Non-Operative Facial Fractures and Prophylactic Antibiotics in Trauma Patients: A Friend or Foe?

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Background

- The non-operative management of facial fractures has become increasingly common.
- Guidelines surrounding the use of prophylactic antibiotics for facial fractures remain a challenge due to a lack of cited evidence in literature.
- The objective of this study was to perform a pre- and post-analysis of the use of antibiotics for trauma patients with non-operative facial fractures.

Methods

- A level 1 trauma registry was queried for adult patients with isolated non-operative facial fractures from October 1, 2022, to December 1, 2025.
- Patient cohorts from 1 year before (PRE) and after (POST) the implementation of the new protocol were captured with a 3-month washout period in between.
- After all exclusion criteria were met, 227 patients remained.
- Data including patient demographics, antibiotics received, and infection development were collected.
- Continuous variables were evaluated for normal distribution and t-test was used to evaluate significance. Continuous variables that were not normally distributed were reported using medians.

	PRE (n=129)	POST (n=98)	p-value
Mean Age (years), mean (SD)	53.7 (19.9)	55.4 (21.4)	0.535
Male, % (n)	69.8 (90)	61.2 (60)	0.178
Race, %, (n)			0.157
White	47.3 (61)	58.2 (57)	
Black	44.2 (57)	31.6 (31)	
Other	8.5 (11)	10.2 (10)	
Insurance status, % (n)			**0.010**
Medicare/Medicaid	62.8 (81)	58.2 (57)	
Private	33.3 (43)	26.5 (26)	
Self-pay	3.9 (5)	15.3 (15)	
Facial third affected, % (n)			0.245
Upper	42.6 (55)	36.7 (36)	
Middle	51.2 (66)	51.0 (50)	
Lower	6.2 (8)	12.2 (12)	
Injury severity score, mean (SD)	**9.4 (6.3)**	**12.1 (8.7)**	**0.008**
CNS leak, % (n)	0.7 (1)	3.1 (3)	0.324
Sinus precaution, % (n)	**53.5 (69)**	**72.4 (71)**	**0.004**

Table 1: Patient demographic data and clinical characteristics

	PRE (n=129)	POST (n=98)	p-value
Received prophylactic antibiotics, % (n)	38.0 (49)	28.6 (28)	0.138
Head/neck infection, % (n)	3.3 (3)	1.0 (1)	0.459
Duration of antibiotic therapy (days), mean (SD)	6.5 (4.1)	5.4 (4.4)	0.750
Hospital length of stay (days), mean (SD)	3.9 (5.6)	4.5 (5.8)	0.415
ICU length of stay (days), mean (SD)	3.6 (2.4)	3.6 (2.4)	0.865
Clostridium difficile infection	0 (0)	0 (0)	1.000

Table 2. Comparison of antibiotic use and clinical outcomes between PRE and POST groups

Results

- A total of 227 patients met the study's inclusion criteria, with 129 in the PRE group and 98 in the POST group.
- The average age of patients was similar between the two groups (p = 0.535, Table 1).
- A majority of patients in both groups were covered by Medicaid or Medicare (p = 0.01; Table 1).
- POST patients had a higher average injury severity score compared to PRE patients (p = 0.008; Table 1).
- There was no difference in prophylactic antibiotic administration between PRE and POST groups (p = 0.138; Table 2).
- Head and neck infection rates were low in both groups, with slightly fewer infections observed in POST patients but no significant difference between PRE and POST groups (p = 0.459; Table 2).
- No patients in either group developed a Clostridium difficile infection (Table 2).
- The duration of antibiotic therapy was, on average, the same across both groups (p = 0.459; Table 2).
- Hospital and ICU length of stay were the same between the two groups (p = 0.415 and 0.865, respectively; Table 2).

Conclusion

- After the guideline change, fewer POST patients received antibiotics, although the decrease was not significant. Despite the reduction in antibiotic use, head and neck infection rates remained similar to PRE patients.
- Future investigation into larger patient populations may prove insightful when considering the impact of these guidelines.

References

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