141th Annual Meeting
May 12 – May 14, 2011

Jewel of the Great Lakes

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Thursday, May 12, 2011
2:30 to 5:00 P.M.

Everything I Know About Endodontics, I Learned After Dental School Part II
In patients studied, 57% reported no pain after debridement and shaping of the root canal system, 21% had slight pain, 15% had moderate pain and 7% had severe pain.


Odontogenic Pain

Usually caused by either noxious physical stimuli or the release of inflammatory mediators that stimulate specific nerve receptors (nociceptors).

The most consistent factor that predicts post-operative endodontic pain is the presence of preoperative hyperalgesia (spontaneous pain, reduced pain threshold, and increased perception to noxious stimuli).


The “3D’s” of Pain Control

Diagnosis

Definitive Treatment

Drug Therapy As Needed

Diagnosis and Definitive Treatment

The etiology (“the cause”) must be identified prior to any treatment.

Treatment does not always involve the “high speed drill”. Prescription of medication can also be considered treatment.

Reduction in Pain With Treatment Alone

Pulpotomy reduced pain reported in 88% of patients (62 of 70 pts) at 24 hrs. They also reported no difference in medicated
dressings (i.e., crestatin, eugenol, ZOE, camphorated phenol) vs. dry cotton pellet for pain.

12 Drug Usage
- Need to balance (titrate) patient’s pain against side-effects of drugs.
- Most analgesia in combos is due to the non-narcotic.
- Most of the side effects are due to the narcotic.
- Non-narcotics (NSAIDs) suffer from a ceiling in the dose-response curve.

13 Flexible Prescription Strategy
- Don’t fall into the habit of always Rx the same analgesics for all patients.
- Use maximal dose of non-narcotic first.
- Use the narcotic as an “adjunct”, it will increase analgesia, but at the cost of increased side effects.

14 Pre-treating Patients With NSAIDs
- Reduces post-operative pain.
- Rational for pre-treatment is based on blocking cyclooxygenase enzyme before the arachidonic acid cascade is activated.
- Recent studies suggest that pre-tx dose of NASIDs can be given up to 2 hrs after tx. Prostaglandins shown not to increase before this time.

15 Advantages vs. Disadvantages of NSAIDs
1. Highly effective for pain of inflammatory origin.
2. Side effect profile is less adverse than opioids.
3. No addiction potential.
4. No tolerance.
2. Ceiling effect for analgesia (600mg).

Common Side Effects:
1. GI
2. Bleeding
3. Renal
4. Allergies

16 Rapid Acting Ibuprofen
Rapid Acting Ibuprofen

- “Advil® Liquigels®” 200mg.
- Formulated in gel liquid for faster absorption.
- Similar peak analgesia as conventional ibuprofen formulations.
- Analgesic onset as fast as 18 min.
  > Cooper et al., Clin Pharm Therap(Abs) 1999.

Take Medications With Water

- Medications should be taken with 8oz of water.
- Triggers gastric flush into intestines.
- Drugs are not absorbed in the stomach.

Opiates

- Opioid receptors are located in the brain and peripherally.
- When activated they inhibit the transmission of nociceptive signals.
- 60mg Codeine is minimal requirement for clinically significant analgesia.
- Equivalent dose to 60mg Codeine is 2 tabs Tylenol III, Hydrocodone 7-10mg (Vicoden), or 5-6mg Oxycodone (Percocet).
- It is important to remember that opiates are good analgesics but not good anti-inflammatory medication.

Common Side Effects of Opiates

- Nausea
- Vomiting
- Respiratory Depression
- Constipation
- Tolerance and Dependence

Recent Advances in Opiate Pharmacology

- Vicoprofen® (200 mg Ibuprofen + 7.5 mg Hydrocodone)
  Advantage: Combines NSAIDs with opioid.
  Disadvantages:
  Less than ceiling dose of ibuprofen (600 mg).
  Cannot double-up dosage (hydro 7.5 mg = 60 mg codeine).
  Long term data not published yet.

Acetaminophen
- Analgesia and anti-pyretic ability similarly to aspirin.
- Little, if any, anti-inflammatory effects.
- Effect COX-3 enzyme?

Acetaminophens
- 90-95% of dose is metabolized in liver.
- 4% of this dose is metabolized into toxic metabolite. Reason high doses or a compromised patients liver may cause liver damage. Not relevant in healthy patients.
- Toxicity enhanced with alcohol intake greater than 3 drinks/day.
- Do not prescribe more than 4gm/day.
- Little to no effect on platelets.

Steroids
- Reduces inflammation by not allowing arachidonic acid to form from the break down of the membrane phospholipids.

Systemic Steroid Usage in Endodontics
- Dexamethasone: synthetic adrenocortical steroid.
- Decadron 0.75mg, 9 tabs, sig: day 1>3 tabs stat, then 1 tab tid, day 2> 1 tab bid, day 3> 1 tab. *(Krasner P, et al. OOO 62:187, 1988)*
- Important to place patient on antibiotic if infection is involved, due to the ability of corticosteroids to mask infection.
- Contraindications: drug hypersensitivity and fungal infections.

Steroids
- Enzyme (protein) synthesis, therefore slower uptake.
- Good for flare-ups (independent to nsaids).
- When prescribing steroids, take patient off nsaids).

Long Acting Local Anesthetic Usage for Pain Management
- Bupivcaine (Marcaine®)
- Etidocaine (Duranest®)
- Studies have shown that advantages of long term anesthesia delays onset of postoperative pain and reduces the magnitude of postoperative pain.
  Hargraves et al : 1999

Long Acting Anesthesia in Combination With NSAIDs
- Profound Postoperative Analgesia was shown in clinical study
Profound Postoperative Analgesia was shown in clinical study when pretx dose of Ibuprofen 600mg (30 min prior) was used in conjunction with a long acting anesthetic.

Roszkowski, Swift & Hargraves, 2000

28 Acetaminophen Enhances NSAIDs Analgesia

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30 Antibiotic Usage In Endodontics

31 Endodontic Infections

Bacteria are involved in all advanced pulpal pathosis

Increase in numbers and diversity (*species*) with time

Polymicrobial flora develop in canal system

Predominated by anaerobic bacteria

Certain species associated with symptoms

- *anaerobic gram-negative bacteria*
  - *Porphyromonas*
  - *Prevotella*

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- Penicillin VK
  
  (500mg: use loading dose, TID, 7 days)

- Amoxicillin
  
  (500mg: use loading dose, TID, 7 days)

- Clindamycin
  
  (150mg: use loading dose, TID, 7 days)

- Metronidazole
  
  (500mg: use loading dose, TID, 7 days, piggy-back with Pen VK or Amoxicillin)

33 Old School of Antibiotic Thought in Endodontics

- Erythromycin as second choice after penicillin. Proven ineffective against many anaerobic bacteria.

- Cephalosporins instead of penicillin. Proven to have poor
bone penetration and ineffective against severe anaerobic infections. 5%-10% cross reactive with Pen sensitive patients.

New School of Antibiotic Thought in Endodontics
- Augmentin (amoxicillin + clavulanic acid) has shown significant effect on “endodontic-type” bacteria.
- Has wider spectrum of bacterial activity outside of the oral cavity.
- Indicated for treatment of immunocompromised patients, who have odontogenic infections containing non-oral bacteria.
- May also be indicated for the most serious oral infections because of their more rapid and sustained plasma levels
- Augmentin 500mg (125mg clavulanic acid), BID.