



Incidence and Predictors of Complications Following Craniofacial Trauma Repair: Preliminary Findings from a Multi-Year Analysis

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BACKGROUND

- Advances in imaging, surgical techniques, and multidisciplinary care have improved outcomes following craniofacial trauma repair
- However, complication rates remain nontrivial, with meaningful implications for patient outcomes and resource utilization
- Predictors of these complications remain poorly defined, particularly across heterogeneous patient populations and care settings
- Improved risk stratification is critical to inform perioperative decision-making and optimize outcomes

OBJECTIVE

To determine the **incidence and predictors of postoperative complications** following craniofacial trauma repair

RESULTS

Cohort Characteristics and Complication Profile

- Postoperative complications reported in 54 (9.9%) of 547 patients undergoing operative craniofacial fracture repair
- Most common complications were infection (n=20), wound dehiscence (n=10), non-union (n=6), and fistula (n=6)
- Thirty-four patients (6.2%) required reoperation

Predictors of Complications:

Comorbidities Associated with Postoperative Complications Following Craniofacial Fracture Repair

Variable	Univariate OR (95% CI)	p-value	Significant in Multivariable Model?
Coronary artery disease	4.84 (1.9-12.6)	<.001	No
Heart failure	12.4 (2.7-15.9)	<.001	No
Alcohol use disorder	2.92 (1.5-5.9)	.003	Yes — aOR 2.87 (95% CI 1.13-7.26, p = .026)
Vitamin D deficiency	5.87 (1.8-18.7)	.004	No
Osteopenia / osteoporosis	5.45 (1.3-6.6)	.023	No

aOR = adjusted odds ratio. Only alcohol use disorder remained significant on multivariable analysis.

Not shown: hypothyroidism, liver disease, renal insufficiency, atrial fibrillation, HIV, cancer, diabetes (all p > 0.05 or n < 5)

- Demographics and Injury Characteristics:** age, sex, race, insurance, injury location, fracture severity, and operative time were **not** associated with overall complication or reoperation rates
 - Mandible fractures** associated with increased **infection** rates (aOR 4.13, 95% CI 1.9-11.1, p = 0.016)

METHODS

- Retrospective review of patients undergoing craniofacial fracture repair at four urban trauma centers (2019-2025)
- Demographic, clinical, and operative variables were extracted
- Postoperative complications included infection, hematoma, wound dehiscence, fat necrosis, fistula, non-union, and reoperation
- Chi square and multivariable logistic regression to identify independent predictors of complications and readmission

CONCLUSIONS

- Complications** following craniofacial fracture repair appear to be **driven more by patient comorbidities** than injury or operative factors
- Alcohol use disorder** emerged as a **significant independent predictor** of complication risk