Effect of Post-Operative Ketorolac Administration on Bone Healing in Ankle Fractures

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Disclosure

• Elizabeth McDonald, BA; Rachel Shakked, MD; Brian S. Winters, MD; Joseph N. Daniel, DO; and Steven M. Raikin, MD have no conflicts to disclose.

• David I. Pedowitz, MD reports personal fees from Integra LLC, Zimmer-Biomet, and Arthrex, outside the submitted work. In addition, Dr. Pedowitz has a patent Cadence Total Ankle Replacement with royalties paid.
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Background

• Ketorolac reported to delay bone healing after spine surgery 1-3

• Valuable non-narcotic adjunct for post-operative pain

• Not well defined in foot and ankle literature 4-5
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Purpose

• To report clinical and radiographic outcomes for patients treated with a perioperative ketorolac regimen after open reduction and internal fixation (ORIF) of ankle fractures.

Methods

• Single-center, retrospective review w/ minimum 4 month follow-up
• Post-Op received 20 tablets of 10mg ketorolac Q6 hours
• Surgical Indication
  • Lateral malleolus fx
  • Bimalleolar fx
  • Trimalleolar fx
Methods

• Clinical healing
  • walking comfortably, minimally tender on palpation, and evidence of radiographic healing

• Radiographic healing
  • blinded review by 2 fellowship-trained foot and ankle surgeons

• Wound complications
  • post-operative need for local wound care, antibiotics, or repeat surgery

• Severity
  • fibula, medial malleolus, and posterior malleolus involvement
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Demographics

- 281 patients
  - mean age 50 yrs
  - mean BMI 29.8

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
<th>Count</th>
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<tbody>
<tr>
<td>Obese</td>
<td>54%</td>
<td>112/281</td>
</tr>
<tr>
<td>Female</td>
<td>54%</td>
<td>152/281</td>
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<tr>
<td>Current smoker</td>
<td>13%</td>
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<tr>
<td>Former smoker</td>
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<tr>
<td>Diabetic</td>
<td>19%</td>
<td>53/281</td>
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<tr>
<td>Rheumatoid</td>
<td>2%</td>
<td>6/281</td>
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<tr>
<td>Oral steroids</td>
<td>6%</td>
<td>17/281</td>
</tr>
</tbody>
</table>
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Results

- Clinically healed
  - 265 of 281 patients (94%) within 12 wks
- Radiographically healed
  - 261 of 281 patients (92%) within 12 wks
- Wound complications
  - 17/281 (6%) total complications
    - 4/16 (25%) not healed by 12 wks
    - 13/265 (5%) healed by 12 wks
- Pts not healed by 12 wks were significantly more likely to have a wound complication than those pts who were healed by 12 wks (p=0.006)
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Results

- Radiographic healing 13 wks men vs 12 wks women \( (p=0.004) \)
- other demographic variables not significant
- Not healed \( \leq 12 \) wks
  - mean clinical healing 16.94 wks
  - radiographic healing 17.10 wks
- no difference in severity \( (p=0.500) \)
Conclusion

• Comparable mean time to healing in this cohort and historical control taking no NSAIDs

• Mean healing time was delayed when a wound complication occurred.

• Ketorolac can safely be administered to improve pain control after ankle fracture surgery.


THANK YOU.