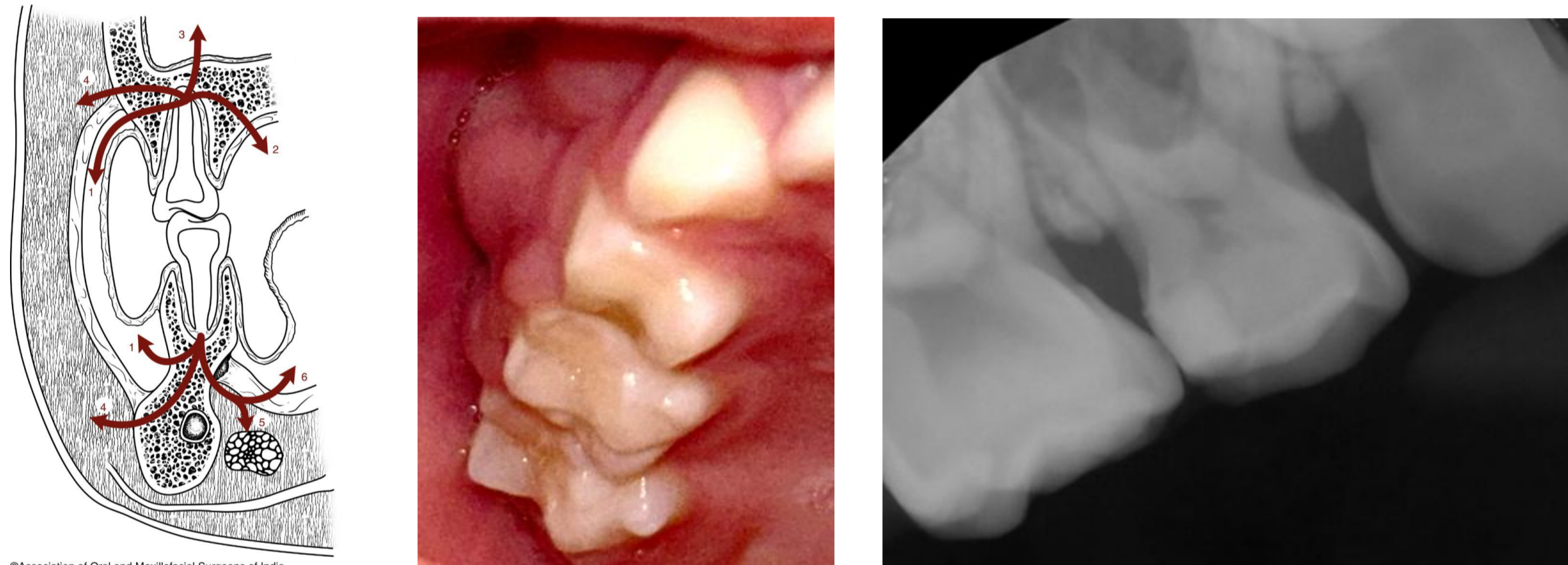


Background

- Dental caries is one of the most prevalent disease among children worldwide and is the leading cause of odontogenic infections.¹
- Potential causes of infection include untreated caries, intracoronal restorations, extracoronal restorations, or trauma history.
- Odontogenic infections are initially localized but can spread to adjacent or distant areas resulting in facial cellulitis.^{1,2}
- Management includes extraction of the offending tooth, with supplemental measures including antibiotics, acute surgical intervention, or hospital admission for medical management.³
- There is a paucity of existing data which relates pediatric odontogenic infections to the source of necrosis and type of dental restoration.



Objective

- To characterize odontogenic infections in pediatric patients in relation to:
 - Patient age, cause of infection, tooth location, presence/absence of facial cellulitis, number of fascial spaces involved, sedation modality

Methods

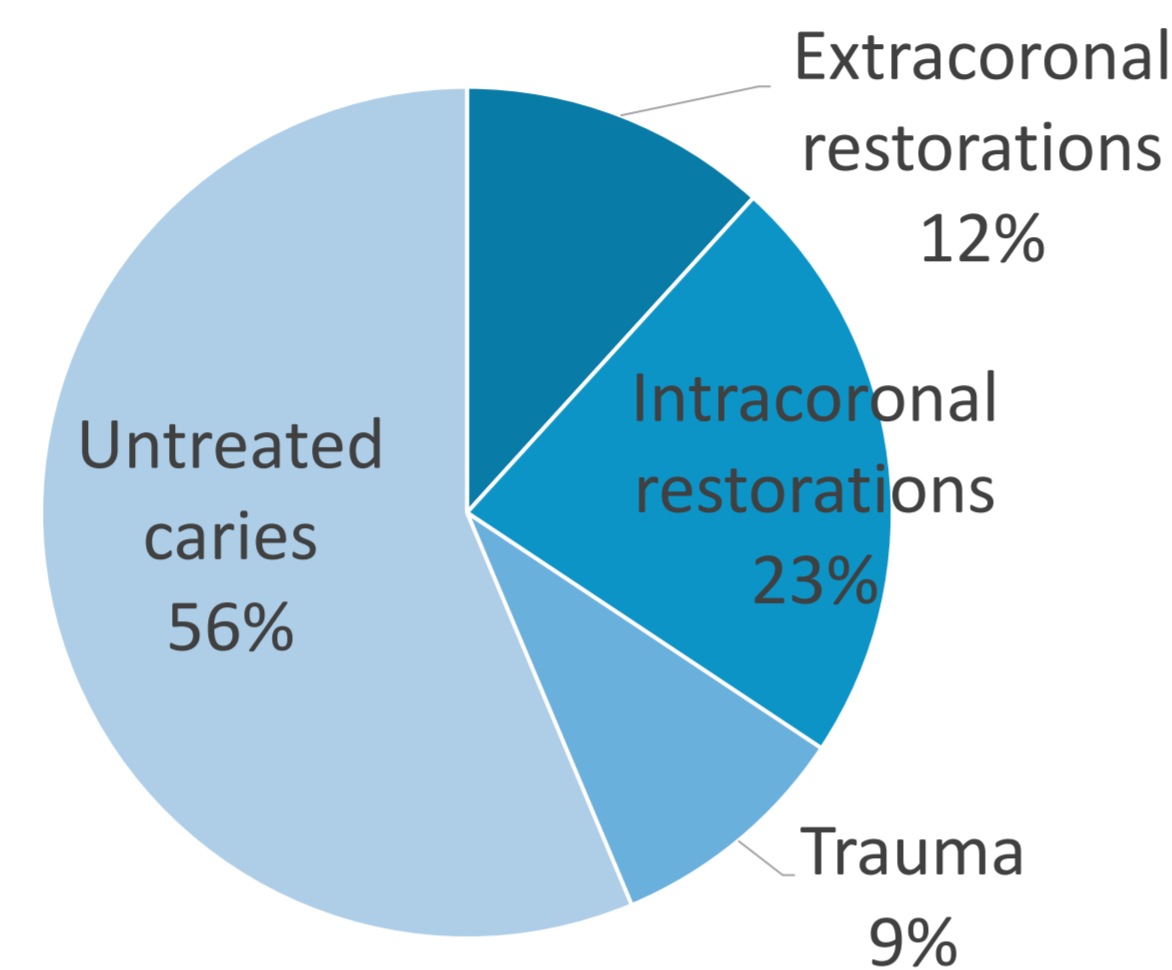
- Retrospective chart review of medical and dental charts involving patients who presented to BCH Emergency Department from 2013-2024
- Children <14 years presenting with or without facial cellulitis, from a primary tooth, requiring dental extraction
- 354 patients were reviewed, of which 323 met inclusion criteria

Statistical Analysis:

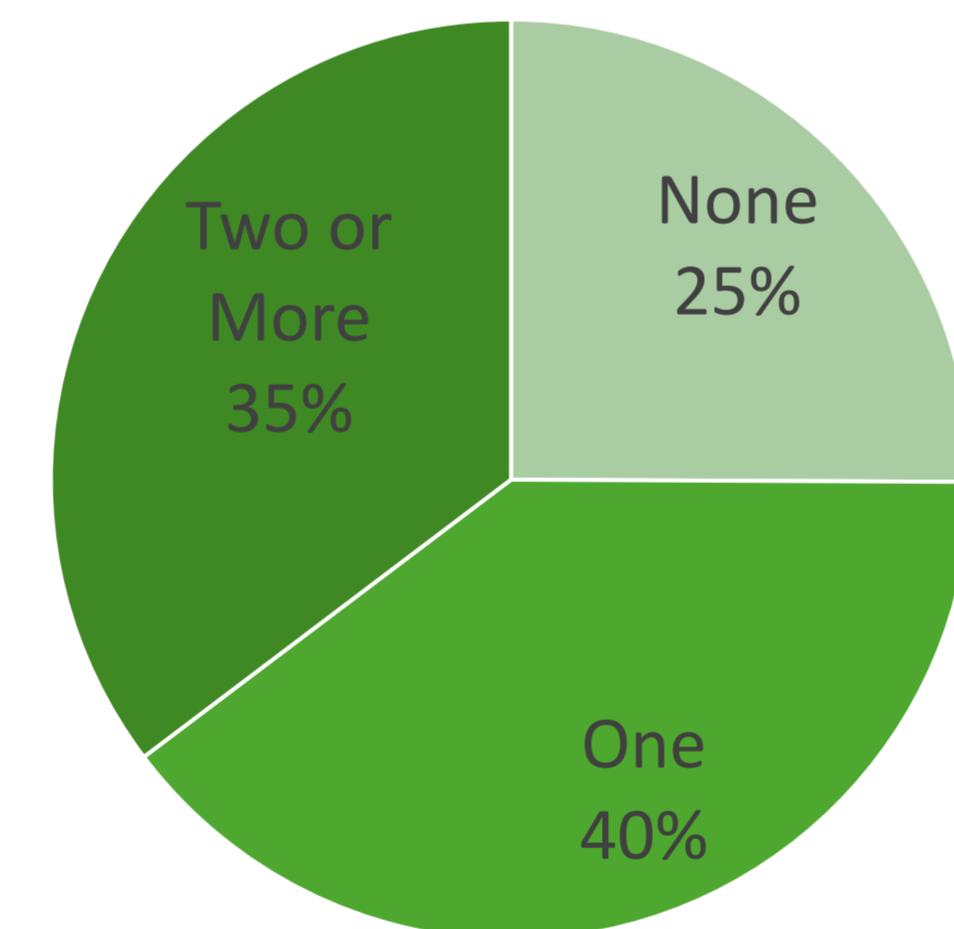
- Pearson's chi-square tests and Fisher's exact tests to compare clinical variables of interest (tooth status, age, arch, tooth location) by presence of facial cellulitis and number of fascial spaces involved. Variables with *P*-values <0.2 in univariate analysis included in multivariable models
- Multivariable ordinal and logistic regression analyses using backward stepwise selection with AIC for final models
- All statistical models were two-sided and *P*-values <0.05 were considered significant

Results

A. Cause of Infection



B. Number of Fascial Spaces Involved



C. Sedation Modality

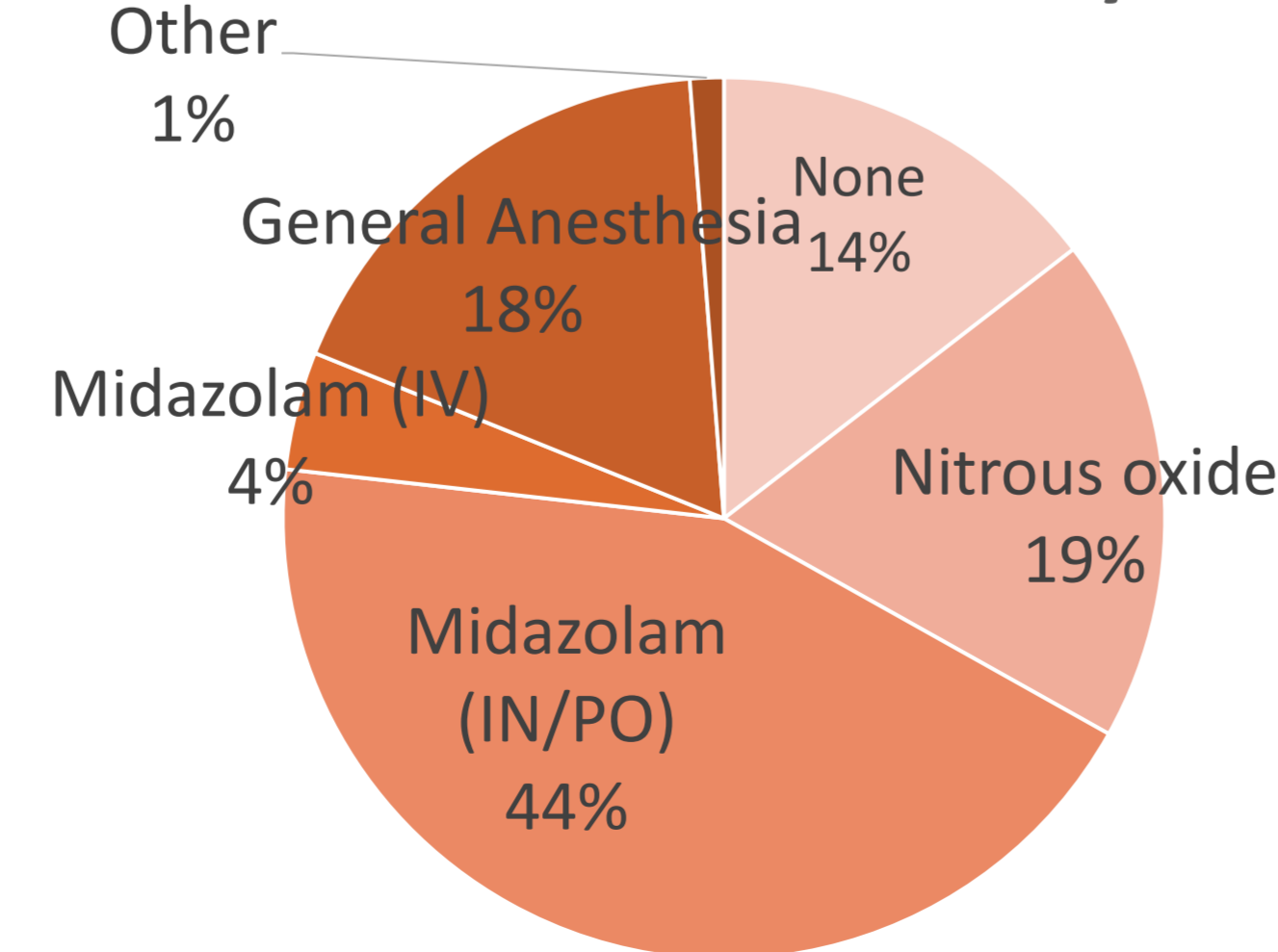


Figure 1: Distribution of infection causes, number of fascial space involvement, and sedation modality

Potential Cause of Infection	Facial Cellulitis N = 242	Abscess N = 81	<i>P</i> -value
Extracoronal Restorations	24 (9.9%)	6 (7.4%)	0.008
Intracoronal Restorations	62 (26%)	13 (16%)	
Trauma	16 (6.6%)	15 (19%)	
Untreated Caries	140 (58%)	47 (58%)	

¹ n (%)

² Pearson's Chi-squared test

Table 1: Potential Cause of Infection, by Presence of Swelling

Variable	Odds Ratio	CI	<i>P</i>
Cause of Infection: Extracoronal Restoration (ref = Untreated Caries)	2.26	1.05-4.99	0.04
Cause of Infection: Intracoronal Restoration (ref = Untreated Caries)	1.63	0.99-2.71	0.06
Cause of Infection: Trauma (ref = Untreated Caries)	0.38	0.17-0.84	0.02
Arch: Mandibular (ref = Maxillary)	2.13	0.43-1.03	0.07

N

AIC

323

292.900

*adjusted for arch and location in mouth based on Fisher's Exact Test

Table 2: Adjusted Ordinal Regression Model Predicting Number of Fascial Spaces Involved, by Cause of Infection

Variable	Odds Ratio	CI	<i>P</i>
Cause of Infection: Extracoronal Restoration (ref = Untreated Caries)	3.26	1.25-9.30	0.02
Cause of Infection: Intracoronal Restoration (ref = Untreated Caries)	1.44	0.76-2.74	0.27
Cause of Infection: Trauma (ref = Untreated Caries)	0.74	0.24-2.22	0.58
Arch: Mandibular (ref = Maxillary)	0.25	0.14-0.43	<0.001

N

AIC

242

310.361

*using backwards stepwise regression with AIC

Table 3: Adjusted Logistic Regression Model Number of Fascial Spaces Involved, by Cause of Infection (Excluding Abscess)

Variable	Odds Ratio	CI	<i>P</i>
Cause of Infection: Extracoronal Restoration (ref = Untreated Caries)	1.13	0.42-2.73	0.80
Cause of Infection: Intracoronal Restoration (ref = Untreated Caries)	0.48	0.20-1.05	0.08
Cause of Infection: Trauma (ref = Untreated Caries)	0.10	0.01-0.48	0.03
Age: Less than 6 years old (ref = 6 years or older)	2.13	1.17-3.94	0.01

N

AIC

323

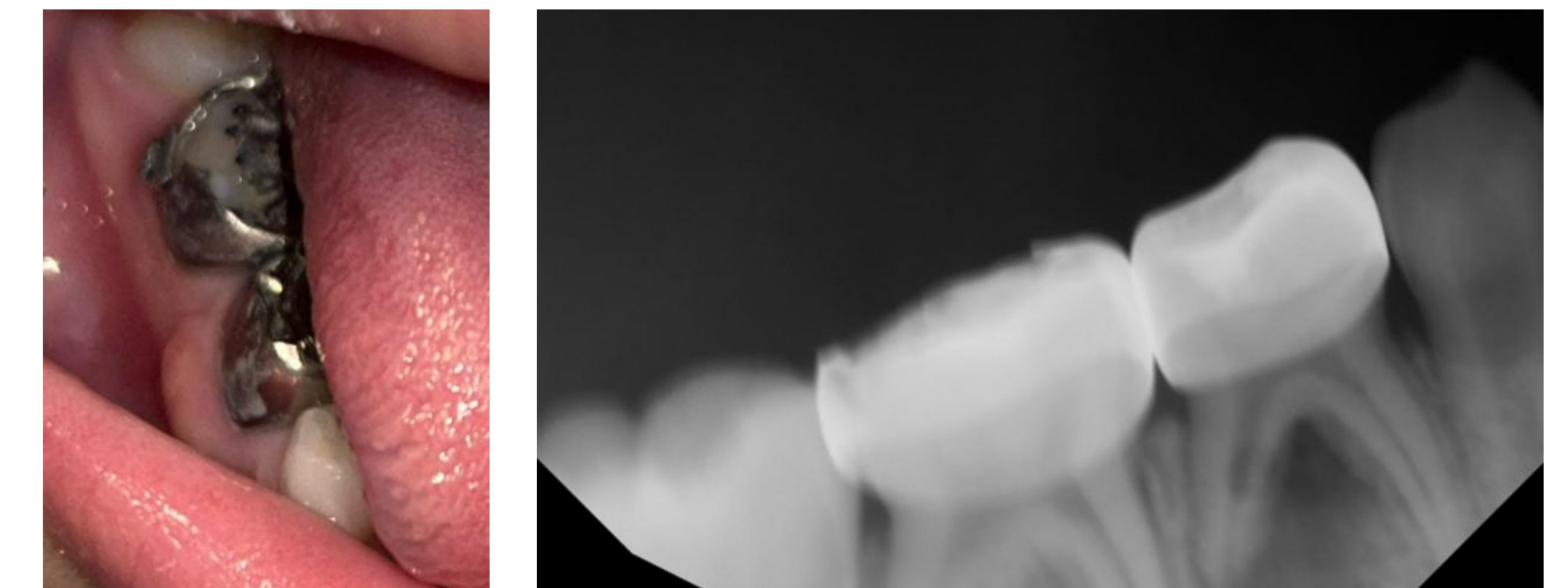
292.900

*adjusted for age based on Fisher's Exact Test

Table 4: Logistic Regression Model Predicting General Anesthesia (with Age)

Results

- Most infection sources were posterior teeth (81%) and untreated caries due to pulpal necrosis (56%).
- Teeth with extracoronal restorations had over twice the odds of having more fascial spaces involved compared to untreated caries (OR=2.26; 95% CI 1.05-4.99; *P*=0.04)
- After excluding local abscesses, extracoronal restorations had 3.26 times the odds of having more than one fascial space involved compared to untreated caries (OR=3.26; 95% CI 1.25-0.30); *P*=0.02).
- Traumatized teeth had a 62% reduction in odds of involving more fascial spaces compared to untreated caries (OR=0.38; 95% CI 0.17-0.84; *P*=0.02).
- Patients younger than 6 years old had 2.13 times the odds of going under general anesthesia for extraction compared to older patients (OR =2.13; 95% CI 1.17-3.94; *P*=0.01).



Conclusions

- Teeth with extracoronal restorations were associated with the most severe infections involving multiple fascial spaces.
- Traumatized teeth were less likely to result in cellulitis.
- Younger patients face higher risks of cellulitis requiring extraction under general anesthesia.
- Dental providers should carefully consider the increased risk of facial cellulitis when treating carious primary teeth with extracoronal restorations.

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