Literature Review on Current Postoperative Pain Management Protocols

CALAOMS 19TH ANNUAL MEETING & ANESTHESIA UPDATE

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No disclosures.
Outline

◦ Historical Perspectives

◦ Current literature:
  ◦ 3rd molar sx & orthognathic sx

◦ Protocols & Studies
Historical Perspective

POSTOP PAIN
History

- 1980s to early 2000s
- Objective data has changed practice patterns
“...change(d) my prescribing habits (1990s) from hydrocodone-acetaminophen to flurbiprofen in my suburban oral surgery practice...fewer patients called postoperatively with complaints of pain when taking NSAIDs than when taking opioids...”

- Dr. Florine
History

- Commonly accepted principles
  - 3rd molar sx painful
  - LA critical
  - NSAIDs just as efficacious as opioids
“Dental pain is included in the musculoskeletal category, and for decades studies have repeatedly found that NSAIDs are generally superior to opioids at conventional dosages.”
History

• Commonly accepted principles...
  • Tramadol efficacious, few SEs
  • Steroids reduce pain & swelling
  • Pre-emptive analgesia?
  • Rx habits variable
  • PCA v PO/IV?
3RD MOLAR EXTs

CURRENT LITERATURE
The ‘Ideal’ Study Procedure

- 10 million 3rd molar exts per year in US
- Short duration
- Young, healthy cohort
- Sedation variance; intra-/postop assess.
Does Single Dose Pre-Emptive IV Ibuprofen Reduce Postop Pain Following Third Molar Sx?

- What is the pre-emptive analgesic effect of IV ibuprofen on postop pain?
- 75 pts, ext of lower third molars
  - Group 1: IV ibuprofen 60 min pre, IV placebo post
  - Group 2: IV placebo pre, IV ibuprofen 60 min post
  - Group 3: Placebo

- Preop IV ibuprofen best; less pain and less rescue med requirement
- Rescue acetaminophen 640 mg G1, 1240mg G2, and 1840mg G3
Assessment of Combined Local Anesthesia and Ketamine for Pain, Swelling, & Trismus After Sx Ext of Third Molars

- What is the efficacy of combined LA and subanesthetic ketamine?
- 50 pts, ext of lower third molars
  - Group 1: LA alone
  - Group 2: LA + ketamine (0.3 mg/kg) combo
- Facial swelling sig lower and mouth opening sig greater for the LAK group
- Pain scores sig lower for LAK group
The Efficacy & Clinical Safety of Various Analgesic Combinations for Post-Operative Pain After Third Molar Surgery: A SR & M-A

- Which analgesic combinations are most effective?
- Systematic Review & Meta-Analysis of RCTs
- 14 studies, 3500 subj, 10 groups/17 dosages of analgesic combos
There were 17 drug combinations with different dosages

1. Acetaminophen 650mg + codeine phosphate 60mg
2. Acetaminophen 600mg + codeine phosphate 60mg
3. Acetaminophen 300mg + codeine phosphate 30mg
4. Acetaminophen 1g + codeine phosphate 30mg
5. Acetaminophen 1g + hydrocodone bitartrate 10mg
6. Acetaminophen 500mg + hydrocodone bitartrate 7.5mg
7. Acetaminophen 325mg + oxycodone HCL 5mg
8. Acetaminophen 500mg + ibuprofen 200mg
9. Acetaminophen 1g + ibuprofen 400mg
10. Aspirin 650mg + caffeine 65mg
11. Aspirin 650mg + codeine phosphate 60mg
12. Aspirin 325mg + caffeine 40mg + butalbital 50mg + codeine phosphate 15mg
13. Ibuprofen 400mg + oxycodone HCL 5mg
14. Ibuprofen 200mg + caffeine 200mg
15. Ibuprofen 200mg + caffeine 100mg
16. Ibuprofen 200mg + caffeine 50mg
17. Ibuprofen 400mg + codeine phosphate 25.6mg

Tylenol 650, Aspirin 650, Ibuprofen 400 + ea other, various opioids, caffeine
The Efficacy & Clinical Safety of Various Analgesic Combinations for Post-Operative Pain After Third Molar Surgery: A SR & M-A

- Ibuprofen 400mg and oxycodone 5mg had superior efficacy
- Ibuprofen and caffeine had a reasonable analgesic profile with fewer side effects
A Comparison of the Effects of Midazolam/Fentanyl and Midazolam/Tramadol for Conscious Intravenous Sedation During Third Molar Extraction

- 60 pts, ext of horizontal 3rd molars
  - G1: midazolam alone
  - G2: midazolam + 1ug/kg fentanyl
  - G3: midazolam + 1mg/kg tramadol

- Postop pain scores sig lower & time to first rescue med sig longer for midazolam + tramadol group
Liposomal Bupivacaine Use in Third Molar Impaction Surgery: INNOVATE Study

- Does liposomal bupivacaine work for third molar surgery?
- 89 ‘per protocol’ as 73 pts excluded d/t protocol violations
  - Placebo group: lidocaine + postop saline
  - Study group: lidocaine + postop liposomal bupivacaine

- Liposomal bupivacaine group had significantly lower pain scores and time to first opioid medication
Liposomal bupivacaine

- Long-acting local anesthetic, proprietary foam soln
- DOA: 24-72h (96h)
- Hepatic metabolism
- 25 ga needle or larger bore
- Minimum 20 minutes after lidocaine
- May inject with traditional bupivacaine
- 10 cc (133 mg) appropriate, max 20 cc (266 mg)
Investigation of an Opioid Prescribing Protocol After Third Molar Extraction Procedures

- Does an opioid Rx protocol decrease opioid prescriptions for 3rd molar sx?
- Instructions: Ibuprofen +/- acetaminophen, hydrocodone prn

- # of opioid prescriptions was decreased
- non-opioid prescriptions increased
- Higher CDT codes = increased Rx opioids
- Variance decreased
NMCSD
Prospective Study
3RD MOLARS
NMCSD Prospective 3rd Molar Study

- Anesthetic Protocol
  - Midazolam / ketamine / propofol
  - Lidocaine for IAN blocks
  - bupivacaine for vestibule infiltration
  - LB for vestibule infiltration
- Ext procedure
- Postop:
  - G1: PO toradol + acetaminophen, + 5 tabs oxycodone prn
  - G2: PO ibuprofen + acetaminophen, + 5 tabs oxycodone prn
NMCSD Prospective 3rd Molar Study

- 1/40 patients called/returned for additional pain medication
- 5 tabs oxycodone
ORTHOGNATHIC SX
CURRENT LITERATURE
Patient-Controlled Analgesia and Length of Hospital Stay in Orthognathic Surgery: RCT

- Are hospital length of stay and pain scores different for PCA v non-PCA after jaw sx?
  - 40 pts (15-56), 2-jaw / 1-jaw / +/-genio, 3rd molars

- Median LOS 2d for both groups
- No difference in pain scores (rest or movement)
- *1 pt transitioned to PCA group (intolerant of PO protocol)
Safe and Effective Outpatient 2-Jaw Orthognathic Surgery

◦ Can same-day 2-jaw sx be safe/effective?

◦ Surgical (efficiency, hemostasis)
◦ Patient engagement (education)
◦ Anesthetic (pre-emptive, propofol/remi-fentanyl, limit IVF)
◦ Post-op (blocks, no/light elastics, sxn wean at 2h)

◦ 75% home same day, 5% bounce-back, 0 re-admissions
Postoperative Pain and Opioid Analgesic Requirements After Orthognathic Surgery

- Do age, gender, and type of surgery effect postop pain intensity and opioid analgesic consumption after orthognathic surgery?
- Primary outcome variable: opioid analgesic consumption

- <25yoa slightly higher req, W>M pain scores, max sx least pain
NMCSD
Prospective Study
ORTHOGNATHIC SURGERY
NMCSD Prospective Ortho Study

- Maxillary jaw surgery
  - G1: Traditional bupivacaine
  - G2: Traditional bupivacaine + Liposomal bupivacaine (10cc/133mg)

- Anesthetic Protocol
  - At discretion of anesthesia provider
  - No fentanyl/opioids requested (not essential)

- Postop:
  - Acetaminophen, ibuprofen scheduled
  - Tramadol/oxycodone prn
  - IV rescue
NMCSD Prospective Ortho Study

- Avg <1 tramadol / <1 oxycodone per pt - both groups
- 24 pts to date, 12 ea group
- No sig diff in pain scores or opioid requirement (milligram morphine equivalents)
Questions / Comments