapiro S. First trimester maternal medication use in relation to gastroschisis. Teratology 1992;45:361-7, and The use of newer asthma and allergy medications during pregnancy. The American College of Obstetricians and Gynecologists (ACOG) and the American College of Allergy, Asthma, and Immunology (ACAAI). Ann Allergy Asthma Immunol 2000;84:475-80.

Nerve Block Locations



Occipital Nerve Block



- Peripheral anesthetic blockade of the greater occipital nerve
- May end Cluster Cycle
- Effective for intractable migraine
  - Especially unilateral location
- [illegible]erve
  [illegible]it

Very safe procedure

- Not near brain
- Not near cervical cord
- Not near important vasculature

Occipital Nerve Block Supplies

- Consent for procedure
- 5cc syringe
- 18 gauge needle to draw
- 27 gauge 1½” needle to inject

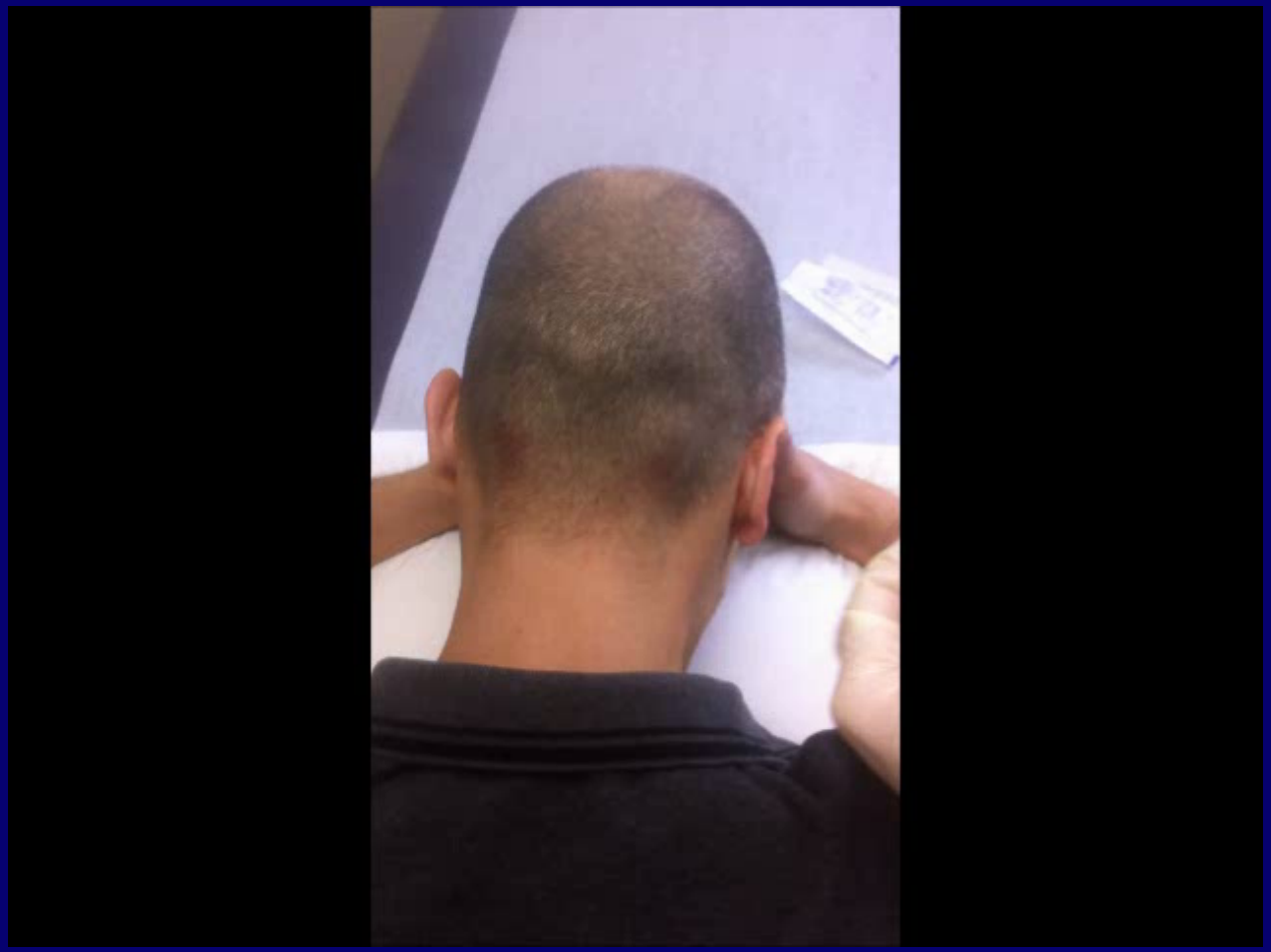
- Typical injection
  - lidocaine 2% without epinephrine – 2cc
  - Bupivacaine 0.25% - 2cc
  - Kenalog 40mg - 1 cc

Occipital Nerve Block Procedure

- Position patient in chair, chin to chest
- Palpate occipital nerve area for focal tenderness
  - 2/3 distance from occipital protuberance to mastoid
- Prep with alcohol pad or betadyne

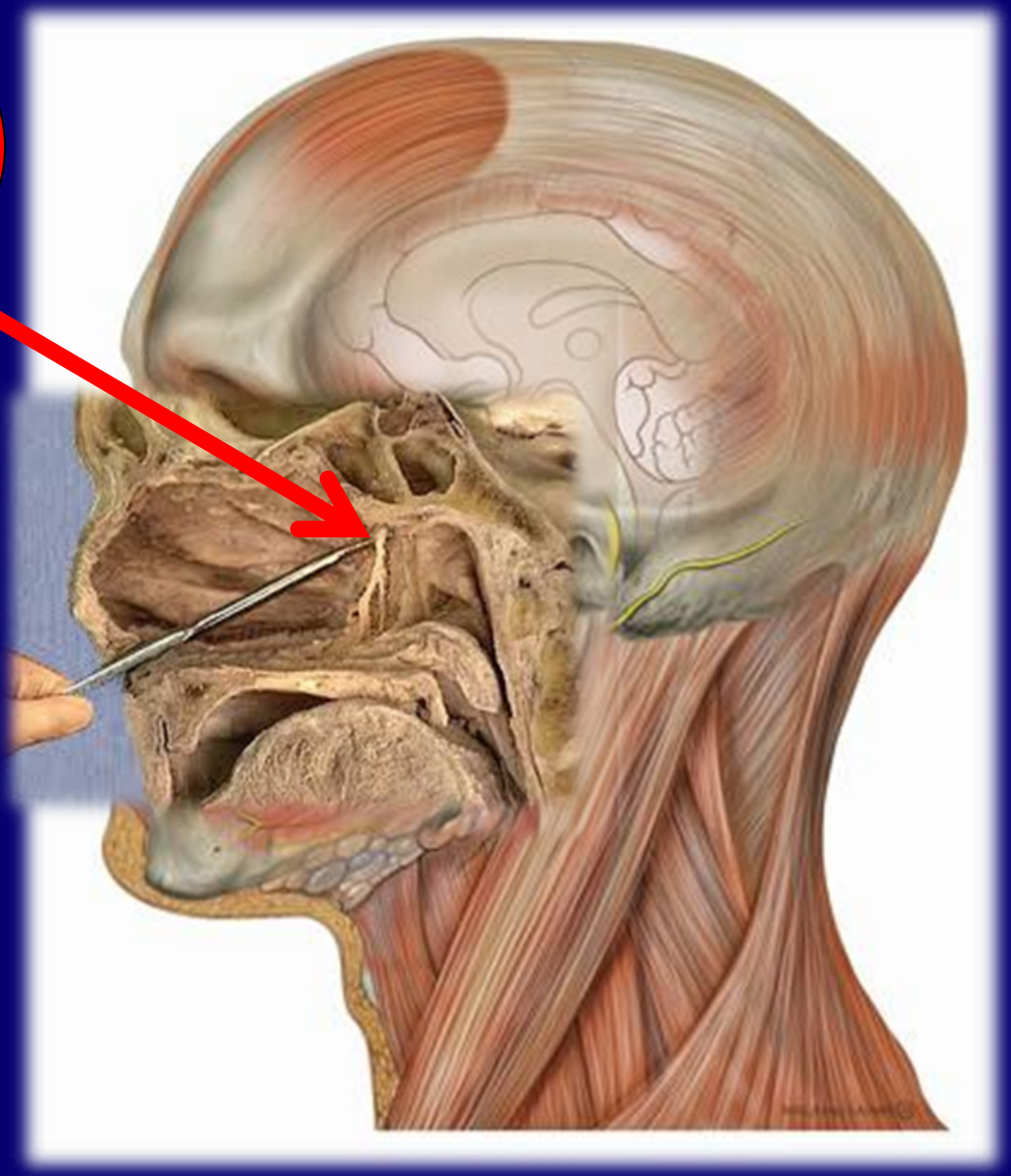
- Place needle with ceph
  - Aspirate for blood (if rec
- Inject
- Patient seated or supin
  - Observe for vasovagal s
- Sensory test occipital s

Occipital Nerve Block

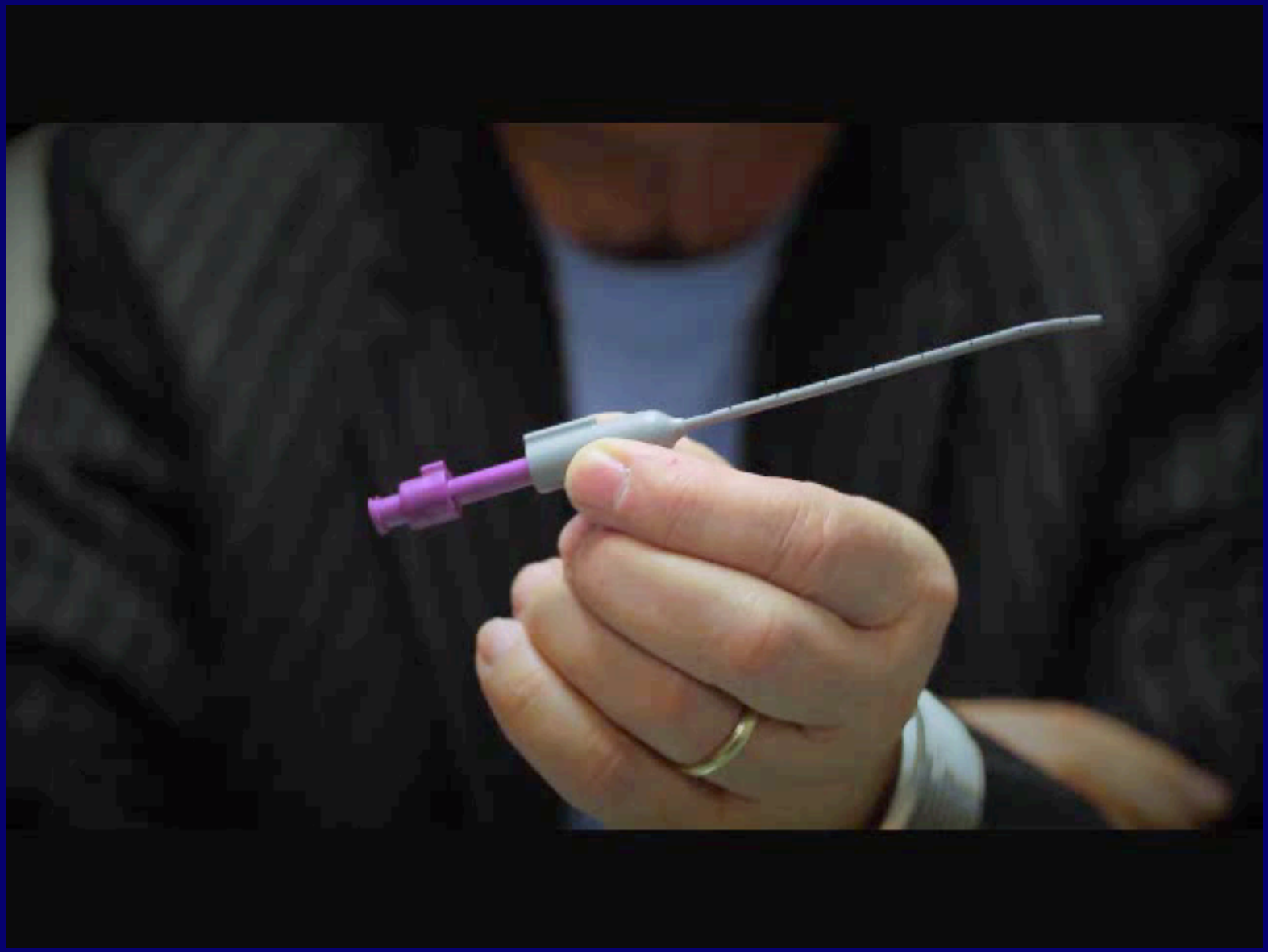


Supra Orbital Nerve Block

Sphenopalatine Ganglion



Intranasal SPG Block



Summary

Migraine is common in pregnancy
- Typically improves

Judicious use of treatments
- Acetaminophen / metoclopramide
- Sumatriptan?

Consider nerve blocks
- Occipital nerve block
- Sphenopalatine ganglion block