

Pain Control During Endodontic Treatment

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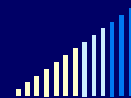
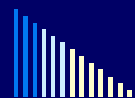
The University of Western Australia



Strategies for Managing Pain During Endodontic Treatment

Abbott PV, Parirokh M.

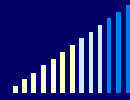
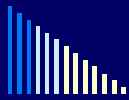
Aust Endo J 2018; 44: 99-113.



Importance of Pain Control During Treatment



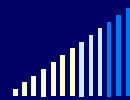
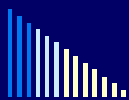
- ◆ Pain during treatment significantly impacts on the amount of post-op. pain
 - *Hence, adequate pain control is essential*



Local Anaesthesia

Hargreaves & Khan *Endod Topics* 2005

- ◆ Three goals of local anaesthesia:
 - Anaesthesia during treatment
 - Haemostasis during treatment
 - Prolonged post-operative pain control



Local Anaesthesia

Hargreaves & Khan *Endod Topics* 2005

- ◆ Pain control from local anaesthetics - two mechanisms:
 1. Direct: Block discharges from peripheral nerves
 - Duration: Minutes → Hours
 2. Indirect: Prolonged blocking of peripheral input reduces central sensitization
 - Duration: Hours → Days

Local Anaesthesia

Hargreaves & Khan *Endod Topics* 2005

- ◆ Inadequate local anaesthesia
 1. Pain during treatment
 2. More post-operative pain
 - ◆ Since prolonged exposure to sensory input increases allodynia and hyperalgesia

Pain from
non-injurious
stimuli

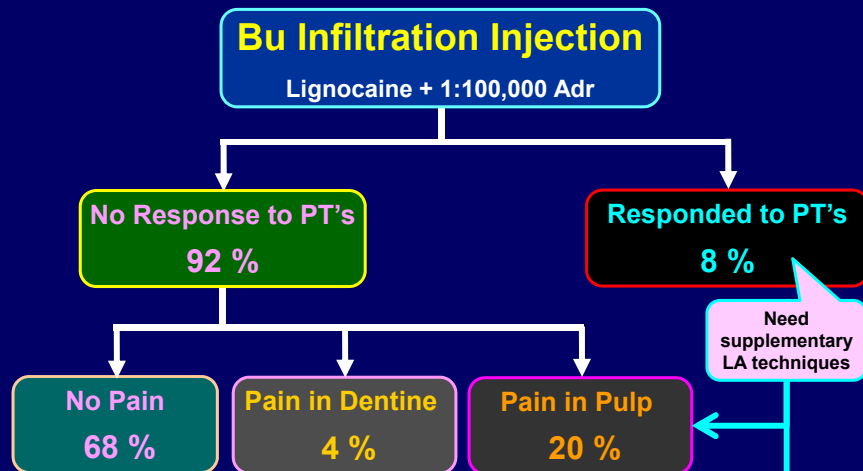
Exaggerated
sense of pain

Anaesthetic efficacy of the supplemental intraosseous injection of 2% lidocaine with 1:100,000 epinephrine in irreversible pulpitis

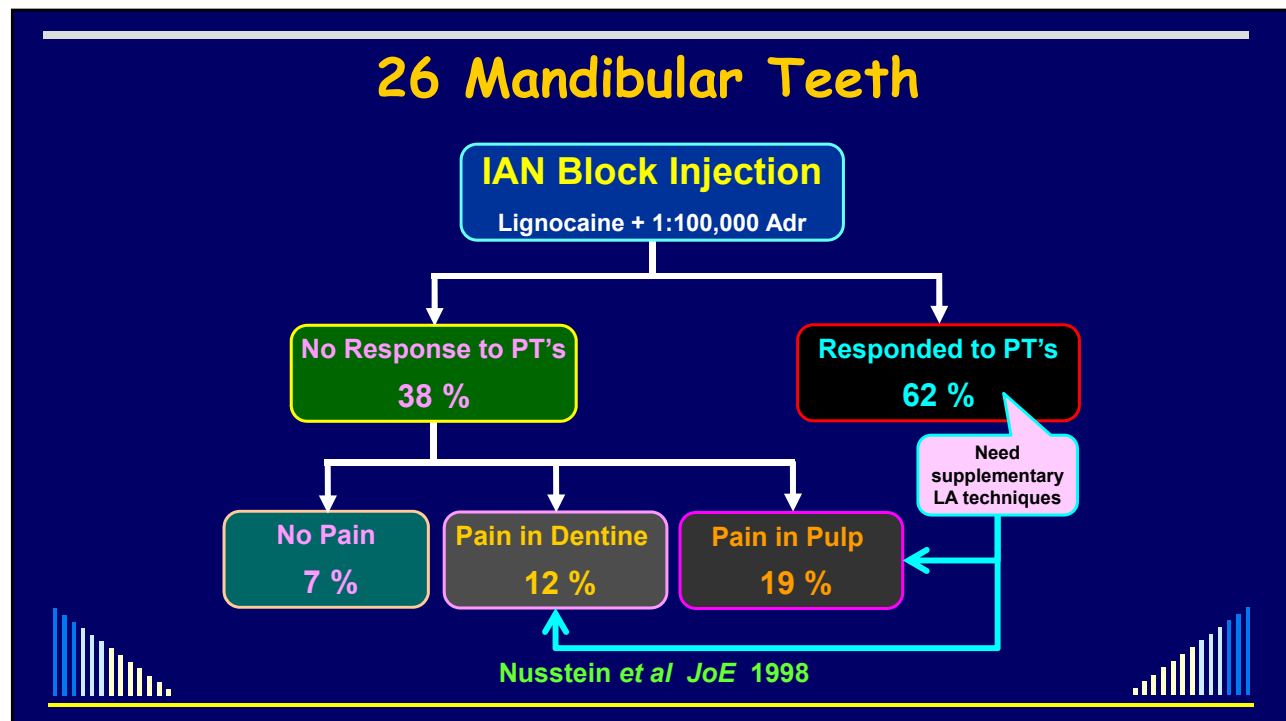
Nusstein J, Reader A, Nist R, Beck M and Meyers WJ.

J Endod 1998; 24: 487 - 91

25 Maxillary Teeth



Nusstein et al *JoE* 1998



Why Does Local Anaesthesia Not Work with Acute Irreversible Pulpitis?

- ◆ Various theories proposed - none proven
- ◆ Most commonly discussed:
 - Inflammation activates nociceptors (pain receptors) and associated central pain mechanisms
 - Inflammatory mediators reduce threshold of nociceptor activation
 - So minor stimuli fire the neurons
 - Mediated by prostaglandins
 - Produced by arachidonic acid metabolism
 - Prostaglandins sensitize nerve endings
 - Enhances pain and inflammation
 - Inflamed pulps have high levels of both prostaglandins and arachidonic acid

Why Does Local Anaesthesia Not Work with Acute Irreversible Pulpitis?

- ◆ Various theories proposed - none proven
 - LA unable to block conduction of all nerve impulses
 - When pain present - have more impulses than normal
 - pH is more acidic in the presence of inflammation so LA so
 - Spread of LA may restrict absorption
 - Increased blood flow and removes the LA more rapidly
 - Periapically, there may be stasis - reduced blood flow
 - Pain can neutralise the effects of LA in the CNS

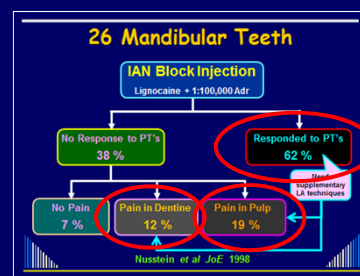
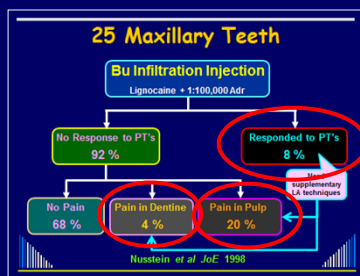
But most of these theories do not make total sense and they do not explain why a block injection does not work!

Why Does Local Anaesthesia Not Work with Acute Pulpitis?

- ◆ Other possible causes:
 - Insufficient dose
 - Incorrect injection site
 - Incorrect technique
 - Intravascular injection
 - Individual variation - anatomy, dosage, etc.
 - Variation in pain threshold and perceptions
 - Inadequate time for LA to work

Continued Pain After LA Injection

- ◆ **Three stages when pain may be felt:**
 1. **Pre-operative**
 2. **Dentine**
 3. **Pulp**



Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

1. **Pre-empt the difficult situation - i.e. Diagnosis !!**
2. **Consider pre-medication with ibuprofen**
 - Assuming no contra-indication

CONSORT Randomized Clinical Trial **J Endod 2010;36:1450-1454**

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

Masoud Parirokh, DDS, MSc, Rezvan Asbouri, DMD,[†] Ali Reza Rekabi, DMD,[‡] Nourzar Nakhaee, MD,[§] Abbas Pardakhti, PhD,[§] Sara Askarifard, DMD, MS,* and Paul V. Abbott, DDS, PhD^{||}*

Abstract

Introduction: Achieving pulp anesthesia with irreversible pulpitis is difficult. This study evaluated whether nonsteroidal anti-inflammatory drugs assist local anesthesia. **Methods:** In a randomized double-blinded clinical trial, 150 patients (50 per group) with irreversible pulpitis were given placebo, 600 mg ibuprofen, or 75mg indomethacin 1 hour before local anesthesia. Each patient recorded their pain score on a visual analog scale before taking the medication, 15 minutes after anesthesia in response to a cold test, during access cavity preparation and during root canal instrumentation. No or mild pain at any stage was considered a success. Data were analyzed by the chi-square and analysis of variance tests. **Results:** Overall success rates for placebo, ibuprofen, and indomethacin were 32%, 78%, and 62%, respectively ($p < 0.001$). Ibuprofen and indomethacin were significantly better than placebo ($p < 0.01$). There was no difference between ibuprofen and indomethacin ($p = 0.24$). **Conclusions:** Premedication with ibuprofen and indomethacin significantly increased the success rates of inferior alveolar nerve block anesthesia for teeth with irreversible pulpitis. (J Endod 2010;36:1450-1454)

Pain control particularly during the early phases of endodontic treatment is of paramount importance and makes both the dentist and the patient confident and comfortable for the remainder of the treatment (1). The inferior alveolar nerve block (IANB) is the conventional method for anesthetizing mandibular molar teeth (2, 3). Research has shown that gaining anesthesia in mandibular molars with irreversible pulpitis is much more difficult in comparison to the teeth with normal healthy pulps (4-6). Some investigations have been performed to overcome pulp pain that remains despite having had an IANB injection (2, 3, 7-14). Numerous investigations have been performed to increase the success rate of anesthesia during dental, and particularly endodontic, procedures such as the use of various anesthetic techniques and solutions as well as pretreatment with analgesics (7-25).

The concept of using preoperative analgesic drugs to increase the effectiveness of IANB is based on reports of their beneficial effects on reducing postoperative pain (23). Previous investigations using analgesics before administering IANB have reported conflicting results (10, 23-25). For example, Modaresi et al (23) reported significant improvements in the success rate of IANB in teeth with inflamed pulps after the use of analgesics, and Lainiro et al (10) reported higher success rates although they were not significantly different. In contrast, two separate studies reported no significant difference in IANB success rates when the patients were premedicated with analgesics (24, 25). Several reasons could explain these promising but not completely different results such as an insufficient number of subjects (10) and a lack of similarity of methods and clinical conditions (23). The aim of this study was to compare two types of nonsteroidal anti-inflammatory (NSAID) medication (ibuprofen and indomethacin)

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

- ◆ **Materials and Method:**
 - **Randomized double-blinded clinical trial**
 - **Mandibular molars - acute irreversible pulpitis**
 - ➔ **Confirmed by moderate-severe pain and lingering pain to cold pulp sensibility tests**
 - ➔ **BUT no spontaneous pain**
 - ➔ **AND no radiographic periapical changes**
 - ✦ **i.e. without acute apical periodontitis**

J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Materials and Method:

- 150 patients (50 per group) - given:
 - ✧ Placebo
 - ✧ Ibuprofen - 600 mg, or
 - ✧ Indomethacin - 75 mg

→ Taken 1 hour before local anaesthesia
- 2% lignocaine + 1:80,000 adrenaline used

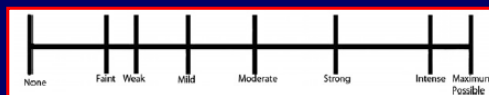
→ 1.8 ml given as an IAN block

J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Materials and Method:

- Pain scored on a visual analogue scale
 - Before taking the medication
 - 15 minutes after LA injection
 - In response to a cold pulp test
 - During access cavity preparation, and
 - During root canal instrumentation



J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Results:

- No sig. diff. in pre-treatment pain scores
- 120 pt's did not respond to the cold pulp sensibility tests 15 minutes after LA injⁿ
 - But 34 (28%) had pain during treatment
- Overall 64 had ineffective LA
 - 30 of these had pain to cold testing

J Endod 2010;36:1450-1454

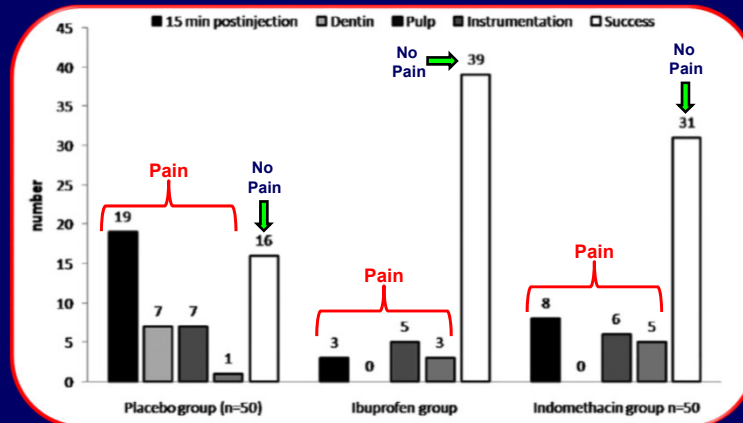
The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Results:

- Overall success
 - Placebo - 32%
 - Ibuprofen - 78%
 - Indomethacin - 62%
- Ibuprofen + Indomethacin
 - Sig. diff. to Placebo
 - But not sig. diff. to each other

J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis



J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Discussion:

- Pre-medication with a NSAID helped with pain control during treatment for acute irreversible pulpitis in mandibular molars
 - Ibuprofen more effective
 - And has less side effects than Indomethacin
 - ⊛ Esp. higher risk of heart attack, stroke, GIT problems, ulcers, etc.

J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Discussion:

■ Previous studies - mixed results

→ Pre-medication with NSAID is beneficial

- ✦ e.g. Seymour and Ward (1996)
Ianiro *et al* (2010)

J Endod 2010;36:1450-1454

The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

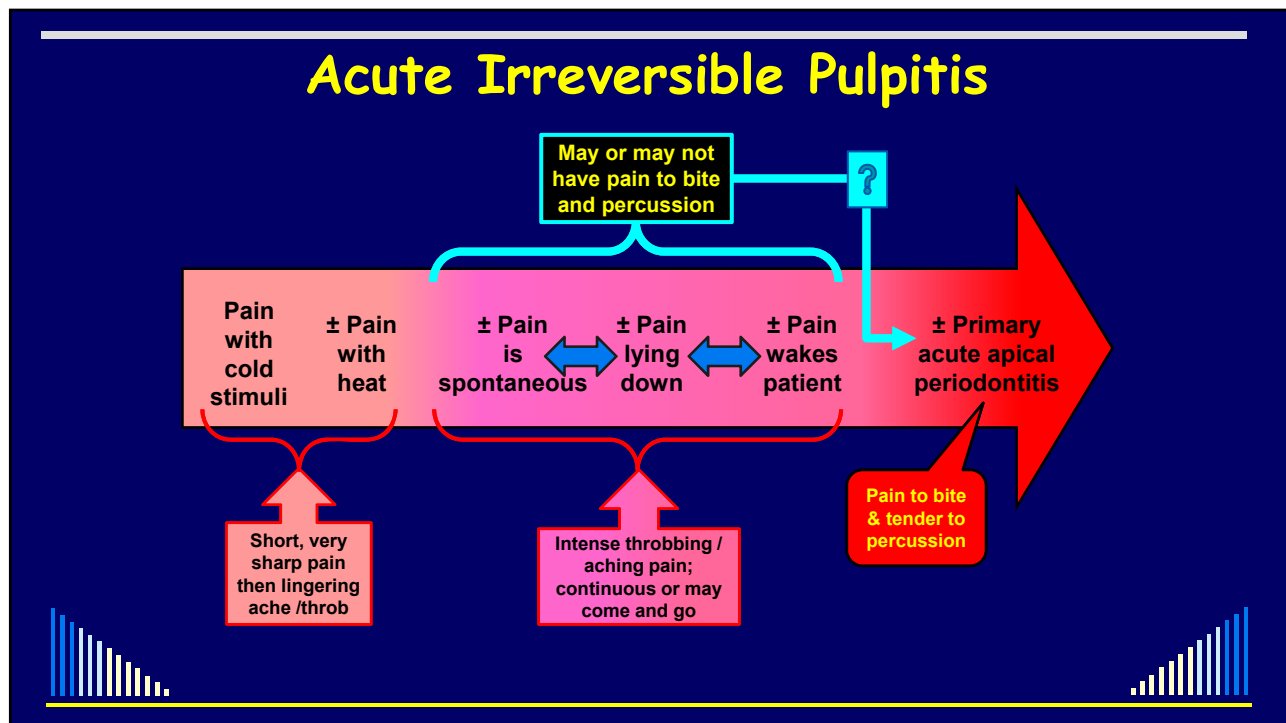
◆ Discussion:

■ Previous studies - mixed results

→ Others: Pre-medication NOT beneficial

- ✦ e.g. Aggarwal *et al* (2010), Oleson *et al* (2010)
 - Their main criterion for acute irreversible pulpitis was "spontaneous pain"
 - More advanced pulp inflammation
 - NSAID and LA less effective

J Endod 2010;36:1450-1454



The Effect of Premedication with Ibuprofen and Indomethacin on the Success of Inferior Alveolar Nerve Block for Teeth with Irreversible Pulpitis

◆ Conclusion:

- Pre-medication with a single dose of ibuprofen can help with pain control during treatment of acute irreversible pulpitis in mandibular molars
 - If there is no spontaneous pain
- Highlights the need for a thorough history and diagnosis of the presenting complaint

J Endod 2010;36:1450-1454

Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

1. *Pre-empt the difficult situation - i.e. Diagnosis !!*
2. *Consider pre-medication with ibuprofen*
3. *Test tooth: triplex air + percussion during examⁿ*
4. *Give Gow-Gates Block*

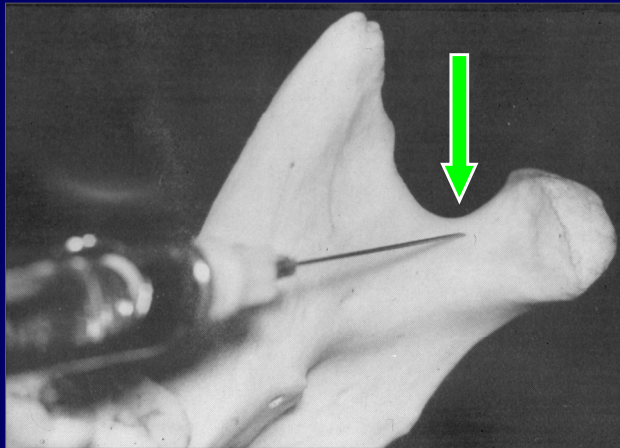
The Gow-Gates Mandibular Block

- ◆ **Developed by Dr. George Gow-Gates**
 - **Sydney, Australia**
 - **First used in 1947**
 - **First published in *OS:OM:OP* in 1973**
 - **After 26 years of daily use and testing**
 - **Many publications and practical courses since then - with:**
 - **Dr John Watson – Anatomist & Orthodontist**
 - **A/Prof. Michael Kafalias – Prosthodontist**

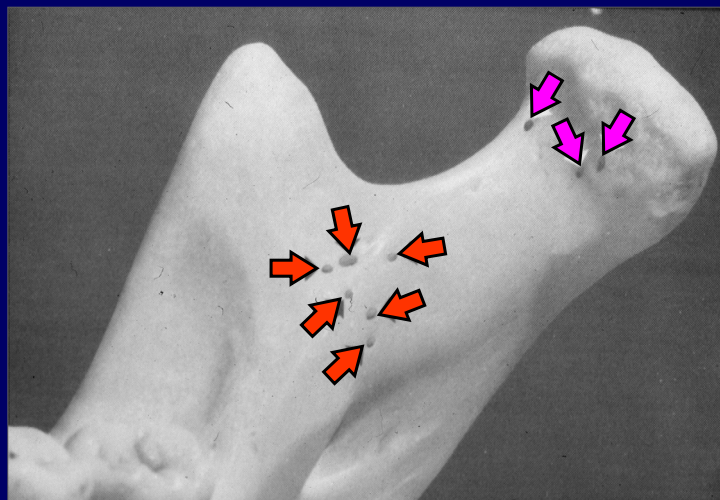
✦ **University of Sydney**

The Gow-Gates Mandibular Block

Target site: Lateral region of the neck of the condyle,
just below the insertion point of the lateral pterygoid muscle



The Gow-Gates Mandibular Block



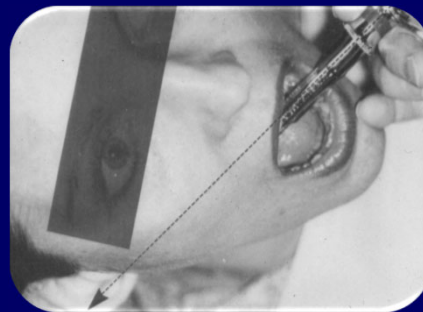
The Gow-Gates Mandibular Block

Entry point: Medial to the deep tendon of the temporalis muscle
and slightly below the Palatal cusp of the UPPER 2nd molar



The Gow-Gates Mandibular Block

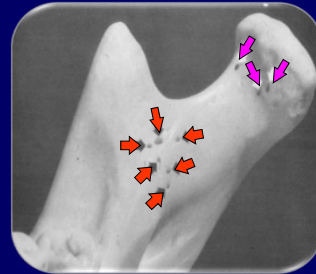
External landmarks: Apex of the intertragic notch and the lower
border of the tragus through to opposite corner of the mouth



The Gow-Gates Mandibular Block

Advantages

- ◆ High success rate
 - GG: 92 - 99 %
 - IAN: 65 - 85 %
- ◆ Complete Mandibular Nerve (V₃) block
- ◆ No supplementary injections needed
 - i.e. Do not need Long Buccal or Lingual nerve injections



The Gow-Gates Mandibular Block

Advantages

- ◆ Less muscle involved
- ◆ Less painful
- ◆ Even though larger needle used!
 - 25 Gauge long needle



The Gow-Gates Mandibular Block

Advantages

- ◆ A safer technique
- ◆ Less blood vessels at injection site
 - Positive aspiration rate - negligible



G-G injection site



IAN injection site

The Gow-Gates Mandibular Block

Advantages

- ◆ A safer technique
- ◆ Less blood vessels at injection site
 - Positive aspiration rate - negligible
- ◆ No vaso-constrictor required
 - Use plain Prilocaine (e.g. Citanest 4%)
 - Only 1 carpule required (i.e. 2.2 ml)

The Gow-Gates Mandibular Block

Incidence of Grade "A" anaesthesia

	IAN	G-G
3% Prilocaine + Adrenaline	83.9	98.25 %
3% Prilocaine + Felypressin	85.4 %	98.4 %
4% Prilocaine Plain	-	100 %

Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

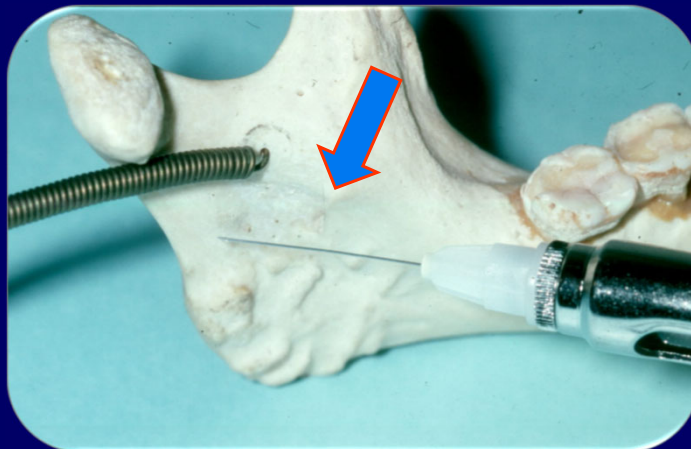
1. *Pre-empt the difficult situation - i.e. Diagnosis !!*
2. *Consider pre-medication with ibuprofen*
3. *Test tooth: triplex air + percussion during examⁿ*
4. **Gow-Gates Block**
 - First injection
 - Then discuss findings, treatment, etc.

Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

1. *Pre-empt the difficult situation - i.e. Diagnosis !!*
2. *Consider pre-medication with ibuprofen*
3. *Test tooth: triplex air + percussion during examⁿ*
4. *Gow-Gates Block*
 - First injection
 - Then discuss findings, treatment, etc.
5. *Re-test with triplex air and percussion*
 - *If no pain: place rubber dam and re-test !!*
 - *If still pain: Give IAN Block + Buccal Infiltration*

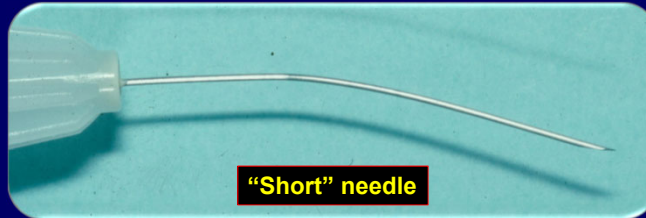
Inferior Alveolar Nerve Block

Hints



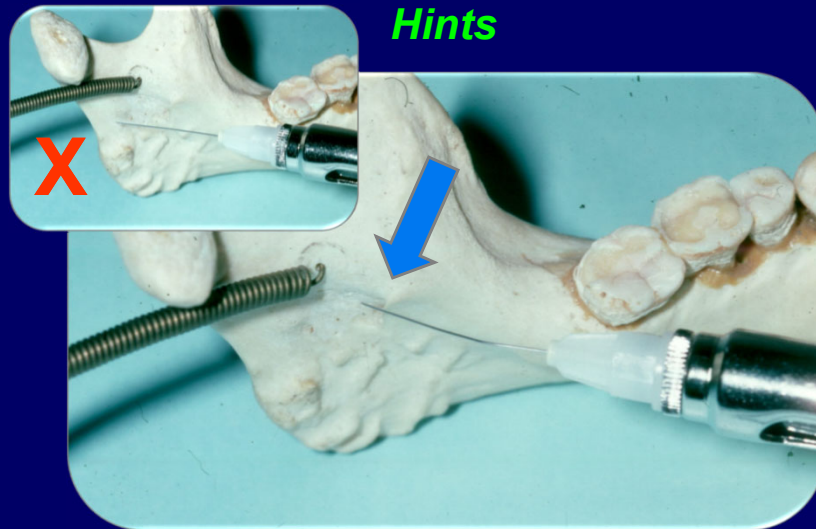
Inferior Alveolar Nerve Block

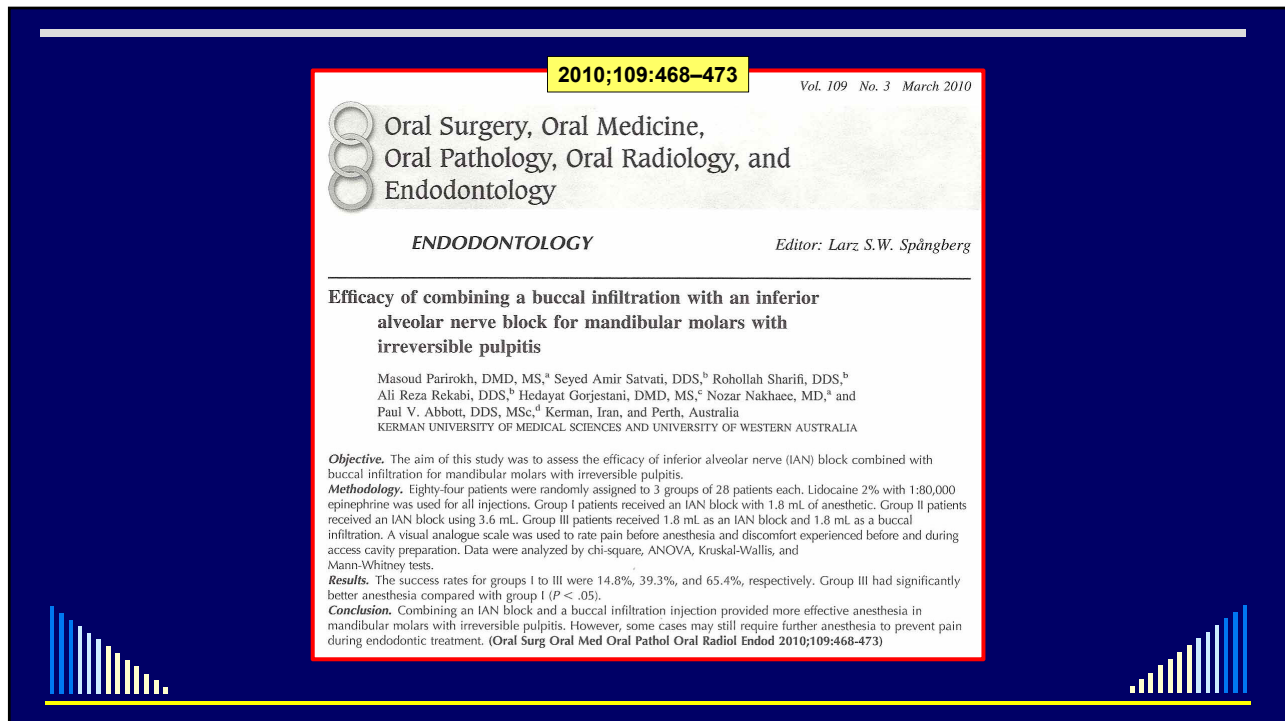
Hints



Inferior Alveolar Nerve Block

Hints





2010;109:468-473 Vol. 109 No. 3 March 2010

Oral Surgery, Oral Medicine,
Oral Pathology, Oral Radiology, and
Endodontology

ENDODONTOLOGY Editor: Larz S.W. Spångberg

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

Masoud Parirokh, DMD, MS,^a Seyed Amir Satvati, DDS,^b Rohollah Sharifi, DDS,^b Ali Reza Rezaei, DDS,^b Hedayat Gorjestani, DMD, MS,^c Nozar Nakhaee, MD,^a and Paul V. Abbott, DDS, MSc,^d Kerman, Iran, and Perth, Australia
KERMAN UNIVERSITY OF MEDICAL SCIENCES AND UNIVERSITY OF WESTERN AUSTRALIA

Objective. The aim of this study was to assess the efficacy of inferior alveolar nerve (IAN) block combined with buccal infiltration for mandibular molars with irreversible pulpitis.

Methodology. Eighty-four patients were randomly assigned to 3 groups of 28 patients each. Lidocaine 2% with 1:80,000 epinephrine was used for all injections. Group I patients received an IAN block with 1.8 mL of anesthetic. Group II patients received an IAN block using 3.6 mL. Group III patients received 1.8 mL as an IAN block and 1.8 mL as a buccal infiltration. A visual analogue scale was used to rate pain before anesthesia and discomfort experienced before and during access cavity preparation. Data were analyzed by chi-square, ANOVA, Kruskal-Wallis, and Mann-Whitney tests.

Results. The success rates for groups I to III were 14.8%, 39.3%, and 65.4%, respectively. Group III had significantly better anesthesia compared with group I ($P < .05$).

Conclusion. Combining an IAN block and a buccal infiltration injection provided more effective anesthesia in mandibular molars with irreversible pulpitis. However, some cases may still require further anesthesia to prevent pain during endodontic treatment. (*Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2010;109:468-473)

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ Materials and Method:

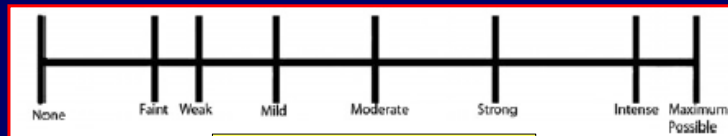
- 84 patients with acute irreversible pulpitis in a lower first molar tooth
- Randomly assigned to three groups of 28 patients each:
 - Group I - IAN block with 1.8 ml of LA solⁿ
 - Group II - IAN block with 3.6 ml of LA solⁿ
 - Group III - 1.8 ml as an IAN block PLUS 1.8 ml as a buccal infiltration

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ **Materials and Method:**

- **Used Lignocaine 2% + 1:80,000 adrenaline**
- **Visual analogue scale to rate pain:**
 - Pre-operative - before LA
 - At 15 minutes after LA injection
 - During access cavity preparation
 - During instrumentation of root canals



OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ **Materials and Method:**

- **Cold pulp sensibility test 15 mins after injⁿ**
- **Data analyzed by chi-square, ANOVA, Kruskal-Wallis, and Mann-Whitney tests**

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ Results:

■ Pre-op pain scores - no sig. diff.

- Group I - 117.2 ± 29.9
- Group II - 119.2 ± 22.8
- Group III - 112.8 ± 30.4

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ Results - overall success

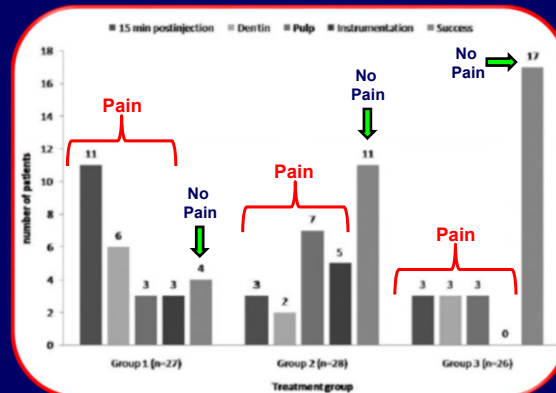
Group	Technique	No Pain
I	1.8 ml IAN Block	14.8%
II	3.6 ml IAN Block	39.3%
III	1.8 ml IAN Block + 1.8 ml Bu Infiltration	65.4%

Sig. Diff

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

No. of patients with pain at each stage and overall success



OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

- ◆ Overall 49 (60.5%) pt's had inadequate anaesthesia
 - Only 17 responded to a cold pulp sensibility test 15 minutes after injection
 - More in Group I
 - 32 pt's had pain when access cavity prepared
 - Despite no response to a cold pulp test
 - Group II - more when the pulp chamber was entered

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ **Discussion:**

- **Combining an IAN block with a Buccal infiltration provided more effective LA for acute irreversible pulpitis in lower molars**
- **Pulp testing after LA is not necessarily an indication of adequate pain control**
 - Dentists need to be aware of the possible need for extra pain control strategies

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ **Discussion:**

- **Group II better than Group I - but not sig. diff.**
 - Greater volume of LA solution helps a little
 - But an alternative injection site was more effective
 - ✧ Targets different nerves which may be involved in the pain sensation process

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an inferior alveolar nerve block for mandibular molars with irreversible pulpitis

◆ Discussion:

- Two Articaine studies with both IAN and Bu injections for irreversible pulpitis
 - RESULTS: 54% and 58% success
- This study tested lignocaine - 65.4%

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of Articaine

Literature review article - BDJ 2011

- ◆ Articaine for Irreversible Pulpitis
 - TWO studies - sig. better
 - One max. infilⁿ; one IAN block + Bu infilⁿ
 - SEVEN studies - no sig. difference
 - Max. Infilⁿ, IAN block + Bu infilⁿ, G-G block
- ◆ Articaine for other injections (i.e. not irrev. pulpitis)
 - SEVEN studies - sig. better
 - TEN studies - no sig. diff.

Yapp, Hopcraft, Parashos - Brit Dent J 2011; 210: 323-9

Efficacy of combining a buccal infiltration with an
inferior alveolar nerve block for mandibular molars
with irreversible pulpitis

◆ Discussion:

- Hence, no advantage in using Articaine
 - ✦ Beware potential side effects with IAN blocks
 - ✦ Esp. lingual nerve paraesthesia

OS:OM:OP:OR:Endo 2010;109:468-473

Efficacy of combining a buccal infiltration with an
inferior alveolar nerve block for mandibular molars
with irreversible pulpitis

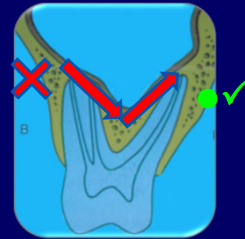
◆ Conclusions:

- More effective LA for acute irreversible pulpitis in lower molars when an IAN block is combined with a Bu infiltration
- *However, some patients will still have pain !!*

OS:OM:OP:OR:Endo 2010;109:468-473

Supplementary Injections - Other Teeth

- ◆ Labial infiltration for lower anterior teeth
- ◆ Palatal infiltration for upper molars
- ◆ Palatal for upper premolars and anterior teeth
 - Anterior middle superior alveolar (AMSA) nerve block



Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

1. *Pre-empt the difficult situation - i.e. Diagnosis !!*
2. *Consider pre-medication with ibuprofen*
3. *Test tooth: triplex air + percussion during examⁿ*
4. *Gow-Gates Block*
 - *First injection - then discuss findings, treatment, etc.*
5. *Re-test with triplex air and percussion*
 - *If no pain: place rubber dam and re-test !!*
 - *If still pain: Give IAN Block + Buccal Infiltration*
6. *Allow more time for LA to work*
7. *Place rubber dam - use cuff technique*

Rubber Dam Cuff Technique

◆ Advantages:

- Enables PDL injections if required
- Full access to the entire tooth
- Better vision

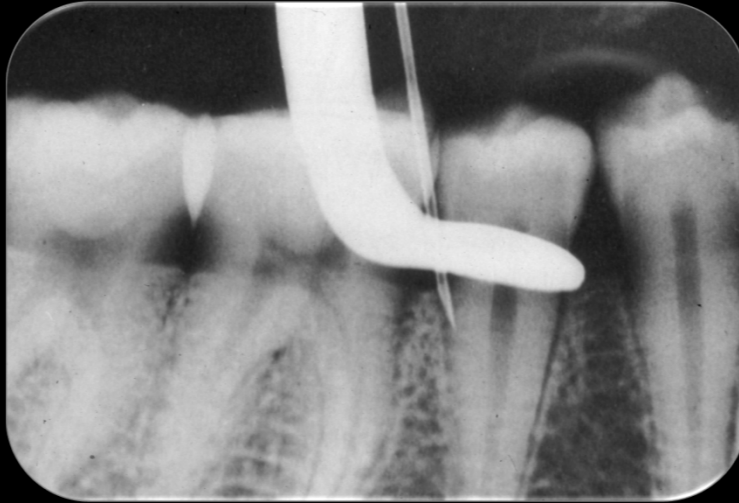


Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

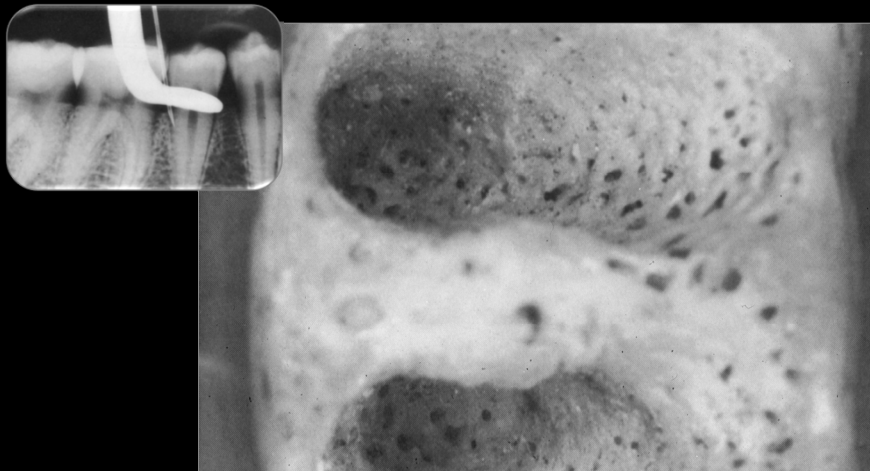
8. *Re-test again with triplex air and percussion*

- *If no pain: proceed with treatment*
 - Turn the H/S handpiece water off !!
- *If pain: give PDL injection and test again*
 - Can then normally cut enamel or restoration

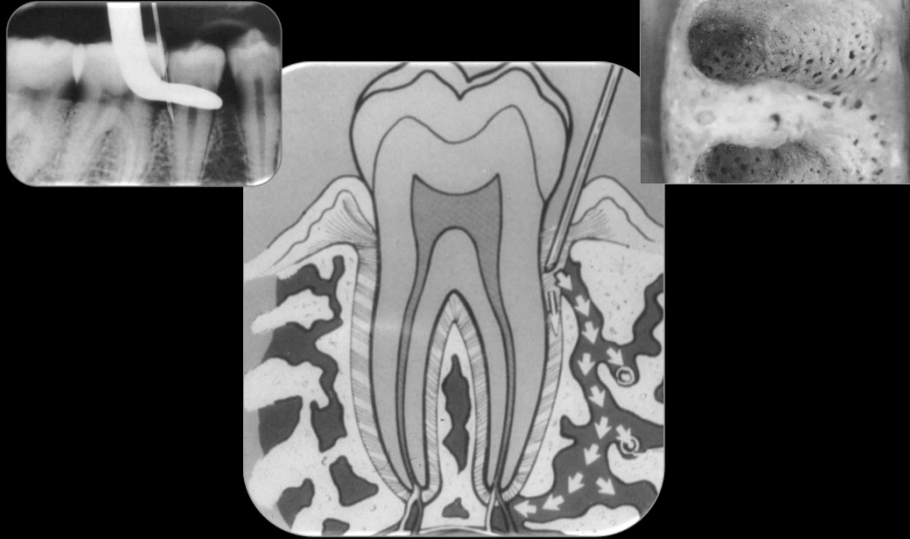
Periodontal Ligament Injection



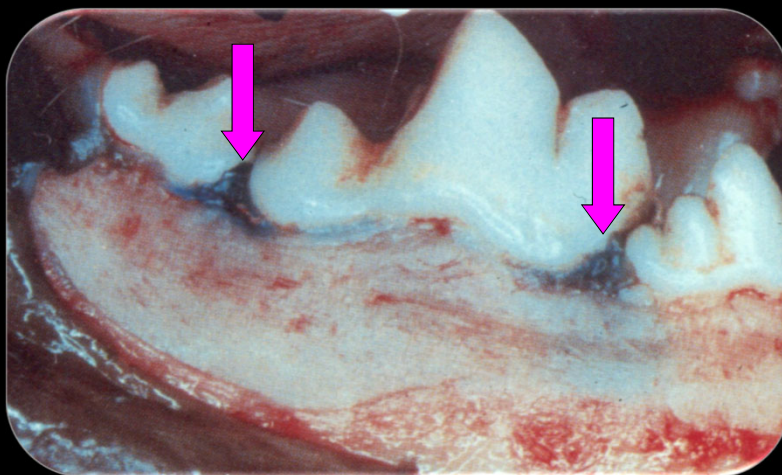
Periodontal Ligament Injection



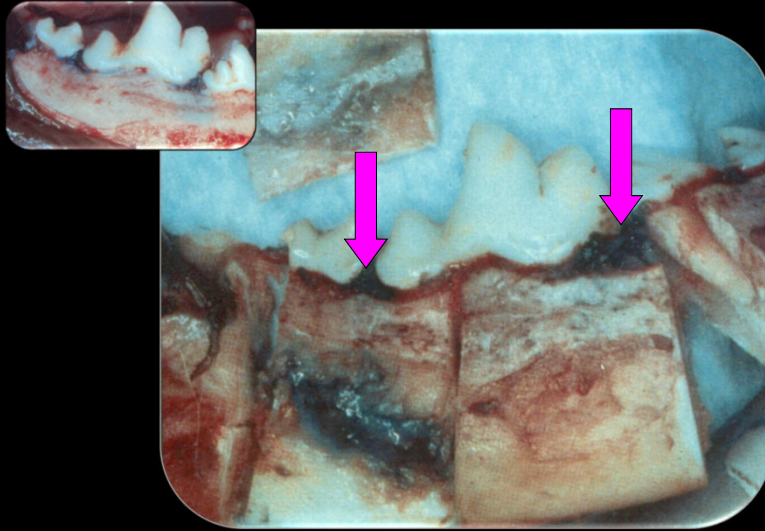
Periodontal Ligament Injection



Periodontal Ligament Injection



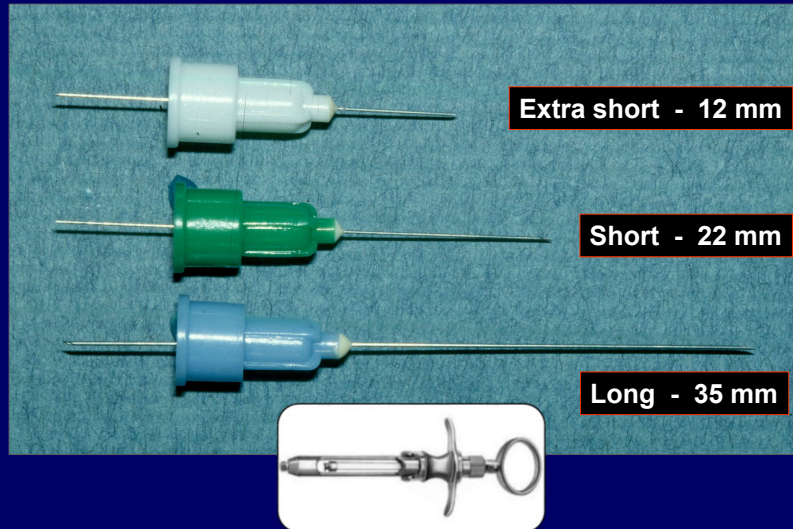
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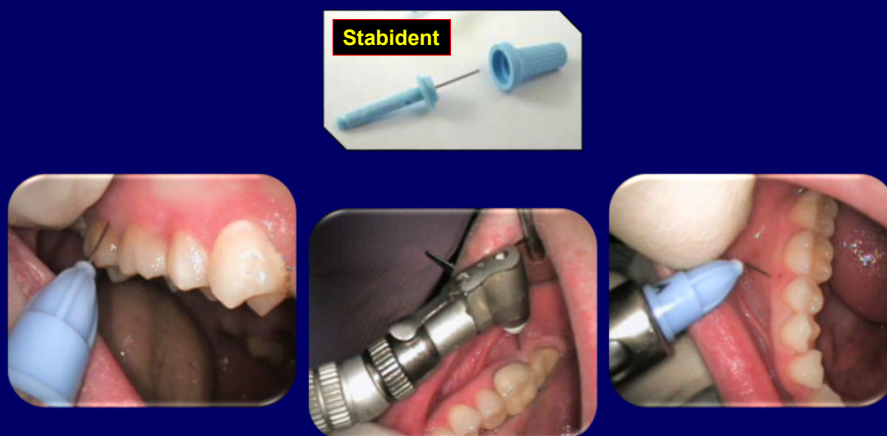
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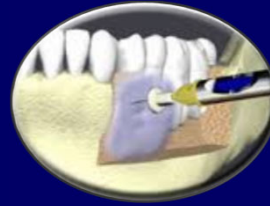
Periodontal Ligament Injection



Intra-osseous Injections



Intra-osseous Injections



Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

8. Re-test again with triplex air and percussion

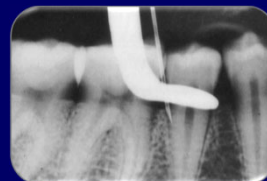
- If no pain: proceed with treatment
 - Turn the H/S handpiece water off !!
- If pain: give PDL injection and test again
 - Can then normally cut enamel or restoration

9. If pain felt on reaching the dentine

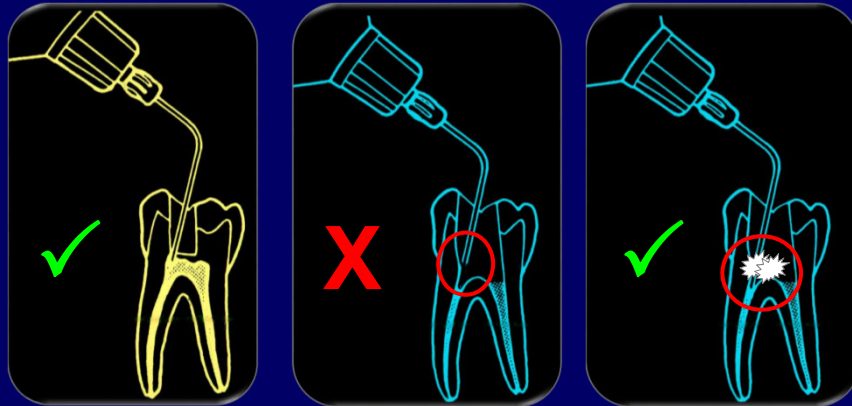
- PDL injection

10. If pain felt on reaching the pulp

- Intra-pulp injection



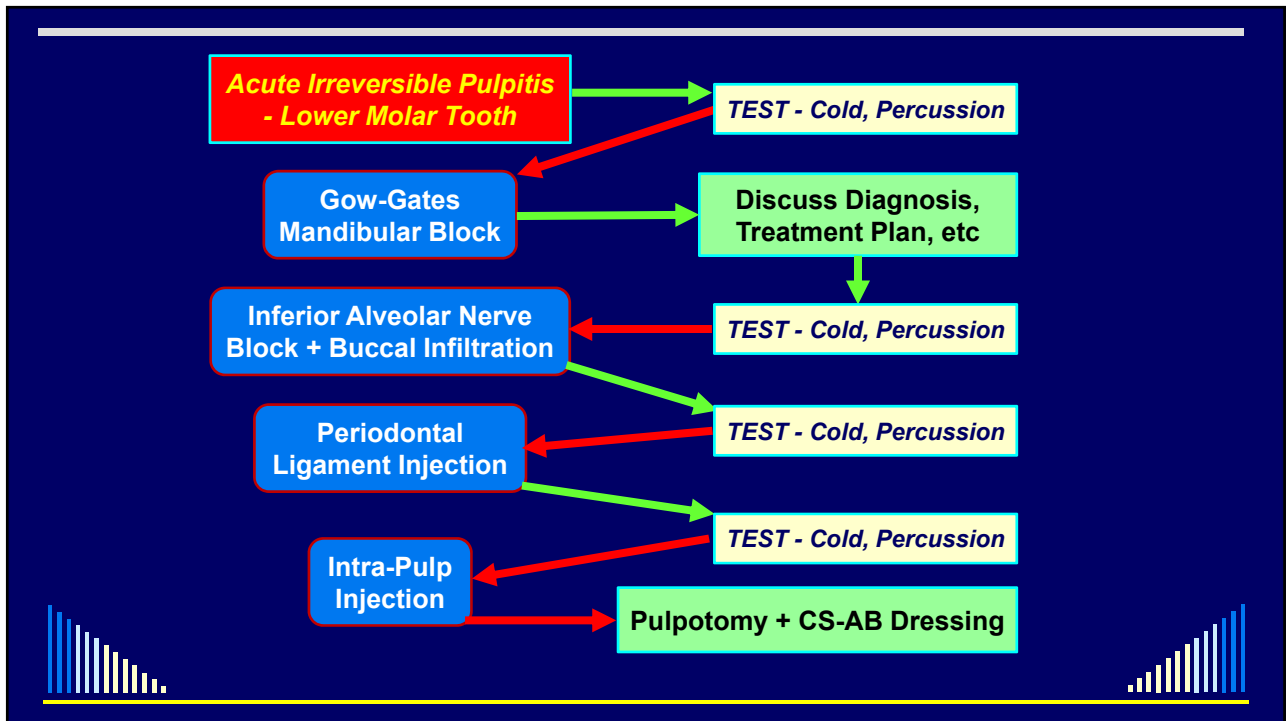
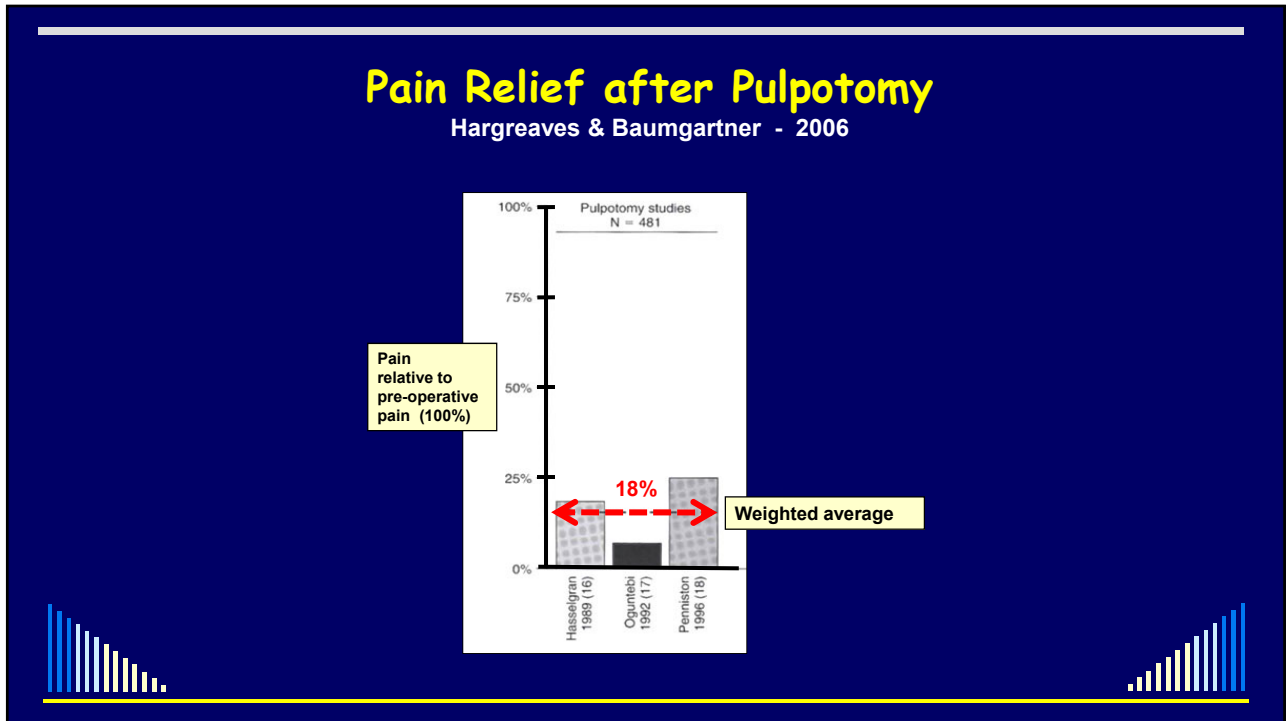
Intra-Pulp Injection

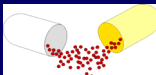


Strategies to Manage Acute Irreversible Pulpitis in a Lower Molar

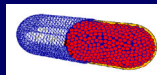
8. *Re-test again with triplex air and percussion*
 - *If no pain: proceed with treatment*
 - *If pain: give PDL injection and test again*
 - ◆ *Can then normally cut enamel or restoration*
 - ◆ *Remember - turn the H/S handpiece water off !!*
9. *If pain felt on reaching the dentine*
 - *PDL injection*
10. *If pain felt on reaching the pulp*
 - *Intra-pulp injection*
11. *If still pain*
 - *Pulpotomy only - CS-AB dressing*
 - *Re-appoint - 3-4 weeks later*







And ...



✘ Do NOT prescribe antibiotics !!!

- ◆ AB's are unnecessary and contra-indicated
- ◆ AB's are not pain relieving medications
- ◆ AB's do not help treat inflammation
- ◆ Pulpitis is an INFLAMMATORY condition
- ◆ Pulpitis is not a bacterial infection
 - Even though it is caused by the presence of bacteria in the tooth
 - And a systemically-administered AB will not reach the bacteria in in the caries, crack, restoration/tooth interface, etc.

The following is a light hearted look at bacteraemia from a patient's perspective. Fiona is a theatre nurse, specialising in oral-maxillofacial surgery and likes to write in her spare time.

◆ Root Canal Memoirs ◆
by Fiona Fyfe

My first day of leave and I planned to do nothing, besides sit on the couch and read my book. The first surge of toothache was mostly an irritation as I had to get up to take an antibiotic. Settling back down, I waited for it to subside. No such luck. It was back to the medicine cabinet. I was not amused, as this was interfering on my busy schedule. I was too late to call the dentist, but I was fairly confident that, with enough drugs, it would go away. Desperation set in. Not having back of time and dosage, I headed out to Costco. My kidneys were begging for mercy and my liver was looking for less toxic poisons. By the time, extremely groggy, I called on one of the couch with my "Dear Day", warmed to combustion temperature, pressed to me, acting just in the way I hope of relief. It was done. I was on the phone to the dentist. Fortunately, I have them on speed dial. With my blood-sugar levels at 100% peak, I was experiencing mild double vision so couldn't read their number if I'd had. Calmer enough, I explained my desperate predicament to the receptionist. Half "read" over? Did she understand the gravity of this situation? Apparently, she did. 12:00 was her final offer. I took it. Having crunched, swished and walked to my through everything the medicine cabinet held, I went in search of more pain relief. I grabbed the pharmaceutical to the ground when he came on the "anti-drug" lecture, and while I had him in a headlock, swabbed a handful. With the amount of relief I was getting, I was beginning to believe I'd been given antibiotics.


One clock ticked around painfully slowly. I learned early to find my caring dentist AT LUNCH! How dare he! The pretty young receptionist asked if I could get me anything. I suggested a dentist. She giggled and assured me he would! The long, eventually, will be needed in the chair and my only suggestion on he walked in. I went through my long-winded explanation. He called for Dr. Jay. "Dr. Jay?" "Dr. Jay is supposed to be a 'real' toothache pain - a "bleed" tooth, no pain. Total and error through pain? I just needed to reduce which had. The right had filling the tray of instruments, indicated quite adequately. This Dark Ages approach to modern dentistry eventually proved both 37 the culprit. Then came the injection.

I fell in Love with this man!

With me in a state of euphoria, he started drilling. My trusty right hand indicated that there was still a wedge of the medicine. Out came the needle. And an injection into the tooth pulp.

I promptly let out of love with this man!

Patients don't wear sunglasses for protection, they're so dentists can't see the day, but are glad there. In my case, I needed a blanket. Drilling with antibiotic pain. No this antibiotic is not a cause for antibiotics. he cheerfully asked. "No, actually with these antibiotics, he completely missed. I had been awake for 24 hours, the pain, and now NO alcohol? While filling the surgery, he indicated the "no alcohol" policy and received the L-glycine for his trouble. Blessedly though, I was sure that that I was grateful. I went to bed that night, my pain or antibiotic had to me. I woke after a good night's sleep and spent the day on the couch reading my book.



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Root Canal Memoirs

- ◆ By a patient - a theatre OMFS nurse
- ◆ Classic description
 - 37 - Acute irreversible pulpitis
- ◆ Endodontic treatment started
 - But with local anaesthesia problems

+ a prescription for Antibiotics!!!

Strategies for Managing Pain During Endodontic Treatment

Abbott PV, Pairokh M. *Aust Endo J* 2018; 44: 99-113.



Table 1 Steps to follow to improve pain management during root canal treatment of a MANDIBULAR molar tooth with acute irreversible pulpitis and primary acute apical periodontitis.

- Take thorough history of symptoms to allow accurate diagnosis
- Consider premedication with non-steroidal anti-inflammatory drugs
- Standard local anaesthetic injection for the tooth involved (e.g. inferior alveolar nerve blocks, Gow-Gates block)
- Allow sufficient time for initial signs of LA to be evident (i.e. lip numbness - needs at least 5 min)
- Administer supplementary LA injection (e.g. buccal infiltration)
- Allow more time for LA to work (at least 15 min from when the block was given)
- Test the tooth with a cold pulp test
 - If adequate LA, proceed with treatment but be prepared for pain!
 - If inadequate LA, administer a second block injection (e.g. repeat the original injection or use an alternate block technique)
- Allow adequate time for the extra injections to work (at least 15 min)
- Re-test with cold pulp test
 - If adequate LA, proceed with treatment but be prepared for pain!
 - If inadequate LA, administer supplementary intra-PDL injections
- After 1-2 min, re-test with cold pulp test
 - If adequate LA, proceed with treatment but be prepared for pain!
 - If inadequate LA, consider further intra-PDL injections
- On commencing treatment, turn off handpiece water spray
- If pain on reaching dentine, administer further supplementary intra-PDL injections
- If pain on reaching pulp chamber, administer intra-pulp injection
- If pain on instrumenting root canal, administer intra-pulp injection into the root canal or consider using topical local anaesthesia gel in the canal
- If still pain, perform a pulpotomy only (or minimal root canal treatment) and place a corticosteroid/antibiotic medicament in the root canal.
- Arrange post-operative pain medication.

Table 2 Steps to follow to improve pain management during root canal treatment of a MAXILLARY molar tooth with acute irreversible pulpitis and primary acute apical periodontitis.

- Take thorough history of symptoms to allow accurate diagnosis
- Consider premedication with non-steroidal anti-inflammatory drugs
- Standard local anaesthetic injection for the tooth involved (e.g. buccal infiltrations over mesio-buccal, disto-buccal roots)
- Palatal infiltration
- Allow sufficient time for LA to work (at least 15 min)
- Test the tooth with a cold pulp test
 - If adequate LA, proceed with treatment but be prepared for pain!
 - If inadequate LA, administer supplementary injections (e.g. ASAN, anterior middle superior alveolar nerve block)
- Allow adequate time for supplementary injection to work (at least 15 min)
- Re-test with cold pulp test
 - If adequate LA, proceed with treatment but be prepared for pain!
 - If inadequate LA, administer supplementary intra-PDL injections
- After 1-2 min, re-test with cold pulp test
 - If adequate LA, proceed with treatment but be prepared for pain!
 - If inadequate LA, consider further intra-PDL injections
- On commencing treatment, turn off handpiece water spray
- If pain on reaching dentine, administer further supplementary intra-PDL injections
- If pain on reaching pulp chamber, administer intra-pulp injection
- If pain on instrumenting root canal, administer intra-pulp injection into the root canal or consider using topical local anaesthesia gel in the canal
- If still pain, perform a pulpotomy only (or minimal root canal treatment) and place a corticosteroid/antibiotic medicament in the root canal.
- Arrange post-operative pain medication.

Summary

- ◆ Achieving adequate pain control is difficult, and unpredictable, when treating acute irreversible pulpitis
- ◆ Dentists need various strategies to ensure good pain control for their patients
 - Before treatment
 - During treatment
 - After treatment

Summary

1. Pre-empt the difficult situation
2. Consider pre-medication
3. Test tooth pre-op:
 - Triplex air + percussion
4. Gow-Gates Block
 - Discuss treatment, etc.
5. Re-test: triplex air + percussion
 - If no pain: proceed with treat^m
 - Turn water off H/S handpiece
 - If still pain: Give IAN Block + Buccal Infiltration
6. Allow more time for LA to work
7. Place rubber dam - cuff tech.
8. Re-test again: air + percussion
 - If no pain: proceed with treat^m
 - Turn water off H/S handpiece
 - If pain: give PDL injection
9. If pain felt on reaching dentine
 - PDL injection
10. If pain felt on reaching the pulp
 - Intra-pulp injection
11. If still pain
 - Pulpotomy - CS-AB dressing
 - Re-appoint - 3-4 weeks later