

Perioperative Opioid Exposure and Postoperative Complications Following Facial Fracture Repair: A Propensity-Matched Analysis of 71,738 Patients

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Background

Opioids are frequently prescribed after facial fracture repair.

Concerns exist that opioid exposure may impair wound healing and increase postoperative complications.

Large-scale data evaluating surgical outcomes in this population remain limited.

Research Objectives

- To evaluate the association between perioperative opioid prescriptions and short-term and long-term complications following facial fracture repair

Methods

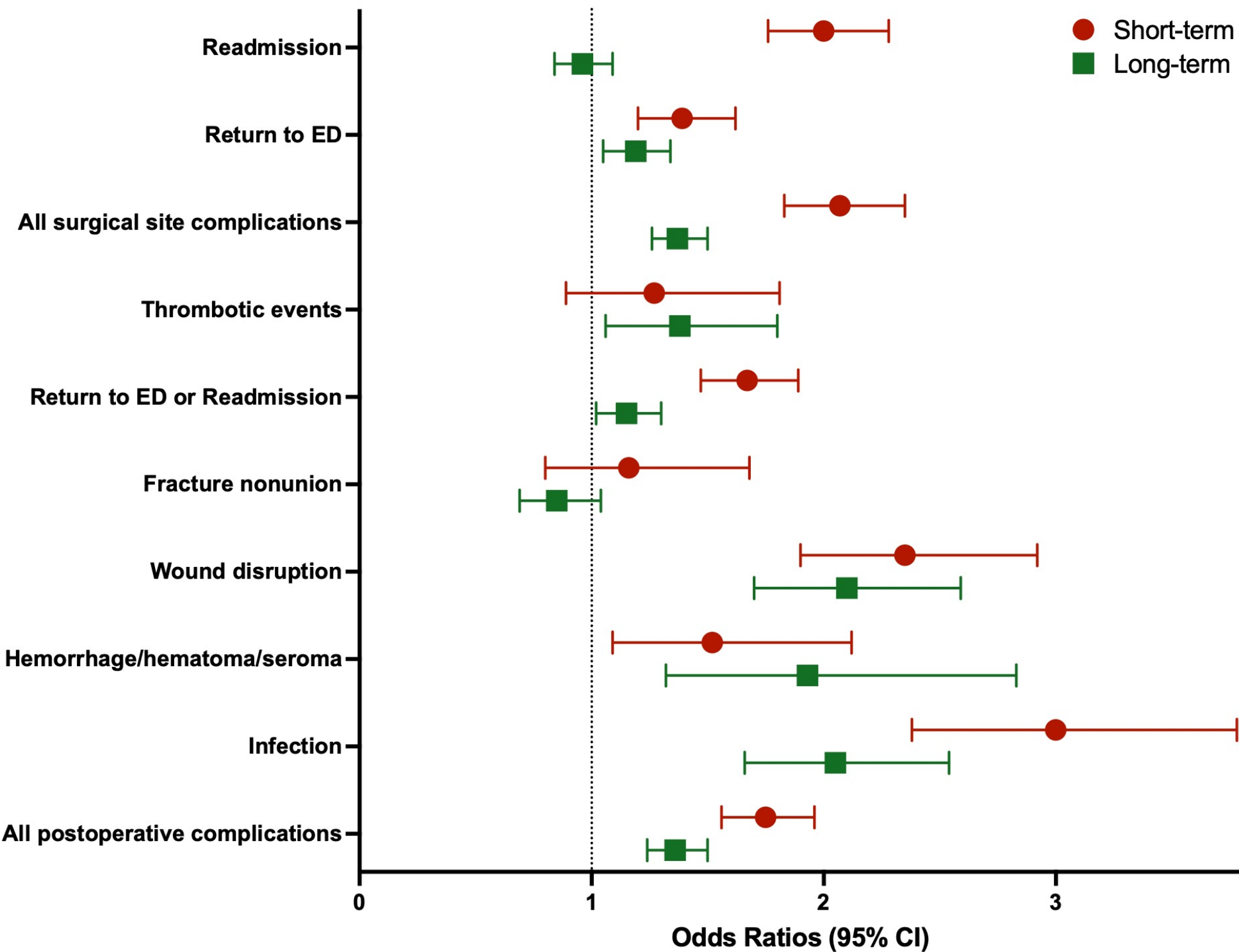
- Data source: TriNetX Research Network (2005–2025)
- Population: Patients undergoing surgical facial fracture repair
- Exclusions: Prior opioid use disorder or cancer
- Exposure: Perioperative opioid prescription
- Matching: 1:1 propensity score matching (age, BMI, race/ethnicity, HTN, DM, nicotine dependence, anticoagulant use)
- Final cohorts: 35,869 opioid vs. 35,869 non-opioid
- Outcomes: Short-term (1–30 days) and long-term (>30 days–1 year) complications

Results

Table 1. Baseline Characteristics Before and After Propensity Matching of Patients Undergoing Facial Fracture Repair Procedures Between Opioid and Control Cohorts.

Characteristic	Before Propensity Matching			After Propensity Matching		
	Opioid Exposure (n=162,449)	Control Cohort (n=45,301)	p-value Before	Opioid Exposure (n=35,869)	Control Cohort (n=35,869)	p-value After
Age at Index (mean ± SD)	39.5 ± 20.8	35.9 ± 23.4	<0.0001	35.9 ± 23.1	36.0 ± 23.4	0.4739
Male	93,357 (57.83%)	22,552 (61.97%)	<0.0001	21,904 (61.07%)	22,213 (61.93%)	0.0177
Female	65,185 (40.38%)	13,550 (37.24%)	<0.0001	13,672 (38.12%)	13,368 (37.27%)	0.0192
White	106,179 (65.77%)	22,998 (63.19%)	<0.0001	23,118 (64.45%)	22,998 (64.12%)	0.3498
Black or African American	25,240 (15.64%)	5,262 (14.46%)	<0.0001	5,087 (14.18%)	5,262 (14.67%)	0.0629
Asian	4,344 (2.69%)	1,058 (2.91%)	0.0221	1,107 (3.09%)	1,058 (2.95%)	0.2849
American Indian or Alaska Native	1,228 (0.76%)	113 (0.31%)	<0.0001	128 (0.36%)	113 (0.32%)	0.3331
Native Hawaiian or Other Pacific Islander	774 (0.48%)	113 (0.31%)	<0.0001	92 (0.26%)	113 (0.32%)	0.1419
Other Race	9,520 (5.90%)	1,741 (4.78%)	<0.0001	1,742 (4.86%)	1,741 (4.85%)	0.9861
Hispanic or Latino	17,708 (10.97%)	5,415 (14.88%)	<0.0001	5,392 (15.03%)	5,415 (15.10%)	0.8103
Not Hispanic or Latino	116,892 (72.41%)	24,379 (66.99%)	<0.0001	24,856 (69.30%)	24,318 (67.80%)	<0.0001
Unknown Ethnicity	26,831 (16.62%)	6,596 (18.13%)	<0.0001	5,621 (15.67%)	6,136 (17.11%)	<0.0001
BMI (mean ± SD)	27.3 ± 6.97	25.8 ± 6.59	<0.0001	26.2 ± 6.86	25.8 ± 6.59	<0.0001
BMI Percentile (mean ± SD)	52.6 ± 30.9	57.1 ± 31.7	0.0321	47.9 ± 30.2	57.1 ± 31.7	0.0011
Hypertension	34,676 (21.48%)	4,551 (12.51%)	<0.0001	4,397 (12.26%)	4,539 (12.65%)	0.1084
Nicotine Dependence	23,508 (14.56%)	2,222 (6.11%)	<0.0001	2,194 (6.12%)	2,222 (6.20%)	0.6636
Diabetes Mellitus	13,550 (8.39%)	1,657 (4.55%)	<0.0001	1,648 (4.59%)	1,652 (4.61%)	0.9432
Anticoagulant Use	38,421 (23.80%)	2,745 (7.54%)	<0.0001	2,753 (7.68%)	2,745 (7.65%)	0.9106

Figure 1. Comparison of Outcomes in Patients who Underwent Facial Fracture Repair Between Opioid and Control Cohorts.



Results

Table 2. Short-term and Long-term Postoperative Outcomes Following Facial Fracture Repair Procedures Comparing Opioid and Control Cohorts.

Outcome	Opioid Cohort (n, %)	Control Cohort (n, %)	Odds Ratio (95% CI)	p-value
Short term (1 day to 30 days)				
All postoperative complications	916 (5.12%)	477 (2.99%)	1.75 (1.56–1.96)	<0.0001
Infection	288 (0.81%)	97 (0.27%)	3.00 (2.38–3.78)	<0.0001
Hemorrhage/hematoma/seroma	88 (0.25%)	58 (0.16%)	1.52 (1.09–2.12)	0.0125
Wound disruption	274 (0.78%)	118 (0.33%)	2.35 (1.90–2.92)	<0.0001
Fracture nonunion	60 (0.17%)	52 (0.15%)	1.16 (0.80–1.68)	0.4473
Return to ED or Readmission	759 (3.87%)	398 (2.36%)	1.67 (1.47–1.89)	<0.0001
Thrombotic events	70 (0.20%)	55 (0.16%)	1.27 (0.89–1.81)	0.1789
All surgical site complications	745 (2.25%)	374 (1.10%)	2.07 (1.83–2.35)	<0.0001
Return to ED	442 (2.06%)	277 (1.49%)	1.39 (1.20–1.62)	<0.0001
Readmission	704 (2.30%)	354 (1.16%)	2.00 (1.76–2.28)	<0.0001
Deceased	68 (0.19%)	40 (0.11%)	1.70 (1.15–2.51)	0.0071
Long term (1 month to 1 year)				
All postoperative complications	1,070 (6.30%)	728 (4.71%)	1.36 (1.24–1.50)	<0.0001
Infection	257 (0.73%)	127 (0.36%)	2.05 (1.66–2.54)	<0.0001
Hemorrhage/hematoma/seroma	77 (0.22%)	40 (0.11%)	1.93 (1.32–2.83)	0.001
Wound disruption	268 (0.77%)	130 (0.37%)	2.10 (1.70–2.59)	<0.0001
Fracture nonunion	178 (0.51%)	210 (0.60%)	0.85 (0.69–1.04)	0.105
Return to ED or Readmission	623 (3.30%)	476 (2.88%)	1.15 (1.02–1.30)	0.024
Thrombotic events	131 (0.37%)	95 (0.27%)	1.38 (1.06–1.80)	0.016
All surgical site complications	1,237 (3.82%)	946 (2.81%)	1.37 (1.26–1.50)	<0.0001
Return to ED	631 (3.00%)	466 (2.54%)	1.19 (1.05–1.34)	0.006
Readmission	422 (1.41%)	444 (1.48%)	0.96 (0.84–1.09)	0.5146
Deceased	190 (0.53%)	233 (0.65%)	0.82 (0.67–0.99)	0.036

Limitations

- Retrospective database design
- Prescription does not confirm medication consumption
- No dose or duration data
- Residual confounding possible

Conclusions

Perioperative opioid exposure was associated with higher short-term and long-term complication rates following facial fracture repair.