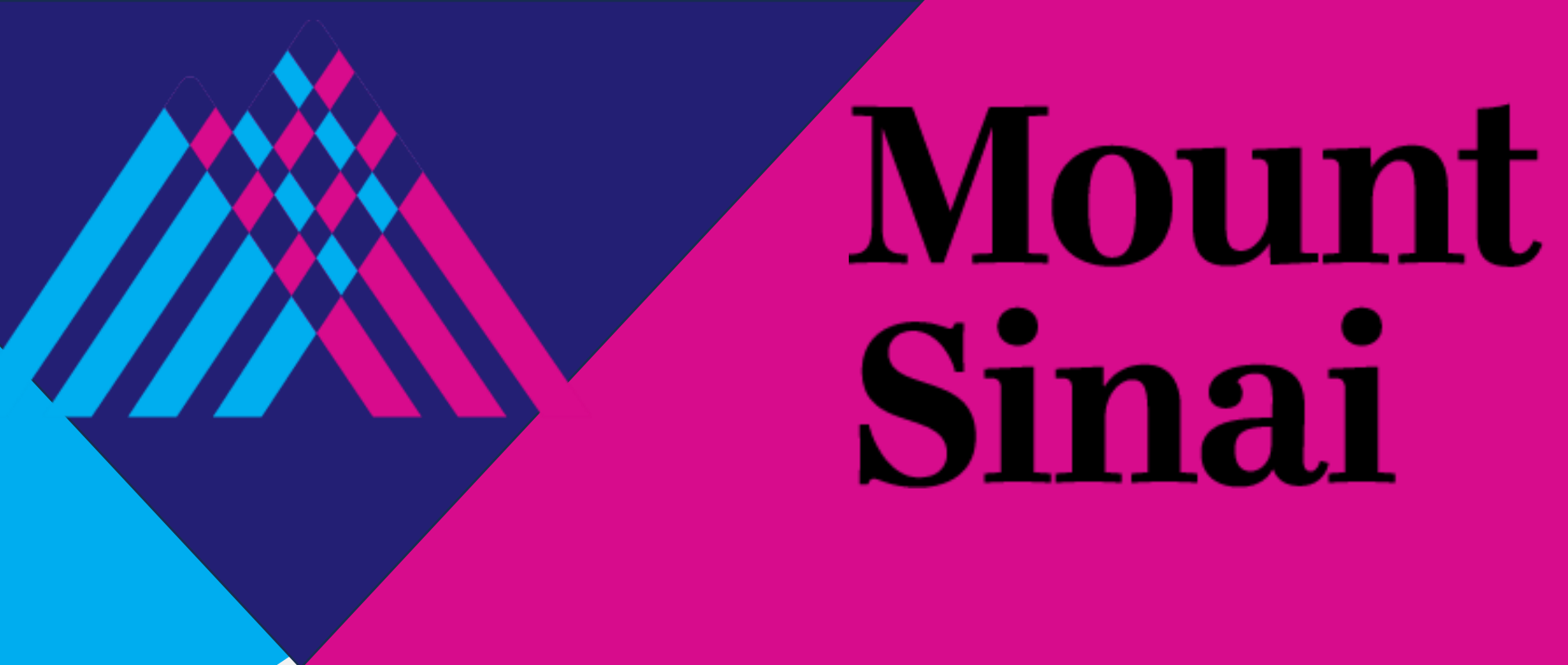


Specialty-Specific Management of Craniofacial Fractures Across Four Urban Trauma Centers

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1. BACKGROUND

Craniofacial trauma (CF) care spans several surgical specialties with overlapping but distinct clinical expertise. However, variation in perioperative management and outcomes across service lines remains underexplored.

The objective of this study was to compare injury distribution, management characteristics, and clinical outcomes among patients undergoing CF fracture repair by plastic and reconstructive surgery (PRS), otolaryngology (ENT), and oral surgery (OS).

2. OBJECTIVE

...to determine whether **specialty is independently associated with outcomes after adjusting for fracture type and case mix**

3. METHODS

Adults undergoing CF fracture repair between 2019–2025 at four urban trauma centers were retrospectively reviewed.

Demographics, fracture location, injury mechanism, comorbidities, and hospital course data were extracted. Outcomes included length of stay (LOS), time to intervention, follow-up duration, complication, and readmission rates.

Chi-square analysis and nonparametric tests were employed to evaluate differences across specialties.

4. RESULTS

- **CASE MIX:** Injury patterns differed significantly across specialties ($p<0.001$). PRS managed a higher proportion of **complex and orbital fractures**, while OMFS predominantly managed **mandibular fractures** and ENT managed **nasal fractures**.

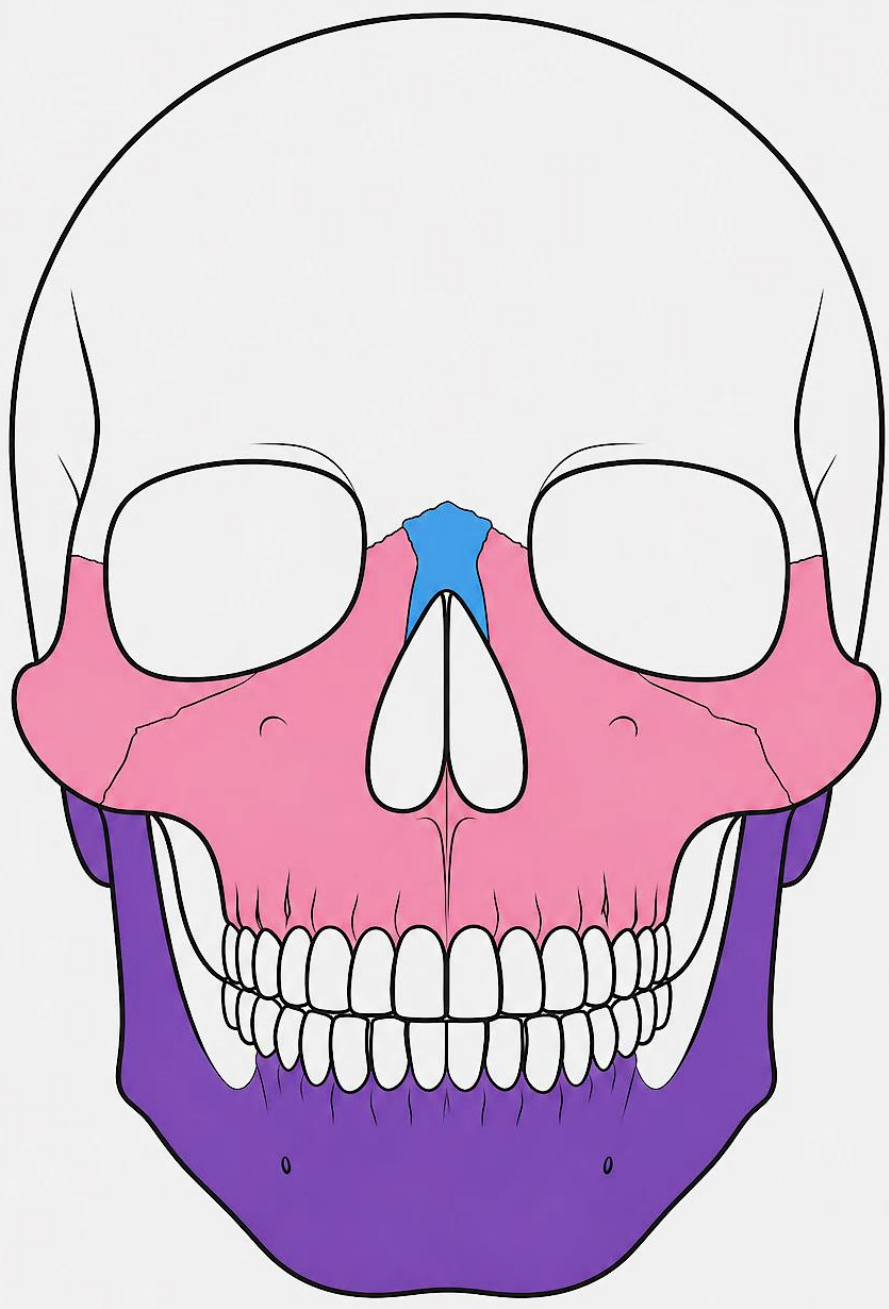
- **TIME-TO-INTERVENTION:** On univariate analysis, PRS cases had a longer median TTI compared with OMFS and ENT ($p=0.001$). However, after adjusting for fracture type, specialty was no longer independently associated with TTI ($p=0.898$). Fracture pattern remained the primary driver of operative timing ($p=0.010$)

- **HOSPITAL OUTCOMES:** Operative time did not differ significantly across specialties ($p=0.20$). Overall complication and readmission rates were similar across groups ($p>0.05$).

- LOS differed by specialty ($p<0.001$), with ENT demonstrating the shortest LOS. After adjustment, **specialty remained independently associated with LOS** ($p=0.003$).

- **INFECTION:** **PRS demonstrated a significantly lower postoperative infection rate** compared with OMFS (1.2% vs 5.8%, $p=0.019$). No significant differences were observed between PRS and ENT or ENT and OMFS. This finding persisted despite PRS managing a more complex fracture population.

- **FOLLOW-UP:** Follow-up rates differed significantly across specialties: PRS: **86.1%**, OMFS: **68.2%**, and ENT: **62.8%** ($p<0.001$). On multivariable analysis, **specialty remained an independent predictor of follow-up adherence** ($p<0.001$). Compared with OMFS, PRS patients had more than threefold higher odds of follow-up (aOR 3.54)



■ PRS-managed
■ OMFS-managed
■ ENT-managed

Variable	PRS	OMFS	ENT (ref)	All Services	p value
Time to intervention, median (hours)	74.3	31.9	20.5	35.6	<0.001
Length of stay, median (days)	1.28	1.51	0.45	1.26	<0.001
Operative time, median (mins)	101.0	118.0	104.1	108.1	0.20
Complications, n (%)					
Infection	2 (1.2)	16 (5.8)	2 (2.6)	20 (3.8)	0.09
Reoperation	11 (6.7)	20 (7.3)	3 (3.8)	34 (6.5)	0.68
Any complication	33 (19.9)	61 (21.9)	12 (15.4)	106 (20.3)	0.29
Follow-Up					
Rate (%)	86.1	68.2	62.8	73.2	<0.001
Duration, median (IQR)	37 (51)	46 (86)	54 (112)	45 (90)	0.135

5. CONCLUSION

Differences across specialties are driven by fracture-type case mix, not operative efficiency.

After risk adjustment, **PRS remained independently associated with lower infection rates and higher follow-up adherence.**

These results support a key role for PRS in complex craniofacial trauma through both technical reconstruction and continuity of care.



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