

The effect of dexamethasone on the incidence and severity of rebound pain after regional anesthesia for ambulatory surgery: a retrospective cohort study



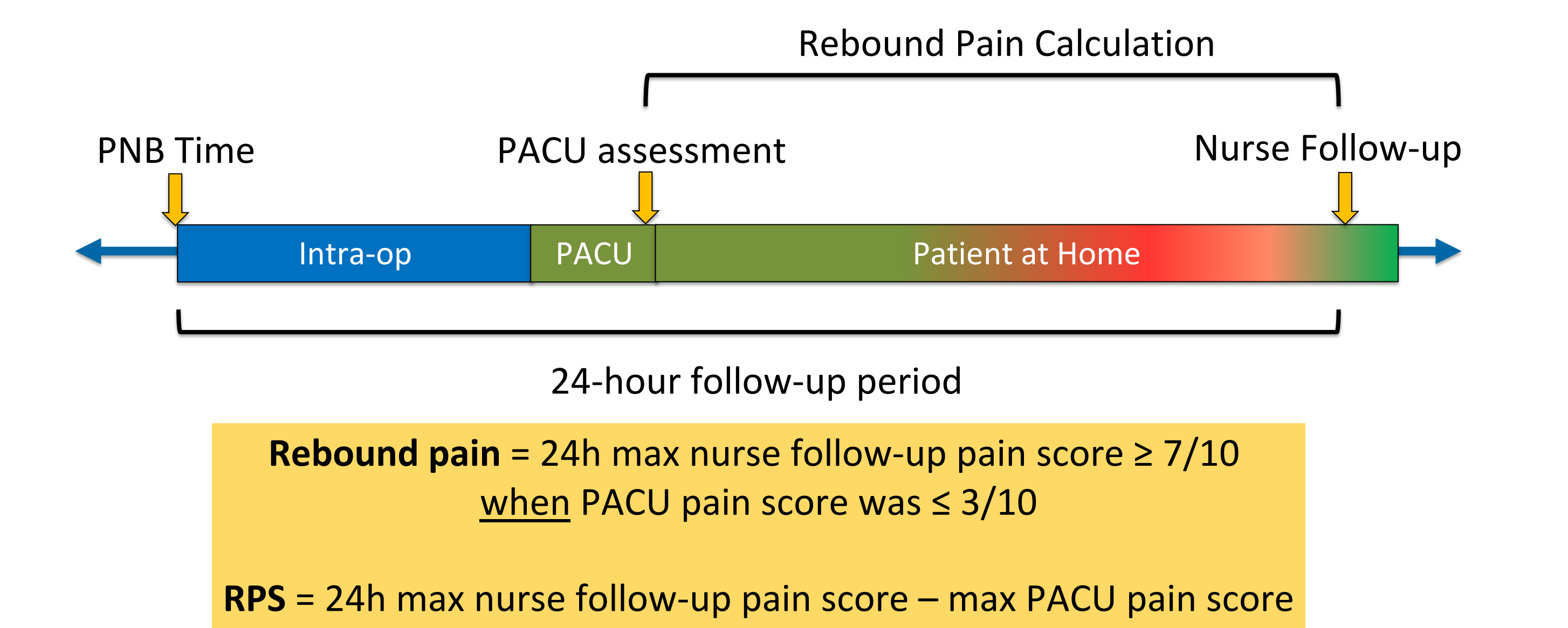
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BACKGROUND: Rebound pain after peripheral nerve block (PNB) is defined as a severe, rapid increase in pain after the PNB has worn off. Previous studies have identified dexamethasone administration as one of the modifiable factors to reduce the risk of rebound pain

Objective: to determine the optimal dose and timing of dexamethasone associated with a reduced incidence and severity of rebound pain in ambulatory surgery patients.

METHODS

- REB approval obtained for retrospective cohort study of adult patients who received single shot PNB for ambulatory surgery at QEII Health Sciences Centre between March 2017 – December 2022
- Data collected from block room follow-up phone call questionnaire and electronic health records
- Exclusions: overnight hospital admission, highly opioid-tolerant patients, and patients who received a continuous peripheral nerve catheter.
- Primary outcome was incidence of rebound pain
- Secondary outcome was the rebound pain score (RPS) to measure severity of rebound pain
- Statistics performed in SPSS: univariate and multivariable regression, logistic regression for binary outcome incidence of rebound pain, linear regression for outcome of rebound pain score.



Dexamethasone: early, higher doses result in reduced rebound pain

1. Dexamethasone independently reduced incidence and severity of rebound pain (Table 1)

2. Dose-dependent effect on rebound pain score (Table 2)

3. For every hour later dexamethasone is given,

- Higher rebound pain incidence (aOR 1.30; 95% CI 1.05 – 1.61)
- Higher rebound pain severity (B=0.51 [NRS per hour]; 95% CI 0.19 – 0.84)

TABLE 1: Incidence and severity of rebound pain by dexamethasone dose using multivariable logistic regression including previously described risk factors age, sex, and bony surgery. SD = standard deviation. 95% CI = 95% confidence interval. aOR = adjusted odds ratio.

	Total Cases (n = 4352)	Rebound Pain (%)	Mean RPS (95% CI)	Multivariable aOR (95% CI; p-value)
Age, years (mean +/- SD)	n = 4352 (55 +/- 18)	1012 / 3756 (26.9)	3.5 (3.4 – 3.7)	0.99 (0.986 – 0.994; <0.001)
Sex				
Male	n = 2394	552 / 2075 (26.6)	3.6 (3.4 – 3.8)	0.89 (0.76 – 1.03; 0.11)
Female	n = 1958	460 / 1681 (27.4)	3.3 (3.1 – 3.6)	Reference
Surgery type				
Bony Surgery	n = 2351	598 / 2044 (29.3)	3.4 (3.2 – 3.6)	1.44 (1.24 – 1.68; <0.001)
Soft Tissue	n = 2001	414 / 1712 (24.2)	3.6 (3.4 – 3.8)	Reference
Dexamethasone (mg)				
0	n = 2927	800 / 2492 (32.1)	4.4 (4.2 – 4.5)	Reference
1-4	n = 293	46 / 251 (18.3)	2.7 (2.2 – 3.3)	0.43 (0.31 – 0.60; <0.001)
5-8	n = 723	114 / 629 (18.1)	2.0 (1.6 – 2.3)	0.43 (0.35 – 0.54; <0.001)
>8	n = 409	52 / 384 (13.5)	1.1 (0.6 – 1.5)	0.31 (0.23 – 0.42; <0.001)

FIGURE 1: Rates of dexamethasone use and rebound pain incidence by year in Halifax, Canada:

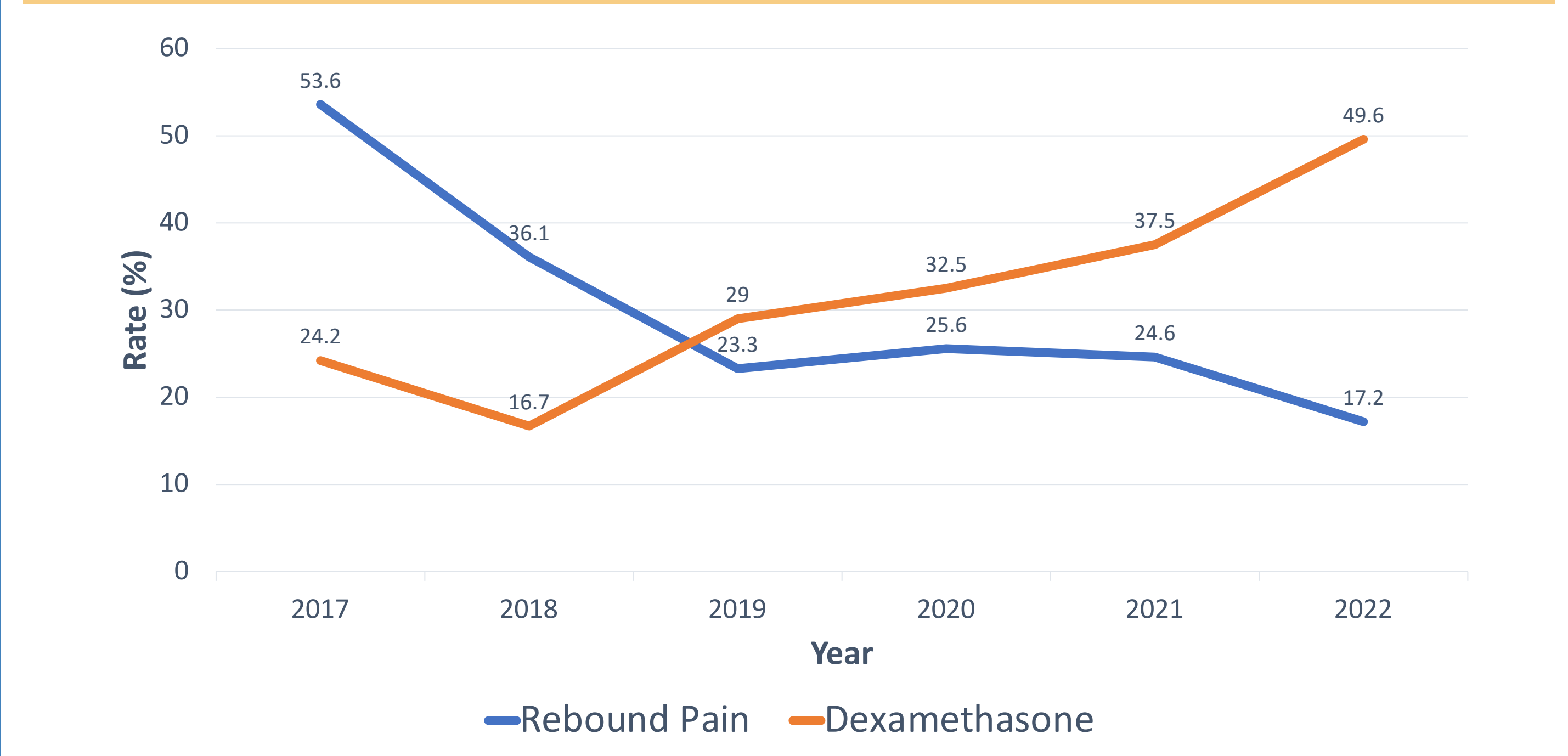


TABLE 2: Dose-dependent effect of dexamethasone on incidence and severity of rebound pain in patients who received dexamethasone. Multivariable logistic regression was performed for the outcome of rebound pain incidence while multivariable linear regression was performed for RPS including the covariates of age, sex, and bony surgery.

	Total Cases (n = 1425)	Rebound Pain (%)	Multivariable adjusted OR (95% CI; p-value)	Mean RPS (95% CI)	Multivariable RPS slope (95% CI; p-value)
Age, years (mean +/- SD)	n = 1425 (55 +/- 18)	n = 212 (14.9)	1.0 (0.99 – 1.0; 0.31)	1.8 (1.6 – 2.1)	-0.01 (-0.03 – 0.00; p = 0.15)
Male	n = 597	n = 96 (16.1)	0.91 (0.68 – 1.2; 0.55)	2.0 (1.6 – 2.4)	0.29 (-0.20 – 0.79; p = 0.25)
Female	n = 667	n = 116 (17.4)	Reference	1.7 (1.3 – 2.0)	Reference
Bony Surgery	n = 735	n = 125 (17.0)	1.2 (0.85 – 1.7; 0.30)	1.5 (1.2 – 1.9)	-0.38 (-0.96 – 0.20; p = 0.20)
Soft Tissue	n = 529	n = 87 (16.4)	Reference	2.3 (1.9 – 2.7)	Reference
Dexamethasone (mg)					
1-4	n = 251	n = 46 (18.3)	Reference	2.7 (2.2 – 3.3)	Reference
5-8	n = 629	n = 114 (18.1)	1.0 (0.68 – 1.5; 0.98)	1.9 (1.6 – 2.3)	-0.72 (-1.1 - -0.35; p < 0.001)
>8	n = 384	n = 52 (13.5)	0.70 (0.45 – 1.1; 0.12)	1.1 (0.6 – 1.5)	

CONCLUSIONS

- Rebound pain is a common problem after single-shot peripheral nerve block in ambulatory surgery patients
- Dexamethasone significantly reduces both the incidence and severity of rebound pain in these patients
- Our retrospective analysis found patients that a higher dose (>8mg) and earlier administration had less rebound pain independent of age, sex, and bone surgery risk factors