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COVID-19 and Limited Dental Resources. The Impact of Odontogenic Infections on Emergency Room and Intensive Care Unit Admissions: The Wexner Medical Center at The Ohio State University Experience

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Abstract: Objective: Many dental procedures generate a significant number of droplets and aerosols, thus posing a potential risk of transmission of the COVID-19 virus and forcing many dental offices to close in an attempt to protect their providers, staff, and patients. The purpose of this study is to assess whether the barrier to dental care in Ohio during the height of the COVID-19 pandemic contributed to an increase in hospital admissions, length of stay, and severity of odontogenic infections extending to the deep neck spaces.

Method and Materials: This retrospective study included all patients admitted to the Wexner Medical Center at the Ohio State University (OSUWMC) for management of a deep space neck abscess of odontogenic origin requiring an extraoral incision and drainage +/-dental extraction between the timeframe of March 2017 and January 2021. Data, such as age and sex of patient, length of hospital stay, number of deep neck spaces involved, ASA status, subsequent need for a surgical washout, and need for ICU transfer, were collected from a chart review of 212 patients (Image 1).

Results: We used a Fisher exact test to look for differences in categorical variables both before and after the start of the COVID-19 pandemic. We used a Wilcoxon signed rank test to look for differences in continuous variables both before and after the COVID-19 pandemic. Based on these tests, we see that there is a marginally significant difference in the total number of spaces before/after COVID-19 (P value = 0.0784 < 0.1). We also see marginally significant difference in whether there were complications before/after COVID-19 (P value = 0.0973 < 0.1). While these results are not significant under the usual significance level of \( \alpha = 0.05 \), they are marginally significant. The \( P \) values are greater than 0.05, however, not by much. We did not see additional significant differences in variables before/after COVID-19 (Image 2).

Conclusion: The authors proposed that the barrier to dental care during the global COVID-19 pandemic would lead to a significant increase in the number of odontogenic infections seen, treated, and admitted to OSUWMC. While the data show only marginal significance, the fact remains that, at a baseline, an endemic exists in patients with odontogenic disease leading to severe cervicofacial infections requiring invasive surgical treatment and lengthy hospital stays.

Summary Table

| X | Level | Overall |
|---|---|---|
| n | 211 |
| Sex (%) | F 102 (48.3) | M 109 (51.7) |
| Washout needed? (%) | No 188 (89.1) | Yes 23 (10.9) |
| ICU Transfer | No 192 (91) | Yes 19 (9) |
| Complications? | No 171 (81) | Yes 40 (19) |
| ASA (mean (SD)) | 2.36 (0.75) |
| Age (mean (SD)) | 41.10 (17.4) |
| Length of Stay (Days) (mean (SD)) | 6.64 (7.29) |
| Total # of Spaces (mean (SD)) | 2.39 (1.34) |
| during covid (%) | No 139 (65.9) | Yes 72 (34.1) |

Stratified by before/during covid

| Summary statistics of data stratified by before and after covid |
|---|---|---|---|
| Variable | Level | Before COVID-19 | After COVID-19 |
| n | 139 | 72 | 0.1476 |
| Sex (%) | F 62 (44.6) | M 77 (55.4) | 0.3329 |
| Washout needed? (%) | No 124 (89.2) | Yes 15 (10.8) | 1.0000 |
| ICU Transfer (%) | No 124 (89.2) | Yes 15 (10.8) | 0.3103 |
| Complications (%) | No 108 (77.7) | Yes 31 (22.3) | 0.0973 |
| ASA (mean (SD)) | 2.33 (0.79) | 3.23 (0.79) | 0.2796 |
| Age (mean (SD)) | 42.20 (18.39) | 38.99 (15.2) | 0.3329 |
| Length of Stay (Days) (mean (SD)) | 6.99 (8.64) | 5.96 (3.27) | 0.5646 |
| Total # of Spaces (mean (SD)) | 2.28 (1.33) | 2.59 (1.34) | 0.0784 |

We used a Fisher exact test to test for differences in categorical variables between before/after COVID-19 (sex, washout needed, etc.). We used a Wilcoxon signed rank test to test for differences in continuous variables between before/after COVID (ASA, Age, etc.). Based on the test, we see that there is a marginally significant difference in total number of spaces before/after COVID (\( P \) value = 0.0784 < 0.1). We also see marginally significant difference in whether there are complications before/after COVID (\( P \) value = 0.0973 < 0.1). These results are not significant under the usual significance level of \( \alpha = 0.05 \). We do not see additional significant differences in variables before/after COVID-19.

We do not see additional significant differences in variables before/after COVID-19.
Interfacility Emergency Department Transfer for Mandibular Fractures in the United States

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Abstract: Purpose: Interfacility hospital transfer for isolated mandibular fractures is common but rarely clinically necessary. The purpose of this study was to generate nationally representative estimates regarding the incidence, cost, and predictors of transfer for isolated mandibular fractures.

Methods: This was a retrospective cohort study using the Nationwide Emergency Department Sample 2018 to identify patients with isolated mandibular fractures. The primary predictor variable was hospital trauma center designation. The primary outcome variable was hospital transfer. Total emergency department (ED) charges also were assessed. Covariates were divided into demographic, medical, injury-related, and hospital characteristics. Descriptive, bivariate, and multiple logistic regression statistics were utilized to evaluate the incidence and predictors of interfacility transfer.

Results: During the study period, there were 41,317 ED encounters with mandibular fracture as the primary diagnosis and 28,557 were included. Within this cohort there were 2,893 hospital transfers (10.2%). In multivariate analysis, evaluation at a nontrauma center ($P \leq 0.001$, OR = 12.8, 95% CI = 6.43 - 25.4), level III trauma center ($P \leq 0.001$, OR = 10.7, 95% CI = 5.25 - 21.7), non-metropolitan non-teaching hospital ($P \leq 0.001$, OR = 2.45, 95% CI = 1.73 - 3.46), and metropolitan non-teaching hospital ($P \leq 0.001$, OR = 1.57, 95% CI = 1.20 - 2.06), as well as cervical spine injury ($P = 0.002$, OR = 3.55, 95% CI = 1.61 - 7.75), fractures of the mandibular body ($P = 0.007$, OR = 1.33, 95% CI = 1.08 - 1.64), and unspecified mandibular fractures ($P = 0.006$, OR = 1.49, 95% CI = 1.12 - 1.99) were independent predictors of hospital transfer. The average ED charge per encounter was $7,482 \pm 565$ for a total nationwide charge of $212,172,264$. Transferred subjects had total ED charges of $25,632,974$, not including additional charges incurred at the recipient hospital.

Conclusion: Isolated mandibular fractures are relatively common injuries that are frequently transferred and cost the health care system millions of dollars annually. Hospital characteristics rather than medical or injury-related variables were the strongest predictors of transfer, suggesting that transfers are primarily driven by need to access maxillofacial surgical services. Programs evaluating necessity of transfer and facilitating specialist evaluation in the outpatient setting may substantially reduce health care expenditures for this injury.