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Introduction

Effective pain relief is a challenge in major foot and ankle surgery.¹ Various modalities of pain relief have been used, including epidural analgesia, peripheral nerve block, and patient controlled analgesia (PCA).^{2,3} There is little evidence to guide transition from these modalities to oral analgesia after surgery in children, and this transition period can be associated with considerable postoperative pain.⁴

Objectives

We undertook this retrospective chart review to assess the efficacy of transition from the primary analgesic modality to oral medication in children undergoing major foot surgery.

Methods

After REB approval, the medical records of all patients undergoing major foot and ankle surgery in the 2-year period 01-02-2011 to 31-01-2013 were identified using the Canadian Classification of Health Interventions code 1.WE.80. Excluded were children discharged home on the day of surgery. Pain scores 24 h prior to and 24 h after the start of transition from the primary analgesic modality were recorded. The number of episodes of severe pain (defined as VAS or FLACC ≥ 7) was compared. Opioid-related side effects including nausea, vomiting, oxygen desaturation, and pruritus were recorded. Categorical data were compared using Chi-square analysis. $P < 0.05$ was considered statistically significant.

Results

Of 77 patients having foot and ankle surgery, 65 were eligible (Table 1). Twenty-five children received epidural analgesia (Group E) as the primary modality, 25 received a peripheral nerve block (popliteal or ankle block) with PCA or oral/IV opioids (Group B), and 15 received PCA only (Group P). The remaining 12 patients had IV and/or oral opioids as ordered by the surgical team. The incidence of severe pain increased significantly during transition from epidural analgesia to oral medication ($P < 0.05$, $\chi^2 (1) = 4.06$) (Fig. 1). There was no statistically significant difference in the incidence of severe pain during transition in the other groups. Within Group E, children administered oral analgesics before discontinuation of epidural infusion tended to have a lower incidence of severe pain (Table 2), although the sample size was too small to show statistical significance. The incidence of any opioid-related side effect was significantly lower ($P = 0.003$) in the epidural group (Fig. 2).

Conclusion

A significant proportion of children experienced severe pain during transition from epidural analgesia to oral medication. Administration of oral analgesics before discontinuation of the epidural infusion may help alleviate this problem.

References

1. *Pediatr Anesth* 2001;11:327-332
2. *Cur Anaesth Crit Care* 2009;20:188-194
3. *Anesth Analg* 2006;102: 744-9
4. *Ann Thorac Surg* 2004;77:1951-5

Table 1. Demographics

	Epidural (n=25)	Block (n=25)	PCA only (n=15)
Age (yr)	10.2 ± 3.9	13.2 ± 4.0	14.7 ± 3.0
Sex (M/F)	18 / 7	19 / 6	7 / 8
Weight (kg)	38.5 ± 16.2	63.6 ± 27.6	56.8 ± 18.8
ASA (I / II / III)	8 / 10 / 7	8 / 14 / 3	7 / 5 / 3
Unilateral/ bilateral	7 / 18	24 / 1	11 / 4
Hospital stay (days)	4 (1-14)	3 (1-4)	3 (1-4)

Data are mean ± SD, frequencies, or median (range)

Table 2. Transition strategy and number of patients with severe pain

Administration of first dose of oral opioid in relation to discontinuation of epidural infusion (T = 0)	No. of patients with severe pain
T = -4 h and q4h thereafter (n=5)	1
T = -1 h and q4h thereafter (n=2)	0
T = 0 and q4h thereafter (n=16)	10

Figure 1. Incidence of severe pain before and after the start of transition (T) from epidural analgesia, peripheral nerve block, and patient controlled analgesia (PCA).

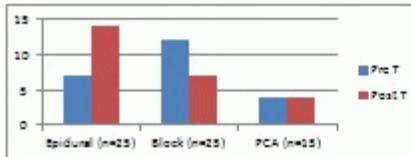


Figure 2. Incidence of opioid related side effects in patients receiving epidural analgesia, peripheral nerve block and patient controlled analgesia (PCA).

