Optimizing Control of Acute Postoperative Pain While Minimizing Opioid Use
Dental Pain Model for Analgesic Research

The Third-Molar Model

Very low placebo response rate (15%)

Young, healthy patients, ASA I

Surgical trauma includes both hard & soft tissues

Reliably & rapidly reaches severe pain level (short time)
Single Dose Oral Analgesics for Acute Postoperative Pain in Adults—an Overview of Cochrane Reviews (Review)

MOORE RA, DERRY S, ALDINGTON D, WIFFEN PJ

Cochrane Database Syst. Rev. 2015, Issue 9
Art. No. CD008659
DOI: 10.1002/14651858.pub3
NNTs  Reported by Moore et al. 2015

- Ibuprofen/200 mg + acetaminophen/500 mg: 1.6
- Ibuprofen/400 mg: 2.5

- **Long** duration (>8hrs): difunisal/500 mg, acetaminophen/650 mg + oxycodone/10 mg, ibuprofen/400 mg + APAP/1,000 mg

- No evidence for analgesia: aspirin/500 mg & oxycodone 5 mg (stand-alone)

- No systematic reviews of hydrocodone
- Tooth extraction: 1-3 days
- Endodontic therapy: 1-7 days
- Periodontal graft surgery: 7+ days
Plasma Ibuprofen 19.83 (µg/ml)

Time (hrs)

400 mg, single dose

AUC

Opioids: Consistently Variable

- Less efficacious than NSAIDs as single agents
- Subject to pharmacogenetic polymorphisms
- Nausea, vomiting
- Sedation
- Important alternatives (ASA allergy, NSAID intolerance, GI disease, coagulopathies)
Oxycodone blood level following single oral dose (manufacturer’s data)

*Manufacturer’s recommended dose = 5 to 15 mg q. 4 -6 hrs
Pharmacogenetics & Analgesics

CODEINE → O-dealkylation → MORPHINE

HYDROCODONE → HYDROMORPHONE
## Oxycodone vs. Hydrocodone

<table>
<thead>
<tr>
<th><strong>Oxycodone</strong></th>
<th><strong>Hydrocodone</strong></th>
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<tbody>
<tr>
<td>- Evaluated in systematic reviews/meta-analyses</td>
<td>- Evaluated in limited number of RCTs</td>
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<tr>
<td>- Adult dose range 5-15 mg</td>
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<td>- $T_{1/2} =$</td>
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<tr>
<td>- Phase I: CYP 3A4</td>
<td>- Phase I: CYP 2D6</td>
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<tr>
<td>- Protein binding:</td>
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<tr>
<td>- No combinations with APAP</td>
<td>- Only available in combination with APAP</td>
</tr>
</tbody>
</table>
Using the Evidence: OTC Drugs

*adult patient, ASA I, no contraindications

For pain relief, take 400 mg ibuprofen (2 Advil) with 1,000 mg acetaminophen (2 Extra-Strength Tylenol) immediately, then every 8 hours as needed
Using the Evidence: Rx Opioid Drugs
*adult patient, ASA I, no contraindications

Rx
Oxyocodone immediate-release, 5 mg tabs
Disp: 6 (six) tabs
Sig: Take 2 tabs with 1,000 mg Acetaminophen (2 Extra-Strength Tylenol) immediately, then every 8 hours as needed, for dental pain.
Warnings: Do not drive, etc.
Opioid Prescribing: Acute and Postoperative Pain Management (AAOMS White Paper 2017)

Pre-emptive NSAIDs
Perioperative corticosteroid
Long-acting local anesthetic
Avoid long-acting/ER opioids
NSAIDs are “first-line” anaglesics
NSAIDS+APAP work synergistically
Consider short-acting opioids for breakthrough pain
Use Rx monitoring programs
Trending NOW: Analgesics

Prostaglandin Receptor Antagonists.
AL-8810
Sharif NA, Klimko PG. Brit. J. Pharmacol. 2018

Preemptive Analgesia/Perioperative Dextromethorphan


Using the Evidence: Are NMDA Receptor Antagonists in Our Future?
Using the Evidence: Corticosteroids

**Efficacy of Corticosteroids on Postoperative Endodontic Pain: A Systematic Review and Meta-analysis**


**Effect of Preoperative Corticosteroids in Patients With Symptomatic Pulpitis on Postoperative Pain After Single-Visit Root Canal Treatment: A Systematic Review and Meta-analysis**

Suneelkumar C et al. *J. Endod.* 2018;44(9):1347-1355