

The Effect of Ketorolac on Pediatric Bone Healing Rate following Osteotomy in Patients with Deformity or Limb Length Discrepancy

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INTRODUCTION: The use of non-steroidal anti-inflammatory drugs (NSAIDs) as an alternative to opioids for analgesia following osteotomies for deformity correction and limb lengthening surgery has become more popular due to the risk of addiction to opioid medication. However, concerns about delayed healing in patients who have undergone osteotomies remain with the use of NSAIDs. This study assesses the effect of ketorolac on the rate of bone healing following osteoplasty in patients who have had either deformity correction or limb lengthening surgery.

METHODS: This was an IRB-approved, retrospective chart review. Charts of patients who had an osteotomy for deformity correction or limb lengthening were reviewed. The total amount of opioids used, calculated as the morphine milligram equivalent (MME), as well as the total amount of ketorolac used in the perioperative period, was determined for each patient. Comparisons were carried out between the MME requirements, the total amount of ketorolac used, and the time to healing for each group. We also carried out a subgroup comparison based on the use of a peripheral nerve catheter.

RESULTS: The charts of 123 patients (136 limbs) were evaluated in this study. This was made up of a total of 82 limbs in 70 patients who had deformity correction surgery (average age 16) and 54 limbs in 53 patients who had limb lengthening surgery (average age 14). We found no correlation between the total dose of ketorolac used and the duration of healing ($p = 0.220$ and $p = 0.860$ for the deformity correction group and the limb lengthening group, respectively). Deformity correction surgery was associated with statistically higher use of opioids but not ketorolac compared to limb lengthening surgery, even with the use of a peripheral nerve catheter. The use of peripheral nerve catheters in both groups of patients was associated with lower opioid use but higher ketorolac use. (See attached chart)

DISCUSSION AND CONCLUSION: The use of ketorolac did not result in an increased time to healing in patients who had osteoplasty for deformity correction or limb lengthening.

	Deformity correction surgery	Limb lengthening surgery	p value
Total MME	134.4 ± 172.6	68.61 ± 51.82	0.0012**
- No PNC	290.5 ± 269.2	98.57 ± 66.06	0.0066**
- PNC	102.3 ± 125.8	57.09 ± 40.59	0.0009***
Total Toradol (mg)	80.81 ± 78.12	79.67 ± 45.2	0.6514
- No PNC	62.57 ± 57.74	70.4 ± 56.85	0.7035
- PNC	84.56 ± 81.52	83.23 ± 40.15	0.6506