Dental Blocks in the Emergency Department: Do They Really Increase Bouncebacks?

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Background

- Each year, approximately 2 million visits to the emergency department (ED) are made secondary to dental pain[1]. With these numbers continuing to rise, we seek ways to better treat these symptoms. Historically, dental blocks faced controversy, primarily due to concerns about their perceived inadequacy in providing prolonged analgesia for patients with dental pain. Moreover, against the backdrop of an ongoing opioid crisis, there is a compelling need to explore alternative modes of analgesia that mitigate the risk of opioid abuse and its associated adversities. In this study, we aim to investigate whether administering a dental block without opioids influences their likelihood of returning to the emergency department within 48 hours.

Objective

- Determine whether patients who receive a dental block for atraumatic, uncomplicated dental pain return to the ED at a higher rate than those treated without a dental block.

Methods

- In this study, a retrospective analysis was conducted utilizing pre-existing, de-identified data from the HCA Healthcare Enterprise Data Warehouse (EDW).

Inclusion:
- Chief complaint of dental pain
- Age 18-65
- BP 100-200 systolic
- Emergency Severity Index (ESI) level 4-5
- Visit years 2018-2022

Exclusion:
- Temp >38C
- BP <100 systolic
- O2 sat <95%
- Hospital admission
- Secondary workup/complaint
- I&D or needle aspiration performed
- I&D or needle aspiration performed
- Specialist consult performed
- Blood work or Imaging performed
- Pregnancy

- We employed logistic regression to estimate a propensity score and compare the rates of patients' return to the ED within 48 hours (bounceback) between the groups.
- Secondary outcomes include return to the ED within 7 days, as well as return to the ED within 30 days.
- Independent variables used for matching included age group, sex, race, payer type, Charlson Comorbidity Index, narcotic use, and antibiotic use.

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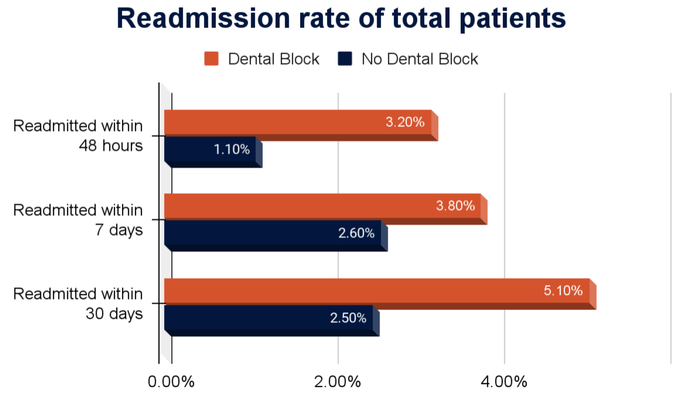
Results



- A total of 27,683 patients met criteria for our study. Of this, 5.45% (n=1,482) received a dental block.
- Predominantly, the study population consisted of a higher proportion of females (54.4%), those in the age group of 18-35 (57.5%), Non-white (55.6%), payer type of Medicare/Medicaid (46%) and a Charlson Comorbidity Index of 0 (86.6%).
- After completion of analysis, patients who received a dental block were found to be 2% (95% CI: 0.011,0.03, p=0.000) more likely to bounce back to the ED compared to those who did not receive the block.
- Additionally, those that received a dental block were also found to have an increased likelihood of bounceback of 2.2% at 7 days, as well as 2.4% at 30 days.

Average treatment effect on treated patients

	Coefficient (β)	Standard error	z score	p-value	95% Confidence Interval	Statistically significant
Readmit in 48 hours	0.020	0.005	4.42	0.000	0.011 - 0.030	✓
Readmit in 7 days	0.022	0.005	4.35	0.000	0.012 - 0.032	✓
Readmit in 30 days	0.024	0.006	4.00	0.000	0.012 - 0.035	✓

Discussion

- Reflecting on the data acquired and the statistical analysis, my primary hypothesis— that fewer bouncebacks would be observed in patients receiving dental blocks—was disproved. Although similar studies evaluating these topics have not yet been documented, our study has demonstrated a significant potential change in patient care. With this information, we can work to mitigate wasted money, time, and undue pain for our patients.
- This study has also uncovered additional avenues for further investigation, including comparing bounceback rates of patients receiving narcotics versus non-narcotics, antibiotics versus no antibiotics, etc.
- The strengths of our study include very limited bias due to the observational design. Confounding was substantially reduced through matching via propensity score. However, we did find that a potential contributing factor was the documentation of the dental block procedure. It is challenging to capture every patient who receives a dental block, as providers may not always document the procedure, leading to patients potentially being placed in the incorrect group.

Conclusion

- Receiving a dental block increases the probability of being readmitted within 48 hours, 7 days, and 30 days, compared to patients treated with narcotic pain medication, non-narcotic pain medication, antibiotics, or a combination of these treatments.

References

1. Sun BC, Chi DL, Schwarz E, Milgrom P, Yagapen A, Malveau S, Chen Z, Chan B, Danner S, Owen E, Morton V, Lowe RA. Emergency department visits for nontraumatic dental problems: a mixed-methods study. Am J Public Health. 2015 May;105(5):947-55. doi: 10.2105/AJPH.2014.302398. Epub 2015 Mar 19. PMID: 25790415; PMCID: PMC4386544.
2. Akinlotan MA, Ferdinand AO. Emergency department visits for nontraumatic dental conditions: a systematic literature review. J Public Health Dent. 2020 Sep;80(4):313-326. doi: 10.1111/jphd.12386. Epub 2020 Oct 1. PMID: 33006151.
3. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis. 1987;40(5):373-83. doi: 10.1016/0021-9681(87)90171-8. PMID: 3558716.

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