Rounds 3A-1

Special Patient Care

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** - **hypertension**, **seizures** (10+ years), petit mal in 2016, grand mal seizure in 2010, **traumatic brain injury** (20+ years ago), **vision** problems, past **tobacco** smoker.

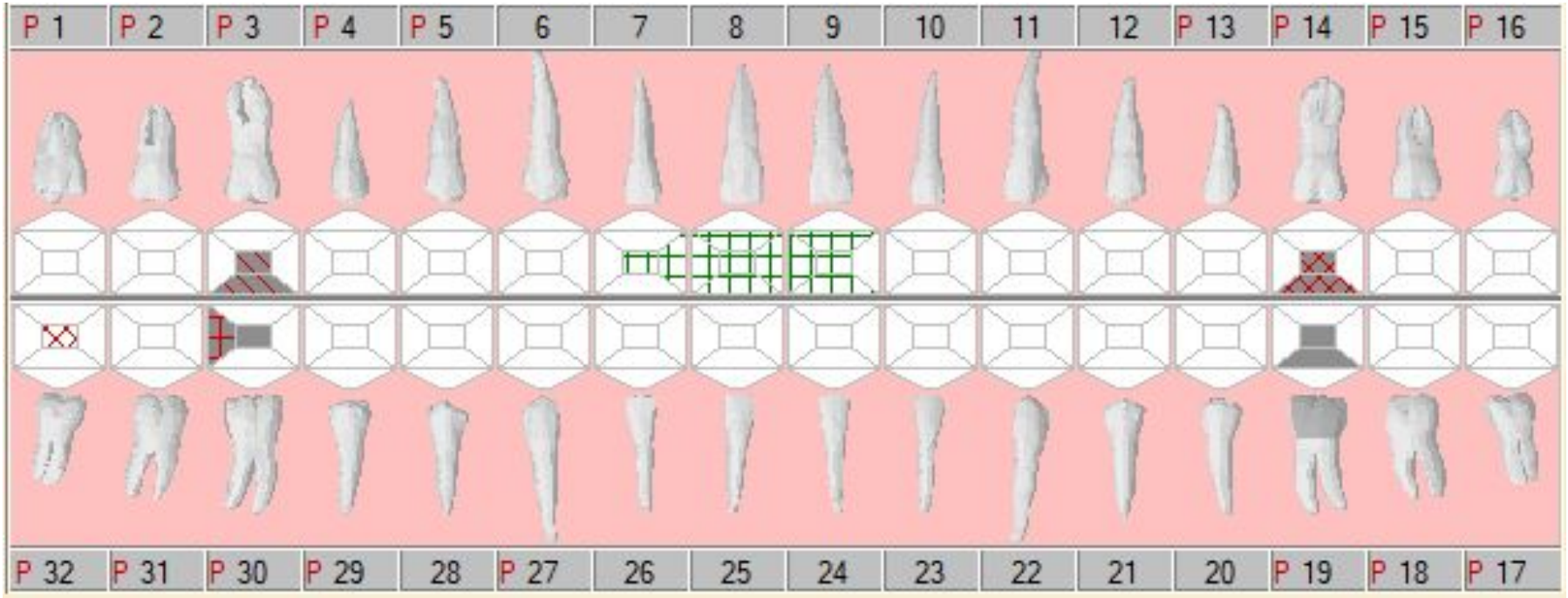
Dental History

- 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.

Specific Findings

- Endo testing:
  - #7:
  - #8:
  - #9:

Periodontal Charting

																MOBILITY
																FURCA
																PLAQUE
																BOP
3 3 3	3 3 3	2 2 2	4 4 4	5 5 5	4 4 4	4 4 4	4 4 4	4 4 4	3 3 3	4 4 4	4 4 4	3 3 3	3 3 3	4 4 4		MGJ
5 3 5	5 4 6	4 3 6	3 3 4	3 3 3	2 3 2	3 2 3	3 3 3	2 2 2	3 3 3	2 2 2	3 3 3	3 3 3	5 3 4	3 4 3	3 4 0	CAL
4 2 4	4 3 5	3 2 4	3 2 4	3 2 3	2 2 2	3 2 3	3 2 3	2 2 2	3 2 3	2 2 2	3 2 3	3 2 3	4 2 4	3 2 3	2 3	P.D.
1 1 1	1 1 1	1 1 2	0 1 0	0 1 0	0 1 0	0 0 0	0 1 0	0 0 0	0 1 0	0 0 0	0 1 0	0 1 0	1 1 0	0 2 0	1 1 0	FGM
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
0 0 0	0 0 0	0 1 0	0 0 0	0 0 0	0 0 0	-1-1-1	-1-1-1	-1 0 0	0 0 0	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	FGM
3 3 3	4 3 5	4 3 3	3 2 4	4 2 3	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	2 1 3	3 2 3	3 4 3	3 3 3	4 3 3	4 3 4	P.D.
3 3 3	4 3 5	4 4 3	3 2 4	4 2 3	3 2 3	2 1 2	2 1 2	2 2 3	3 2 3	3 2 4	4 3 4	4 5 4	4 4 4	5 4 4	5 4 5	CAL
																MGJ
	B B B	B B B							B B B		B B B	B B B				BOP
																PLAQUE
																FURCA
																PROGNOSI

																PROGNOSI
																FURCA
																PLAQUE
				B B B	B B B						B B B		B B B			BOP
	4 4 4	3 3 3	2 2 2	3 3 3	2 2 2	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	4 4 4	3 3 3	3 3 3	MGJ
	5 3 4	4 3 4	4 3 3	2 1 2	1 1 2	2 1 2	1 1 2	2 2 2	2 2 2	1 1 2	3 3 3	3 3 3	4 3 4	5 4 5	5 4 4	CAL
	5 3 4	4 3 4	4 3 4	3 2 3	2 2 3	3 2 3	2 2 3	3 3 3	3 3 3	2 2 3	3 3 3	3 3 3	4 3 4	4 3 4	4 3 3	P.D.
	0 0 0	0 0 0	0 0 -1	-1-1-1	-1-1-1	-1-1-1	-1-1-1	-1-1-1	-1-1-1	-1-1-1	0 0 0	0 0 0	0 0 0	1 1 1	1 1 1	FGM
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	
1 1 1	0 0 0	0 1 0	0 0 0	0 0 0	0 0 0	-1-1-1	0 2 0	-5-1-1	0 1 0	1 2 0	0 1 0	0 1 0	1 1 1	0 1 0	0 0 0	FGM
4 3 3	4 3 3	5 3 4	3 2 4	3 2 3	3 3 4	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	3 2 3	2 3 3	4 3 4	4 3 4	3 3 3	P.D.
5 4 4	4 3 3	5 4 4	3 2 4	3 2 3	3 3 4	2 1 2	3 4 3	-2 1 2	3 3 3	4 4 3	3 3 3	2 4 3	5 4 5	4 4 4	3 3 3	CAL
3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	4 4 4	3 3 3	3 3 3	4 4 4	4 4 4	3 3 3	3 3 3	4 4 4	3 3 3	3 3 3	3 3 3	MGJ
													B B B			BOP
																PLAQUE
																FURCA
																MOBILITY

Diagnosis

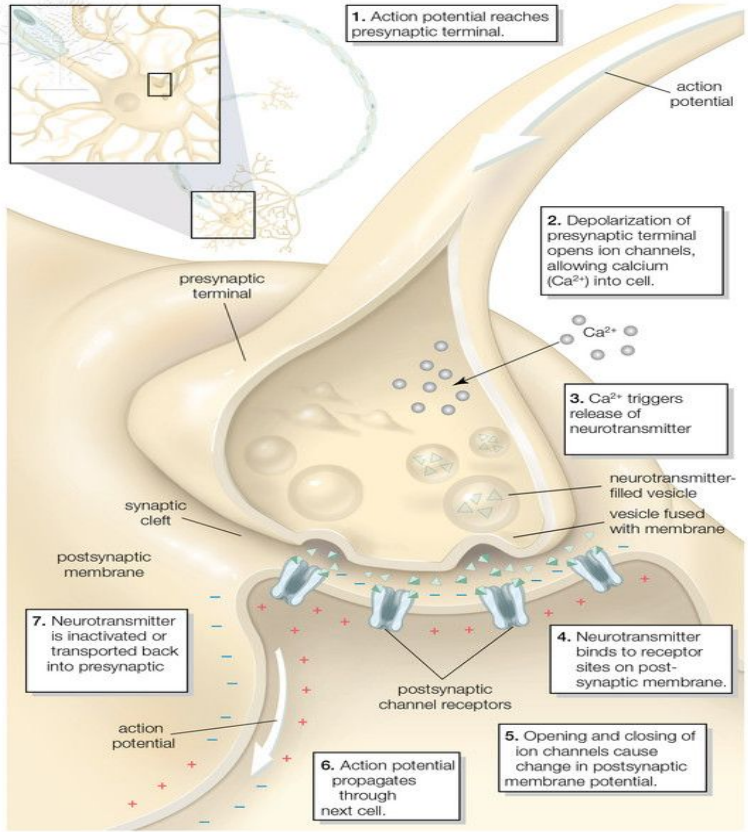
- **Periodontitis** Stage II, Grade B
- #7:
- #8:
- #9:

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.

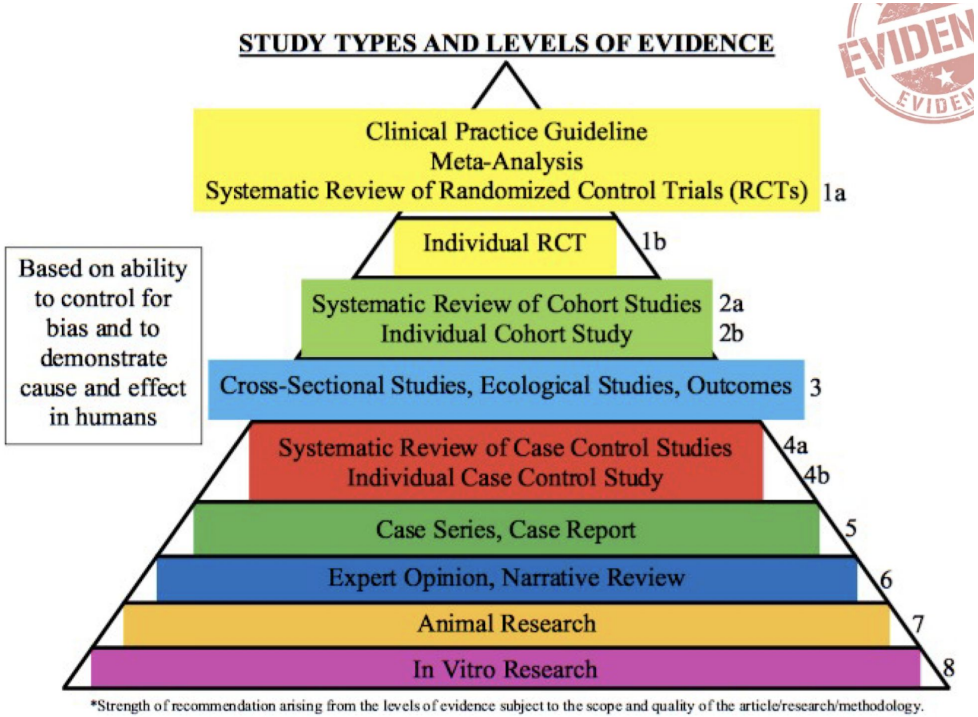
Article 3 Selection:

- 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?