Special Patient Care

Rounds 3A-1

Emily Schuler, Anthony Garcia, Jake Dibbet, Mariama Price

October 7th, 2020

Rounds Team

- Group Leader: Dr. Grady
- Specialty Leader: Dr. Domagala
- Project Team Leader: Emily Schuler
- Project Team Participants:

  - D3: Anthony Garcia
  - D2: Jake Dibbet
  - D1: Mariama Price

Patient:

- 57 year-old African American Male
- Presents with caretaker / sister
- Gives own consent

Medical History

- **Medications** - Fluoxetine (Prozac), Lamotrigine (Lamictal), Levetiracem (Keppra), Amlodipine (Norvasc)
- **Allergies** - NKDA
- **Additional medical concerns** - **traumatic brain injury** (20+ years ago), **seizures** (10+ years), petit mal in 2016, grand mal seizure in 2010, **hypertension**, **vision** problems, past **tobacco** smoker.

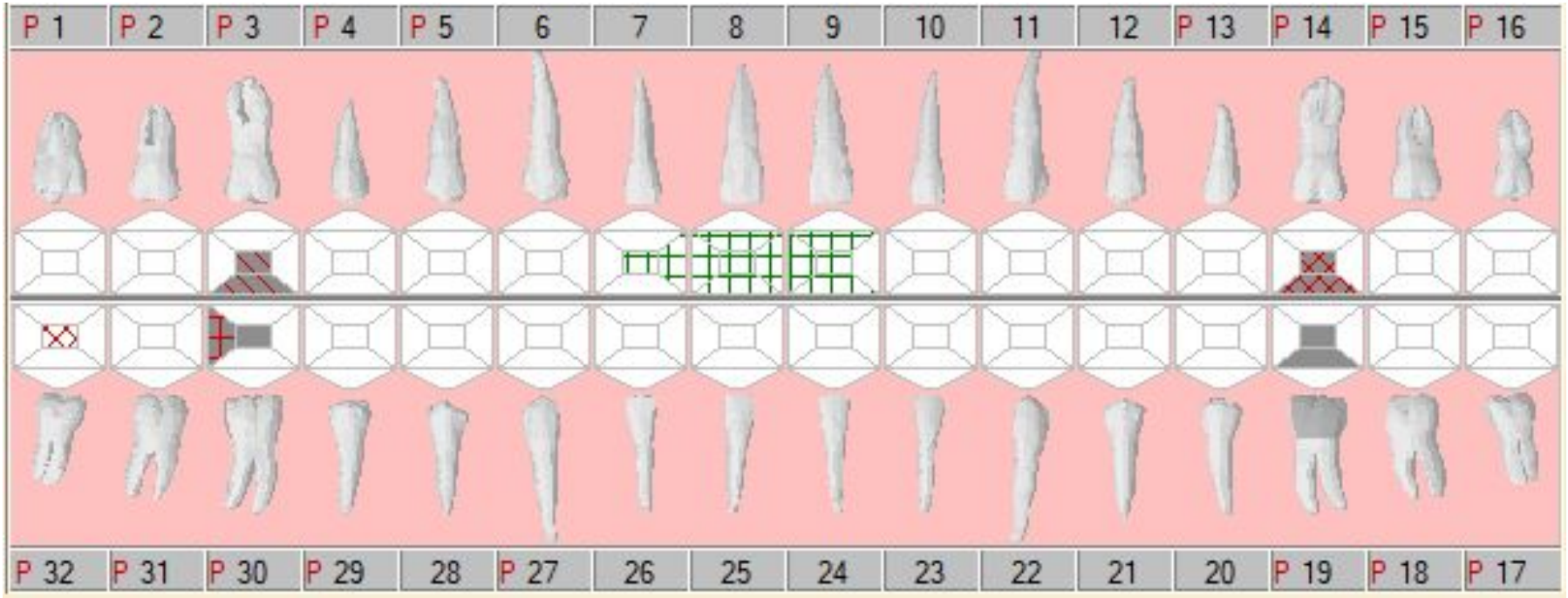
Dental History

- LV to DDS prior to MUSoD was in 2017 in Racine
- Hx of amalgam restorations, no concerns w/ past dental visits
- Caries Risk Assessment: medium
- Oral Cancer Risk Assessment: high
- Home care:
    - Caretaker / sister helps with OH

Problem List

- Caries
- Crowding
- Defective restoration
- Fractured teeth
- Home care

Dental History



Panoramic

Posterior Bite Wings

Anterior PAs

Radiographic Findings

- No missing teeth (note third molars present)
- Some bone loss, but not excessive
- Subgingival calculus
- Fractured #7-9
- Lower anterior crowding
- RL associated w/ #8

Clinical Photos

Clinical Findings

- Extra oral exam findings: Nontender submucosal swelling on left sternocleidomastoid muscle
- Soft tissue findings: bilateral linea alba, bilateral mandibular tori
- Minimal Caries (recurrent decay on #14, #30)
- Probing at sites #7-10 all < 3mm.
- Traumatic occlusion on anterior teeth- nearly end-to-end, crowding

Specific Findings

Endo testing completed on anterior teeth:

	Caries	Cold	Percussion	Palpation	EPT	
#6	(-)	(7s)	(-)	(-)		*as comparison
#7	(-)	(6s)	(-)	(-)		
#8	(-)	(NR)	(+)	(-)		24 - pt didn't respond to EPT
#9	(-)	(3s)	(-)	(+)		8 - pt respond to EPT
#10	(-)	(7s)	(-)	(-)		*as comparison

Periodontal Charting

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													B B B			BOP
																PLAQUE
																FURCA
																MOBILITY

Diagnosis

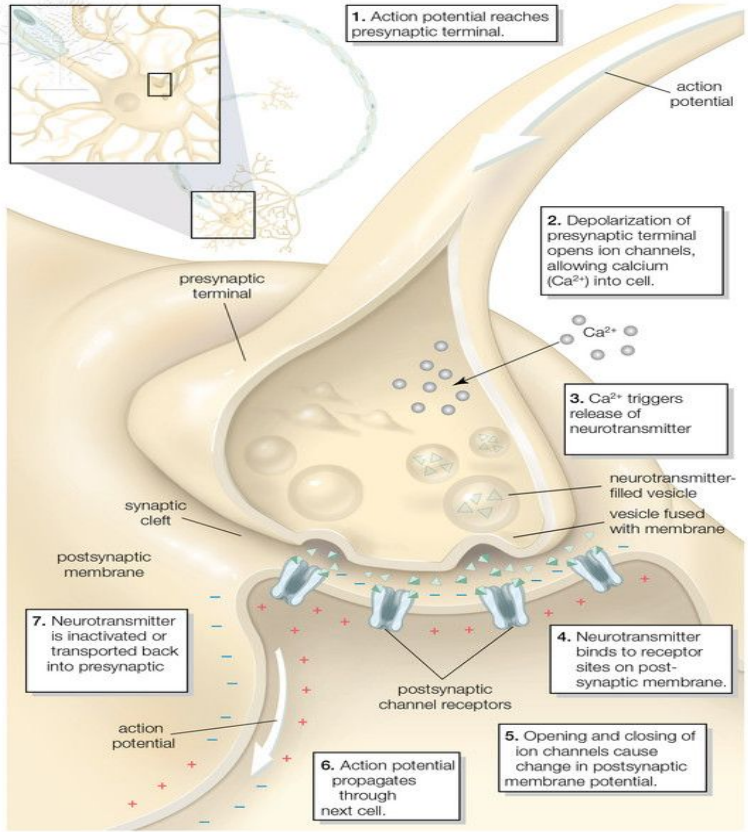
- **Periodontitis** Stage II, Grade B
- #7: normal pulp, normal apical tissues
- #8: inconclusive
- #9: normal pulp, normal apical tissues

Recommendations made to patient and caretaker...

D1 Basic Science

What makes up a neuron and how does it transmit signals in the brain?

Neurons and brain signal transmission



https://content.byui.edu/file/a236934c-3c60-4fe9-90aa-d343b3e3a640/1/module6/readings/neuron_pysiology.html

References

- Lodish H, Berk A, Zipursky SL, et al. Molecular Cell Biology. 4th edition. New York: W. H. Freeman; 2000. Section 21.1, Overview of Neuron Structure and Function.

D2 Pathology

What is Traumatic Brain Injury?

Traumatic Brain Injury

- **“Alteration in brain function, or other evidence of brain pathology, caused by an external force”**
- **Many symptoms**
- **Must involve head trauma**
- **Long-term effects**

Traumatic Brain Injury

- **Dental Effects**
  - **Behavior**
  - **Positioning difficulties**
  - **Medications**

References

- Dental.washington.edu. 2011. *Oral Health Fact Sheet For Dental Professionals- Adults With Traumatic Brain Injury*. [online] Available at: <http://dental.washington.edu/wp-content/media/sp_need_pdfs/TBI-Adult.pdf> [Accessed 30 September 2020].
- Menon, D., Schwab, K., Wright, D. and Maas, A., 2010. Position Statement: Definition of Traumatic Brain Injury. *Archives of Physical Medicine and Rehabilitation*, 91(11), pp.1637-1640.

D3 PICO Question

In Patients with TBI, how do traditional dental treatment strategies change to appropriately manage the care of the patient?

Clinical Bottom Line

- Every TBI patient is different; case by case treatment
- Traditional dental practices are not always used
- Oral trauma can result from seizures
- Often treatment options are limited due to a change in occlusion
- Caregivers play a large role in the dental (and overall) health of the patient

Search Background

- **Date(s) of Search:** 9/26
- **Database(s) Used:** PubMed, Cochrane Library of Systematic Reviews
- **Search Strategy/Keywords:** Traumatic Brain Injury, TBI Dental Considerations, TBI Treatment Strategies
- **MESH terms used:** Brain Damage, Oral Hygiene, Dental Caries, Brain Injury

Article 1: Oral Hygiene following traumatic brain injury: A program to promote dental health

- Study design / methods: RCT
- Nathan D. Zasler, Catherine W. Devany, Amy L. Jarman, Richard Friedman & Ann Dinius(1993) Oral hygiene following traumatic brain injury: A programme to promote dental health, Brain Injury, 7:4, 339-345,

Reasons for Article Selection:

- Directly related to topic
- Limited research available related to topic

Article 1 Results:

- 20 Patients with TBI
- 10 control group and 10 experimental group
- Changes in plaque index score when given oral hygiene instruction vs no oral hygiene instruction
- 5-6 weeks experimental group showed significant lower plaque index scores
- Patients with TBI can benefit from being given oral hygiene instruction during rehabilitation

Oral Hygiene

- Oral hygiene is vital to keeping the patient stable during recovery and for their dental health long term
- Need to determine the patient's own ability to perform daily hygiene
- OHI given to the caregiver is equally important as OHI given to the patient

Article 2: “Oral Fact Sheet for Adults with Traumatic Brain Injury”

- Study design / methods: Fact Sheet

Article 2 Selection:

- Directly Related to Topic
- Discusses Tx planning and patient management
- Limited scientific research about topic

Article 2 Conclusions:

- 8-9% lifetime prevalence among adults
- TBI is a contributing factor to nearly a ⅓ of all injury related deaths
- Functional changes can affect thinking, language, learning, emotions, behavior, and sensation
- Seizures are a common complication of TBI
- Oral Manifestations: Oral trauma, bruxism, GERD, inadequate oral hygiene due to cognitive impairments, spasticity, and ataxia

Common Medications For TBI Cause Dental Side Effects

SYMPTOM	MEDICATION	SIDE EFFECTS
Aggressive Behaviors	**Anti-psychotics**	
	Olanzapine (Zyprexa) *Risperidone* (Risperdal) *Paliperidone* (Invega)	Xerostomia, sialorrhea, dysphagia, dysgeusia, stomatitis, gingivitis, tongue edema, glossitis, discolored tongue, dyskinesia, dystonia, angioedema.
	Anticonvulsants	
	Carbamazepine (Tegretol) *Valproate* (Depakote, Depakene)	Xerostomia, stomatitis, glossitis, dysgeusia. Excessive bleeding may result when either medication is combined with aspirin or NSAIDS. Valproate – oral petechia.
	Lamotrigine (Lamictal)	Angioedema of mouth, lips, tongue or face; oral lesions, xerostomia, nausea, headache, blurred vision, double vision, Stevens-Johnson syndrome (uncommon, severe).

SYMPTOM	MEDICATION	SIDE EFFECTS
Depression Repetitive Behaviors	**SSRIs (Selective Serotonin Reuptake Inhibitor)** *Escitalopram* (Lexapro) *Fluoxetine* (Prozac) *Paroxetine* (Paxil) *Sertraline* (Zoloft)	Xerostomia, dysphagia, nausea, anxiety, dizziness, nervousness, headache, sweating, bruxism. Suicidal risk through age 24. Do not prescribe with MAOIs.
	SNRIs (Serotonin-Norepinephrine Reuptake Inhibitor) *Duloxetine* (Cymbalta) *Venlafaxine* (Effexor, Effexor XR)	Xerostomia, dysphagia, nausea, anxiety, dizziness, nervousness, headache, sweating, bruxism. Suicidal risk through age 24. Do not prescribe with MAOIs.
	Atypical antidepressants *Bupropion* (Wellbutrin)	Xerostomia, dysgeusia, stomatitis, gingivitis, glossitis, bruxism, dysphagia, angioedema. Suicidal risk through age 24. Corticosteroids may increase risk of CNS stimulating seizures.
	TCAs (Tricyclic Antidepressants) *Amitriptyline* (Elavil) *Desipramine* (Norpramin) *Imipramine* (Tofranil)	Xerostomia, dysgeusia, stomatitis, sialadentitis, tongue edema, discolored tongue. Suicidal risk through age 24. Local anesthetics with epinephrine may cause severe prolonged hypertension –

Medications Cont.

- Medications prescribed to our patient:
  - SSRI's (Fluoxetine): Xerostomia, Dysphagia, Headaches, Bruxism
  - Anti-Convulsant (Lamotrigine and Levetiracetam): angioedema of mouth, lips, or tongue, oral lesions, xerostomia
- Almost all medications prescribed for TBI can have side effects that affect oral health
- Medications can affect the appropriate treatment planning

Article 2 Conclusions Cont.

Patient Management:

- Plan a pre-appointment
- Determine if patient or caregiver is able to give informed consent
- Determine the level of impairment
- Explain procedures at the appropriate level of understanding
- Tell-show-do works

Article 2 Cont.

Dental Treatment:

- Do they need to replace missing / damaged teeth?
- Manage patient's emotional stress
- Know the protocol for managing a seizure
- Prescribe a mouth guard to help bruxism
- Dysphagia management: place patient in upright position to keep airway open

Article 3: Botulinum toxin injection for bruxism associated with brain injury

- Study design / methods: Case Report
- Kesikburun S, Alaca R, Aras B, Tuğcu I, Tan AK. Botulinum toxin injection for bruxism associated with brain injury: case report. J Rehabil Res Dev. 2014;51(4):661-4. doi: 10.1682/JRRD.2013.10.0218. PMID: 25144179.

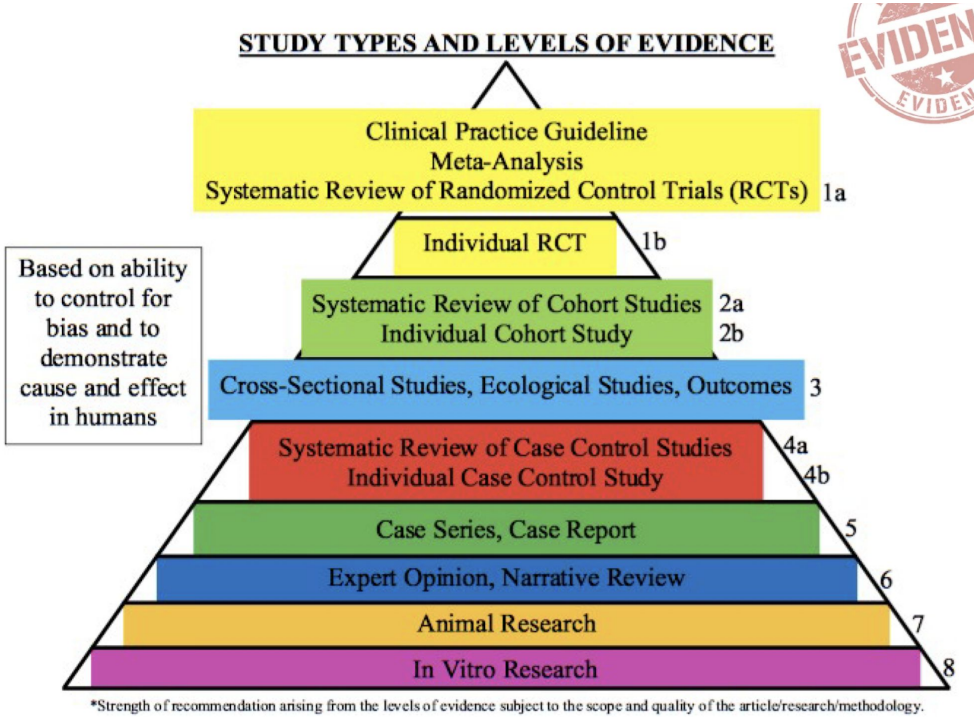
Article 3 Selection:

- Relevance
- Slight evidence of a successful treatment option
- Limited research available

Article 3 Results:

- Botulinum Toxin-A injected into the masseter (20 U) and temporalis (15U) muscles
- Initial decrease in bruxism noticed day 3
- Clinical improvement persisted 4 months post treatment
- Botulinum Toxin-A injection can be used as an effective treatment for bruxism associated with brain injury
- Long term prognosis for patients with TBI is not always known
- Botox provides an efficient way of keeping patients stable during recovery

Levels of Evidence



Article 1: Individual RCT

Article 2: Expert Opinion

Article 3: Case Report

How strong is our research?

☐	**A** – Consistent, good quality patient oriented evidence
☐	**B** – Inconsistent or limited quality patient oriented evidence
☐	**C** – Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Conclusions

- VERY limited amount of research on TBI and dental considerations
- Oral hygiene instruction is vital to patient's dental health
- Bruxism is very common among patients with TBI
- TBI medications greatly influence dental Tx
- Every patient is different and requires a unique approach to their dental Tx

Discussion Questions

- Is sedation dentistry a viable option for patients with brain trauma?
- What are the current guidelines for treating patients that have experienced a TBI?
- How long should elective dental treatment be deferred in a patient who experiences traumatic brain injury?
- Are electric toothbrushes safe to recommend for patients with history of TBI?
- What dental treatments are contraindicated for patients with TBI?
- Would someone with a TBI need more frequent oral health maintenance?

Discussion Questions

- Does epinephrine need to be limited when completing dental procedures that require local anesthetic on patients with a traumatic brain injury?
- What medications may a traumatic brain injury patient be taking that would be of concern in the dental setting?
- Are there certain types of traumatic brain injuries that would lead to more serious oral health complications than others?
- Are their pieces of armamentarium that should be avoided when operating on a patient with a traumatic brain injury?
- Are there any dental materials that are contraindicated for patients with TBI?
- How would dental procedures work in relation to damage to facial cranial nerves in TBI?