

Postoperative Opioid Use and Pain Scores After Repeat Cesarean Delivery: A Within-Patient Retrospective Cohort Study

Briel Lee, MD · Kathleen Smith, MD · Lacey Straube, MD · Monika Nanda, MD · Christine McKenzie, MD

Background

Prior studies have yielded **conflicting results** and are limited by **interindividual variability**.^{1–4}

Evaluating outcomes **within the same patient** may better isolate the effect of repeat surgery on postoperative pain and opioid outcomes.

Holmes et al. (2024)⁵ found no difference in opioid consumption or pain scores between primary and repeat CD in the same patient.

Study Aim

We aimed to compare opioid consumption and pain scores between two cesarean deliveries occurring within the same patients during a defined study period.



Key Question

Does repeat cesarean delivery lead to greater postoperative opioid consumption and pain scores compared to the prior cesarean delivery in the same patient?

Study Design & Methods

Study Design

Design: Single-center retrospective cohort

Period: July 1, 2019 – June 30, 2025

Population: Patients who underwent two CDs at our institution (480 patients)

Within-patient design: Each patient served as her own control

Analgesic Protocol

Standard Analgesic Protocol:

- **Neuraxial morphine** (0.1 mg IT or 3 mg epidural)
- Scheduled ibuprofen
- Scheduled acetaminophen
- PRN lidocaine patches
- PRN oxycodone 5 mg PO q6h

Additional PRN interventions:

- Opioid escalation (PO or IV)
- Truncal nerve blockades

Outcomes

Primary Outcome:

48-hour opioid consumption (OME (mg))

Secondary Outcomes:

- Average pain score on PPD 0 and PPD1
- Maximum pain score on PPD 0 and PPD1

n = 960 cesarean deliveries, 480 patients | Only the first two CDs per patient at this institution included in analysis

Results

n = 471 patients



Patient & Surgical Differences at 2nd CD

Patient characteristics: ↑ Age ↑ Weight ↑ BMI ↑ Anxiety

Surgical characteristics: ↑ Surgical duration ↑ Blood loss

Primary Outcome: 48-hr Opioid Consumption (mg OME)

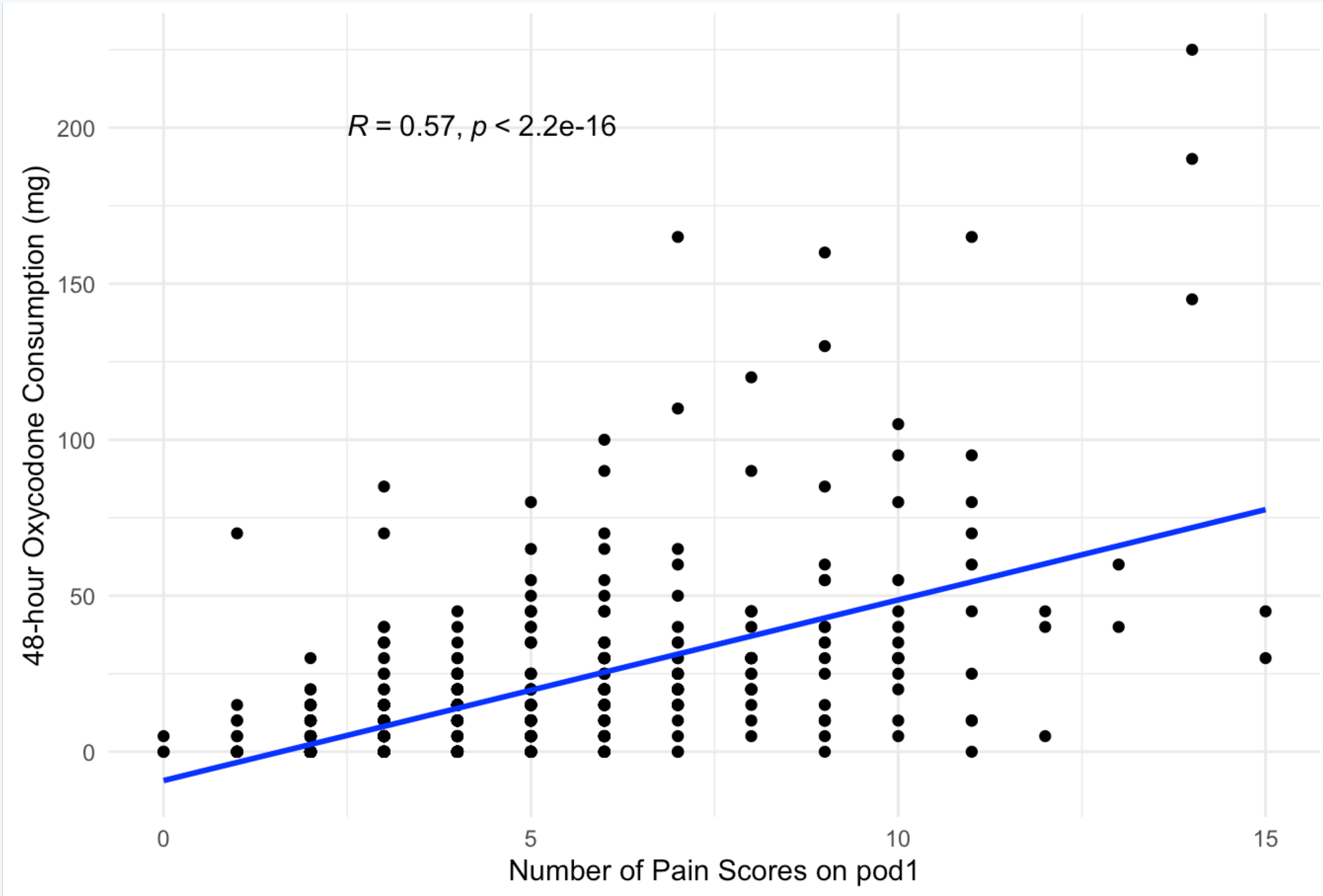
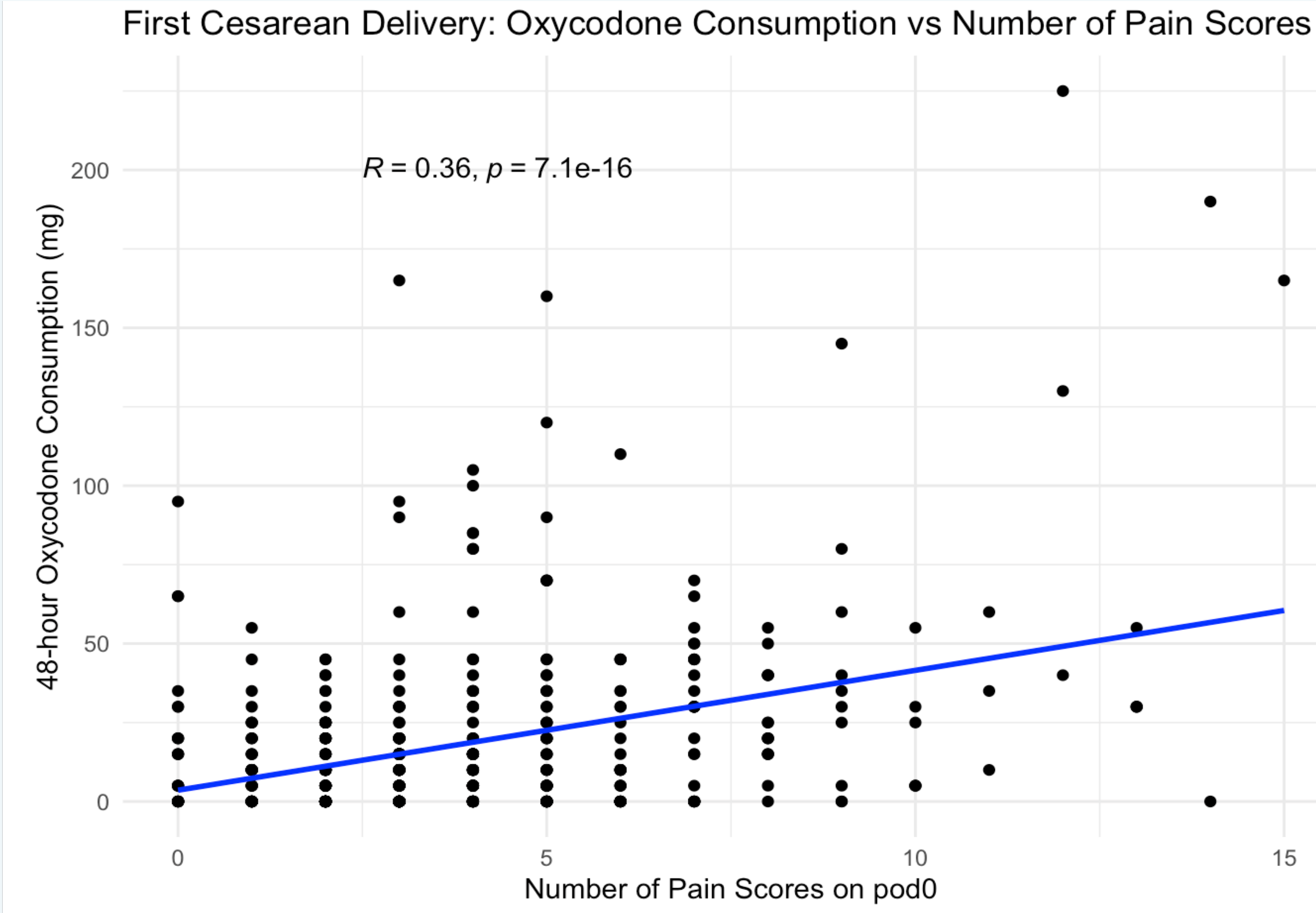
HIGHER

after the repeat CD (p < 0.05)

Pain Score Outcomes — Summary

Outcome	1st CD	2nd CD	Comparison
48-hr Opioid Consumption (OME)	24.0 (32.0)	28.7 (39.8)	↑ Higher (p < 0.01)
Mean Pain Score — PPD 0	1.71 (2.22)	1.76 (2.33)	No significant difference
Max Pain Score — PPD 0	3.45 (3.20)	3.50 (3.19)	No significant difference
Mean Pain Score — PPD 1	2.50 (2.43)	2.93 (2.53)	↑ Higher (p < 0.01)
Max Pain Score — PPD 1	4.82 (3.15)	5.15 (3.17)	↑ Higher (p = 0.03)

*Specific mean values are presented in the study Table. (SD)



Conclusions & Discussion

Main Finding

Opioid use and pain scores were **higher** following repeat CD vs. the primary CD in the same patient.

Pain scores (avg and max) were higher on **PPD 1**. No difference observed on PPD 0.

Clinical Significance

The clinical significance of these differences is **uncertain**. A difference of 2 MME is 1.33mg oral oxycodone.

These findings may guide **patient counseling** about postoperative opioid and pain expectations after repeat cesarean delivery.

Future Directions

This within-patient design highlights an opportunity for patients undergoing repeat CD to serve as their **own controls** in future analgesic intervention studies.

Evaluate **targeted analgesic strategies** for repeat CD



References:

1. Chao et al. J Clin Med 2019; 8(12):2221. 2. Duan et al. BMC Anesthesiology 2019;19(1):189. 3. Mehdiratta et al. IJOA 2020;44:60-67. 4. Yang et al. J Pain Research 2020;13:555-563. 5. Holmes et al. Can J Anesth 2024; 71(11):1518-1524.