



The Effects of Dental Procedures, Local Anesthesia, and Intraoperative Analgesics on PACU Pain Score after Pediatric General Anesthesia

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BACKGROUND

- Dental general anesthesia is a treatment modality often used for patients who cannot tolerate routine dental care in an office setting
- During visits anesthesiologists and dentists give systemic and local pain relievers at their own discretion
- Understanding the relationship between pain relievers, treatment, and post-operative pain is crucial for delivering adequate care

PURPOSE

- To investigate the association between the type of dental procedure conducted intraoperatively and the experience of postoperative pain
- To analyze the relationship between the amount of intraoperative local anesthesia given with the post-operative pain score and/or postoperative pain medications given
- To analyze the relationship between intra-operative systemic pain medications with whether post pain medications are needed and PACU pain score

METHODS

- IRB approved, single-center, retrospective cohort study of children receiving dental general anesthesia from November 2018 to March 2022
- Exclusion criteria included:
 - Patients with incomplete charts
 - Patients receiving combination surgeries with other medical specialties
 - Patients who required hospital admission post-operatively.

RESULTS

- 786 ASA I & II patients were included in the study.
- Patients with a pain score ≥ 1 had a higher median number of primary teeth extractions and were more likely to undergo 4-6 extractions compared to those with a pain score of 0. (**Table 1**)
- Patients who were given PACU opioids were more likely to have 4-6 extractions of primary teeth. This relationship was not seen in extractions of 7+ primary teeth, or extractions of permanent teeth (**Table 2**)

Type of procedure	Composite Pain score = 0 n=600	Composite pain score ≥ 1 n=186	Total n=786	P values
Primary tooth extractions Avg (SD)	2.6 (2.8)	3.1 (3.1)	2.7 (2.9)	0.027
Primary tooth extractions median [p25,p75]	2.0 [0.0, 4.0]	3.0 [0.0, 5.0]	2.0 [0.0, 4.0]	0.017
Extractions of primary teeth (No.)				0.005
0	198 (33.0%)	53 (28.5%)	251 (31.9%)	
1 - 3	217 (36.2%)	52 (28.0%)	269 (34.2%)	
4 - 6	128 (21.3%)	63 (33.9%)	191 (24.3%)	
7 or greater	57 (9.5%)	18 (9.7%)	75 (9.5%)	
Number of extractions of permanent teeth	0.2 (0.7)	0.3 (1/2)	0.2 (0.9)	0.454
Primary tooth extractions median [p25,p75]	0.0 [0.0,0.0]	0.0 [0.0,0.0]	0.0 [0.0,0.0]	0.777
Extractions of permanent teeth (No.)				0.569
0	530 (88.3%)	163 (87.6%)	693 (88.2%)	
1 - 3	63 (10.5%)	19 (10.2%)	82 (10.4%)	
4 - 6	6 (1.0%)	3 (1.6%)	9 (1.1%)	
7 or greater	1 (0.2%)	1 (0.5%)	2 (0.3%)	

Table 1. Number of extractions, and PACU pain

Type of procedure	Post operative opiates given No	Post operative opiates given Yes	Total	P values
Extractions of primary teeth (No.)				0.002
0	244 (32.84)	7 (16.28)	251 (31.93)	
1 - 3	259 (34.86)	10 (23.26)	269 (34.22)	
4 - 6	174 (23.42)	17 (39.53)	191 (24.30)	
7 or greater	66 (8.88)	9 (20.93)	75 (9.54)	
	743 (100)	43 (100)	786 (100)	
Extractions of permanent teeth (No.)				0.127
0	657 (88.43)	36 (83.72)	693 (88.17)	
1 - 3	76 (10.23)	6 (13.95)	82 (10.43)	
4 - 6	9 (1.21)	0 (0.00)	9 (1.15)	
7 or greater	1 (0.13)	1 (2.33)	2 (0.25)	
	743 (100)	43 (100)	786 (100)	

Table 2. Number of extractions, and PACU opiates

- Patients who received opioids in the PACU tended to have a slightly higher median amount of intraoperative local anesthesia compared to those who did not receive opioids ($p = 0.0141$) (**Table 3**)
- Patients with pain scores of zero were more likely to receive intraoperative systemic pain relievers such as Ketorolac ($p = 0.019$) and Dexmedetomidine ($p = 0.023$) compared to those with pain scores of 1 or greater

PACU Opioid Given	N	Mean LA (mg/kg)	Median LA (mg/kg)	SD LA (mg/kg)
No	743	1.35	1.17	0.99
Yes	43	1.74	1.58	1.05
Total	786	1.37	1.20	1.00

Table 3. PACU Opioid given and Local Anesthesia (mg/kg)

CONCLUSIONS

- Overall, only a few children reported pain post-operatively after dental rehabilitation under general anesthesia
- Dental providers may consider preparing the medical team that patients with multiple extractions have a higher likelihood of post-operative pain
- There is a trend that an increased number of primary tooth extractions leads to a higher likelihood of post-op pain and hence a need for post-operative opioids
- Intraoperative local anesthesia may increase the likelihood of post-operative pain or discomfort
- Intraoperative system pain relievers like Ketorolac and Dexmedetomidine may reduce the likelihood of post-operative pain.
- Future prospective studies may help elucidate when and if local anesthesia is needed during dental rehabilitation under general anesthesia in a hospital setting

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