Current Clinical Concepts in Acute Restorative Dentistry for DF Trainees

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Handout – hodsollhousedental.co.uk/education & training /course downloads
Acute Dentistry

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Lake Vyrnwy Hotel and Spa

Pain

- Definition of pain:

  ‘........Pain is an unpleasant sensory and emotional experience that is associated with actual or potential tissue damage or described in such terms........’
Honest Reflection

- Have I dealt with many patients with acute pain?
- What frightens me about them?
- Do I understand the basics of how they should be managed?
- Where are my knowledge and skill gaps? (SOTFs – problem-based learning?)
The Function of Pain?

• Why do we sense it and what is it’s function?
  – Alarm Bell
  – Protective
  – Forces Behaviour Change
  – Damage Limitation
The problem has been around for some time
Honest benchmarking - where am I?

- What are my strengths?
- What are my weaknesses?
- How am I going to get better?
- How good can I get?
- Am I going to give it everything I have got?
Have I seen much of this?

Honesty

- Have I dealt with many patients with acute pain?
- What frightens me about them?
- Do I understand the basics of how they should be managed?
- Where are my knowledge and skill gaps?
How do you make sure that you do not miss anything when asking a patient about their pain?
SOCRATES (pain assessment)

- **Site** - Where is the pain? Or the maximal site of the pain.
- **Onset** - When did the pain start, and was it sudden or gradual? Include also whether it is progressive or regressive.
- **Character** - What is the pain like? An ache? Stabbing?
- **Radiation** - Does the pain radiate anywhere?
- **Associations** - Any other signs or symptoms associated with the pain?
- **Time course** - Does the pain follow any pattern?
- **Exacerbating/Relieving factors** - Does anything change the pain?
- **Severity** - How bad is the pain?

**Other things**

- Sleep pattern - disturbed
- Nature – burning, tingling...
- Where does the patient think it is coming from?
- Does it cross the midline
- Have you had any recent dental Rx?
Why is managing pain for patients so important?

• The most important thing that we can do for people
• Infections of the head and neck can be very dangerous
• Practice builder – they will always remember you in a very positive if you can sort out their problems – completely the opposite if you do not
• Very rewarding
Acute irreversible pulpitis (AIP) is an intensely painful condition; which requires prompt intervention by dental professionals to provide appropriate treatment.
What concern do you have when a patient comes to you with AIP from LR56
What are our problems?

Treating a patient in acute pain can be a stressful experience for you as well as the patient and prescribing oral antibiotics may often be seen as a convenient option.
LA for AIP

• It is imperative that dentists receive training and are adequately skilled in the management of AIP.
• Conventional local anaesthetic techniques are sometimes unsuccessful in obtaining profound anaesthesia for posterior mandibular endodontic procedures.
Honest benchmarking - where am I?

- Am I prepared to get stuck in well out of my comfort zone?
Honest benchmarking - where am I?

- Am I prepared to get stuck in well out of my comfort zone?
- Can I improve my knowledge of anatomy of teeth and root canals?
- Have I the confidence and knowledge to use top up LA techniques?
- Can I give an intra pulpal LA?

Articaine and Lidocaine Mandibular Buccal Infiltration Anesthesia: A Prospective Randomized Double-Blind Cross-Over Study

Mohammad Dib Kamac, MPPh, DDS, John Martin Whitworth, PhD, BCD, Ian Porter Crockett, PhD, BDS, and John Gerard Maclean, PhD, BDS

Abstract
This randomized crossover double-blind trial compared the efficacy of buccal infiltration with 4% articaine and 2% lidocaine (both with 1:100,000 epinephrine) in securing mandibular first molar pulp anesthesia. Injections were given at least 1 week apart in 37 healthy adult volunteers. Electronic pulp testing was undertaken at baseline and at 2 minute intervals until 30 minutes postinjection. A successful outcome was recorded in the absence of pulp response on two consecutive maximal pulp testing stimulations (80 µA). 64.5% of articaine and 38.7% of lidocaine infiltrations were successful (p = 0.008). Articaine infiltration produced significantly more episodes of no response to maximum stimulation in first molars than lidocaine (23.6% and 12%, respectively, p < 0.001). Mandibular buccal infiltration is more effective with 4% articaine with epinephrine compared to 2% lidocaine with epinephrine. Both injections were associated with mild discomfort. (J Endod 2006;32:294-298)

Range of local anesthetic drugs have been employed in dentistry, with lidocaine HCl currently considered the gold standard (1). The performance of articaine HCl introduced in the UK and United States in 1999 and 2000 respectively, has been reported as comparable to lidocaine with epinephrine (2). Articaine is the most commonly used dental anesthetic in Germany, Italy, The Netherlands, and Ontario, Canada (3). Mandibular molars are usually anesthetized by regional blockades of the inferior alveolar nerve. Inferior alveolar nerve blocks (IANB) are not 100% effective in obtaining pulpal anesthesia of mandibular teeth (4). Other techniques such as intraseptoal and periodontal ligament anesthesia may be used to supplement or replace the regional block. (4) Another method that might be considered as a supplemental technique is infiltration anesthesia. The effectiveness of infiltration anesthesia has not been tested extensively in mandibular molars.

The aim of the present study was to compare the efficacies of 4% articaine with epinephrine 1:100,000 (Septanest, Deproco, Kent, UK) and 2% lidocaine with epinephrine 1:100,000 (Xylocaine, Dentalpharmaceutical, York, PA) in obtaining anesthesia of the pulp of lower first permanent molar teeth after buccal infiltration in volunteers.
Thinking and thought-processes for dentists

• **Enquiring** thinking – trying it out and practising and reflecting

I find Piezon Ultrasound good for opening up hyperaemic teeth
What about feedback of others on my performance?
Post op analgesia - what’s best do I know? -

The information in the table has been derived from a large number of systematic reviews of randomised, double-blind, single-dose studies in patients who had moderate to severe pain. Each of the reviews has the same outcome measure, at least 50% pain relief over 4–6h. The pain measurements were standardised, and have been validated. Numbers-needed-to-treat are calculated for the proportion of subjects who had at least 50% pain relief over 4–6h compared with placebo in rando-
800mg Ibuprofen TDS better than Pethidine, Morphine and other opiates. I normally suggest 600mg unless very severe pain

- Pt’s should not exceed 2.5gms of Ibuprofen per day
- Not suitable for asthmatics

Table 1. The Oxford League table of analgesic efficacy.

<table>
<thead>
<tr>
<th>Analgesic and dose</th>
<th>People in comparison (n)</th>
<th>Proportion with 50% pain relief (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibuprofen 800</td>
<td>76</td>
<td>100</td>
</tr>
<tr>
<td>Ketorolac 20</td>
<td>69</td>
<td>57</td>
</tr>
</tbody>
</table>
Role of antibiotics

• Current evidence would not support the prescribing of systemic antibiotics for the management of AIP.
• Also they should be used rarely in the management of periapical infection.
• Their use should be reserved for control of spreading infection. Despite this, surgical intervention for pulpitis is not always the first treatment choice by the dental profession (Thomas D W, Satterthwaite J, Absi E G et al. Antibiotic prescription for acute dental conditions in the primary care setting. Br Dent J 1996; 181: 401-404)
Take us through the process of making a diagnosis and treating the problem
• Patient 60 years
• One night of acute /terrible pain from R side of mouth & face
• Exacerbated by hot – have to avoid at all costs
• No sleep last night, cannot eat or function
• Analgesics do not touch it
• Have had a bridge LRQ for 11 years
• You must do something
• I am not leaving until you help me
Right BW – why important

• Shows?
• Would you prefer to see the bridge to be partially decemented at LR6 or not & why?
How do we best look for this then?

Right BW – why important

• Shows?
• Would you prefer for the bridge to be partially decemented at LR6 or not & why?
You will get more confident with removing crowns / bridges in your DF year – it must not stress you

• In UK crowns have a likely survival of 8-10 years – therefore they will be failing – need redo / dismantling / operative / extraction skills
What is your differential diagnosis?
AIP - what would you need to do to manage the problem and why?

• Role of Antibiotics?
• Role of Analgesia?
• Extraction?
• Extirpation / Restoration?
Rx options – driven by an informed patient -

• Removal of bridge remove decay and decide restorability
• Coronal tooth tissue - decides +/- restorability
• How to restore? – core / coronal restoration
• How will it perform?
Coronal Material & Coronal Seal
Long term cuspal protection and tooth looking after itself
Common things occur commonly

You will be dealing with the following conditions:

- Reversible Pulpitis
- Irreversible Pulpitis
- Chronic Apical Periodontitis
- Acute Apical Periodontitis
Acute / Chronic Apical Periodontitis

- What is the likely history from the patient AAP?
- What are you likely to find on examination?
- What are the differences with AAP & CAP?
- What special tests might you use to aid diagnosis?
- What is the basis of management for both?
- What are the clinical challenges and problems of dealing with AAP?
- What is the role of antibiotics in AAP?
- How do you tell if the patient is unwell?
Extra – Oral Examination

• What are you **looking** and **smelling** for?
• What are you **feeling / examining**
• How can you tell if someone is **not well or right**?
• **Swellings** – what types?
Ask, listen, think & observe

Eyes
Sweating
Communication
Movements
Mood
Expressions
Colour
Swelling
Discharge
The Process of Clinical diagnosis hasn’t changed......

.....and it’s the key to all that we do!
Diagnosis will involve:

- History
- Examination
- Special Tests
- Investigation
Vitality

Electronic Pulp Tester - a great tool

Get the patient to hold the pulp tester and let go when they feel something.
Investigation Skills
Skills that we all need to allow investigation, diagnosis and treatment of commonest dental pain

Investigation
Dismantle
Anatomy knowledge
Remove caries
Locate root canals
Identify apex / Zero reading
RCT
Core
Coronal protection
Surgical Sieve aids Differential Diagnosis (cause)

- Metabolic
- Endocrine
- Degenerative
- Infective
- Congenital
- Haematological
- Autoimmune
- Trauma
- Psychological
- Inflammatory
- Neoplastic
Case 1 - what’s going on here?

- Idiopathic/iatrogenic
- Vascular:
  - Inflammatory
  - Traumatic
  - Autoimmune
  - Metabolic
  - Infective
  - Neoplastic
- Degenerative:
‘Never let the sun go down on pus’
Why do we need to drain?

Pus:
Phagocytes / Lymphocytes
Tissue debris
Bacteria
Case 2 – Understanding the severity and prognosis of dento-alveolar injuries – do they stay or do they go?
Case 3 - EO Examination – what do you see?

Idiopathic/Iatrogenic
Vascular:
  Inflammatory
  Traumatic
  Autoimmune
Metabolic
Infective
Neoplastic
Degenerative
Measure & use index finger
We cannot avoid Risk – but we do not need to go looking for it!
Case 4 - Examination

- You are asked to assess a 43 year old patient with a 2 week history of a swelling of his left face that included the upper lip and nose.
- He complains that the swelling is increasing and painful
- He is a little concerned about things
Case 4
Look, Smell, Listen, Touch & Feel
Extra-O oral Examination – always look first what do you see?

Swelling:
Firm and slightly tender
Localised to left anterior maxilla & left nose
No inflammation
Not warm / hot
No discharge in mouth
• Swelling of the Left upper lip
• Also involves left base of nose
• No redness – skin the same colour in the area of swelling and no swelling
• There is something not right about this
What questions would you ask?

- Health – how well does he look?
- Duration and history of problems
- Type of pain
- Discharge
- Previous treatment
Intra-Oral Examination

Intra-oral examination
Differential Diagnosis

• Traumatic
• Infective
• Metabolic
• Neurogenic
• Inflammatory
• Neoplastic
• Auto-immune
• Vascular
• Degenerative
• Environmental
Diagnosis: Myeloma (recurrence)

Differential Diagnosis

- Traumatic
- Infective
- Metabolic
- Neurogenic
- Inflammatory
- Neoplastic
- Auto-immune
- Vascular
- Degenerative
- Environmental
Case 5

• You are asked to see this young male patient in your practice
• Mother has been taking him to another dentist who has no been willing to help

Diagnosis? – 15 year boy with ‘boil’ on the left side of his face
Diagnosis? – 15 year boy with ‘boil’ on the left side of his face
Diff diagnosis?

- Traumatic
- Infective
- Metabolic
- Neurogenic
- Inflammatory
- Neoplastic
- Auto-immune
- Vascular
- Degenerative
- Environmental

Diagnosis? – 15 year boy with ‘boil’ on the left side of his face
Diagnosis & Rx?

- Traumatic
- Infective
- Metabolic
- Neurogenic
- Inflammatory
- Neoplastic
- Auto-immune
- Vascular
- Degenerative
- Environmental
Diagnosis = CAP with external suppuration & possible fistula

- Traumatic
- **Infective**
- Metabolic
- Neurogenic
- Inflammatory
- Neoplastic
- Auto-immune
- Vascular
- Degenerative
- Environmental
Case 6

Patient complains of acute pain localised to LL7. Tooth very tender to pressure (TTP+++). Tooth previously restored with crown following RCT. Mid buccal pocket and tooth grade 1 mobile. LL67 restored at same time. No other major problems with an otherwise intact dentition.
Hopefully most are aware of this critical review on Endodontics Ng et al. (2008 a & b) Int Endod J 41: 6-31

- Pre-operative apical area
- Root filling ending within 2 mm of radiographic apex (instrumentation and obturation)
- Voids within the root-filling (obturation quality)
- Satisfactory restoration coronal seal (post-Rx Rest Dent)
Case 6
Diagnosis and why?
Rx Options, Rx & Plan of Rx?

- Patient wants to know the best thing to do with the symptomatic LL7 (and also LL6)
- Caries visible LL7
- Periapical / furcation area LL7
- What do we think of the endodontic quality?
- What would you suggest to the patient & what do you feel that you can offer now?
- What will you want to be able to offer in 5 years time?
What further Investigation / tests would you request and why?

Use it or lose it?
Tooth Investigation — referred case for re-restoration or extraction and implants LL67. No other major problems with an otherwise intact dentition.
Case 6 - Use it or lose it?

Tooth Investigation – I always like to use a bitewing as you can get a perpendicular view of the coronal perio-crown interface of the teeth.
Coronal Height above the Alveolar Crest

bitewing gives you the best representation of this
What makes a molar strategically important?

• Function – occlusal value
• Aesthetic role – smile width
• Attitude of Patient – if tooth is extracted will you want the gap restored afterwards?
• General dental health, condition and motivation of the patient
Use it or lose it?
What is the reason for symptoms / infections

Coronal Leakage:
Ray & Trope 1995
Briggs & Bishop 1995
Briggs & Scott 1997

Van Nieuwenhuysen et al 1994 IEJ 27:75-81
Use it or lose it?

Tooth Investigation

• We need to strip down to the remaining tooth tissue to confirm or deny the amount of sound tooth tissue above the alveolar crest.
• A coronal evaluation and restorative decision should precede any re-endo and post removal.
• If endodontic Rx necessary we need to find root canal(s) and obturate them.
• Our endodontic technique needs to preserve tooth-tissue.
Strip down, investigate - plan restorative strategy (core / coronal coverage restorations)
What did I do and why?

• Following crown removal and microscopic examination of both teeth with caries removed I felt that LL7 could be re-restored with cores and new crowns (after endodontic infection control)

• The first appointment was time-consuming – so you need shuffle things around to create enough space and time
What I did and why?

- I feel that these restorations in combination with good OH & carbohydrate control will perform well – The amount of remaining tooth tissue above the alveolar crest is the key to my decision
With good patient motivation, good OH & diet carbohydrate control (frequency) the teeth should perform well – The amount of remaining tooth tissue above the alveolar crest is the key to my decision.

Van Nieuwenhuysen et al 1994 IEJ 27:75-81
Case 6 - Cores – which and why?
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