

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

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Background: In recent years, the non-operative management of facial fractures has become increasingly common. However, guidelines on the use of prophylactic antibiotics for facial fractures remain sparse due to a lack of existing literature. In October 2023, an Antibiotics Prophylaxis in Trauma Guideline was approved at a level one trauma center to standardize indications for antibiotic use, agents, and durations across all services. Reflecting conclusions from recent studies, these guidelines do not recommend the use of antibiotics for non-operative facial fractures, including upper, mid-face, and mandible fractures, regardless of whether the fracture is penetrating, non-penetrating, open, closed, or involves the sinus. 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 retrospective review of adult patients with isolated non-operative facial fractures from October 1, 2022, to December 1, 2025, from a Level 1 trauma center was performed. Patient cohorts from one year before (PRE) and after (POST) the implementation of the new protocol were captured with a 3-month washout period in between. Data including patient demographics, antibiotics received, and infection development were collected. Univariate analyses were used to compare the groups.

Results: In total, 227 patients met study inclusion criteria, with 129 PRE patients and 98 POST patients. The average age of PRE patients was 54 years, and the average age of POST patients was 55 years ($p = 0.54$). Falls was the most common mechanism of injury, occurring in 52/129 (40.3%) of PRE and 41/98 (41.8%) POST patients. The average injury severity score (ISS) was 9 in PRE patients and 12 in POST patients ($p = 0.008$). Over a third of PRE patients ($n=49/129$, 38.0%) received prophylactic antibiotics compared to 28.6% ($n=28/98$) of POST patients ($p=0.14$). The most prescribed antibiotic was amoxicillin in PRE patients and amoxicillin-clavulanate in POST patients. The average duration of antibiotic therapy was 7 days in both PRE and POST patients. The average hospital length of stay was 4 days for PRE patients and 5 days for POST patients and the average ICU length of stay was 4 days for both groups. The incidence of head and neck infection in PRE patients was 3.3%

(n=3/129) compared to 1/98 (1.0%) of POST patients (p=0.46). No patient in either cohort developed a *Clostridium difficile* infection.

Discussion: This study demonstrated that despite a reduction in antibiotic prescriptions, the rate of head and neck infections was similar. These results may suggest that antibiotics may be unnecessary in certain patient populations with facial fractures. Future investigation into larger patient populations is needed to help refine guideline development.