Peter Briggs  BDS (Hons) MSc MRD RCS FDS RCS (Eng)
Specialist Endodontic Practitioner

www.hodsollhousedental.co.uk
Peter Briggs
Clinical: Specialist Practitioner & Consultant QMUL
Education: Associate Dean, Secondary Care, Specialist Training, London (HEE)
Modern Endodontics
– Never Standing Still -
Tunbridge Wells, Kent
Tuesday 12th May 2015
Let’s start with a Clinical Case 2015

- Pt referred following trauma by ODS
- Hit by lathe cover in face
- Knocked out – serious max-fac injuries (hard and soft tissues)
- UL23 ‘knocked back’ by impact
- Several tooth avulsions
12 months after accident
ICP – 12 months later
- No IO space R posterior
- Good perio levels
- No caries
- Labial composite UL2 and composite UR2 – both teeth instanding
- Large and wide AF UL6 – ‘niggly’symptoms
- Wide space LR1 (8mm)
- Vertical tissue loss LR1 space visible
• Avulsion of LR1 with loss of alveolar process vertical and horizontal
• Loss (fracture & Avulsion) of UR45, LR4567 & UR 45 and LL45
• Favourable lower lip line
• Hospital unsuccessfully attempted to make Upper Chrome denture – patient could not tolerate / wear
• UL23 were re-positioned in A&E day of accident
• Patient # ‘d mandible
• Patient monitored by ODS
• ODS concerned by cervical radiolucency of UL2 – some crown discolouration
Questions UL23

• Outline your dental assessment of UL23
• What is our diagnosis and why? – both teeth non-vital
• What injuries do you think the teeth sustained?
Copenhagen Trauma Guide

The Dental Trauma Guide
Your interactive tool to evidence based trauma treatment

Patient examination Trauma pathfinder Primary Teeth Permanent Teeth Vocabulary Information Sponsors [ Log In ]

Permanent Teeth
Concussion
Subluxation
Extrusion
Lateral luxation
Intrusion
Avulsion
Infraction
Enamel fracture
Enamel-dentin fracture
Enamel-dentin-pulp fracture
Crown-root fracture without pulp involvement
Crown-root fracture with pulp involvement
Root fracture
Alveolar fracture
Jaw fracture

PERMANENT TEETH
Click image for full diagnosis and treatment recommendations

[Images of various tooth fractures and conditions]
Questions UL23

• How would you treat UL2?
• Outline your treatment plan and plan of treatment for UL23
• What materials would you use and why?
• What is the prognosis?
• What material would you use to repair UL2 and why?
• Would you do it in stages or all at the same time?
UL6

• Tooth ‘niggling’ since accident
• Previously RCT’s and restored with AF
• What diagnosis would you undertake?
Question UL6

• Is the tooth strategic?
• Outline your Rx and plan of treatment for UL6 – what are the challenges?
• What is the likely prognosis?
Are you happy to leave or would you cuspally-protect? Why?
Does the tooth require Re-RCT prior to definitive cuspal-protection? Why?
Is this complex, moderate difficult or routine endodontics? Why?
In 2015 - how would you do it and what will you need to improve to make it all worthwhile
Diagnostic GP point try in
How would you restore?
Nayyar Core build up
THE RESTORATIVE CYCLE

-Pressing the accelerator to extraction?

**COMPOSITE RESIN LEADS TO 1.91 TIMES MORE NEED FOR ENDODONTIC INTERVENTION THAN AMALGAM**

**THE RISK OF SECONDARY CARIES IS 3.5 TIMES HIGHER WITH MULTISURFACE COMPOSITE RESIN RESTORATIONS THAN WITH AMALGAM**
Agreed Team Standards

E-max Monolith UR6 – single strategic RCT’d tooth – biologically excellent substitute for gold
Why do you think that secondary care struggled with the maxillary Chrome?
Prosthodontics Questions

• Outline the challenges and problems of providing prosthodontic replacement of UR45, LR456(?7), LR1, UL45 & LL45?
Prosthodontic - questions

- Patient has a significant legal settlement
- He ideally wants to have fixed restorations
- What would you do and why?
Refurbish, Remove, Repair or Replace?
Conventional Dentistry will eventually fail however well it is executed
Restorative Care Commissioning Guide - Complexity levels – where does this fit in?

1. At completion of DF year
2. An experienced practitioner / DwESs
3. Complex Specialist
We all should be confident with removal of failing crowns / bridges

- For those with crowns, on average there were three per person, amounting to an estimated 47.6 million crowns across England, Wales and Northern Ireland
- Crowns have a likely survival of 8-10 years – therefore they will be failing – need redo / dismantling / operative / extraction skills
Passive ‘lift-off’ to protect what is underneath
Where are the Pros / Endo interface risks?

Let’s look at me in action – there for the grace of God go I

Abbott 2004
Caries with no de-cementation – which is worst?
Coronal Material & Coronal Seal
Long term cuspal protection and tooth looking after itself is the key

Endodontic Rx tooth survival

Survival at eight to ten years was 87%

They were able to place the influential factors in order of significance:

1. A full coverage coronal restoration after root canal treatment
2. Tooth has both mesial and distal proximal contacts
3. Tooth not acting as abutment for either a removable or fixed prosthesis
4. Tooth type, specifically non-molar teeth.

Ng YM, Mann V, Gulabkula R. Tooth survival following non-surgical root canal treatment: a systematic review of the literature. Int Endod J 2015; 48: 771-783. Their findings are from 14 relevant studies.
Predictive Discussions with Endodontics patients

• CAP with exudation - presence of sinus (48% lower)
Is our Endodontics going to work?

**Intra-operative:**
- Achieving patency (Two-fold increase)
- Canal prepared short of terminus (12% lower for every 1mm short for tooth with CAP)
- Long root filling (62% lower odds of success)
- Using Chlorhexidine as irrigant (53% lower)
- Using EDTA (Re-RCTx) (Two-fold increase)
- Inter-appointment swelling/pain (47% lower)

*Ng, Mann & Gulabivala; International Endodontic Journal, 2011*
Dismantle – over 70% of all dentistry is re-do
Repair, Re-treat, Restore or Replace?
Diagnosis of endodontic condition against restoration type


Table 3. Diagnosis of the pulp and root canal condition associated with the different restorative materials (percentages in parentheses represent the percent of teeth for each restorative material)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Amalgam</th>
<th>Composite</th>
<th>Crowns</th>
<th>Posts/Crowns</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reversible pulpitis</td>
<td>6 (4.6%)</td>
<td>–</td>
<td>1 (3.7%)</td>
<td>–</td>
<td>7 (2.9%)</td>
</tr>
<tr>
<td>Irreversible pulpitis</td>
<td>67 (51.2%)</td>
<td>16 (20.8%)</td>
<td>5 (18.5%)</td>
<td>–</td>
<td>88 (35.9%)</td>
</tr>
<tr>
<td>Necrosis and infection</td>
<td>4 (3.0%)</td>
<td>2 (2.6%)</td>
<td>–</td>
<td>–</td>
<td>6 (2.4%)</td>
</tr>
<tr>
<td>Pulpless and infected</td>
<td>41 (31.3%)</td>
<td>34 (44.1%)</td>
<td>7 (25.9%)</td>
<td>–</td>
<td>82 (33.5%)</td>
</tr>
<tr>
<td>RCF* and infection</td>
<td>13 (9.9%)</td>
<td>25 (32.5%)</td>
<td>14 (51.9%)</td>
<td>10 (100%)</td>
<td>62 (25.3%)</td>
</tr>
<tr>
<td>Totals</td>
<td>131 (100%)</td>
<td>77 (100%)</td>
<td>27 (100%)</td>
<td>10 (100%)</td>
<td>245 (100%)</td>
</tr>
</tbody>
</table>

*RCF=Root canal filling.
Table 2. Age of the existing restorations

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Amalgam</th>
<th>Composite</th>
<th>Crowns</th>
<th>Posts/Crowns</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>3</td>
<td>14</td>
<td>1</td>
<td>–</td>
<td>18</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>15</td>
<td>–</td>
<td>–</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>30</td>
<td>5</td>
<td>–</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>11</td>
<td>3</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>6-10</td>
<td>14</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>11-15</td>
<td>3</td>
<td>–</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>16-20</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>4</td>
</tr>
<tr>
<td>21-25</td>
<td>2</td>
<td>–</td>
<td>5</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>&gt;25</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Patient cannot recall (but &gt;10 yrs)</td>
<td>83</td>
<td>–</td>
<td>5</td>
<td>–</td>
<td>88</td>
</tr>
<tr>
<td>Totals</td>
<td>131</td>
<td>77</td>
<td>27</td>
<td>10</td>
<td>245</td>
</tr>
</tbody>
</table>

Amalgam findings:

• A ‘typical amalgam’ restoration in this study lasted a long time before symptoms of **pulpitis** (rather than **necrosis**) developed, which indicates marginal breakdown many years after the restoration was placed.

• Both **Caries** and **Marginal Breakdown** easier to spot

• Amalgam more often associated with **pulpal symptoms** – suggesting better protection of seal to the pulp

Composite Findings:

• A ‘typical composite’ restoration had passed through all of the progressive stages of pulp disease (i.e., reversible pulpitis, irreversible pulpitis, necrosis, canal infection, pulp-less) and then developed apical periodontitis within just three years.
• This indicates that they probably develop marginal breakdown & micro-leakage soon after the restoration had been placed since this pulp disease cycle typically takes between 1-5 years.
• Very difficult to ‘spot’ and diagnose the presence of caries and marginal breakdown with composite resin!

Endodontics and the older tooth
What's our commonest practical difficulty in endodontics?

ACCESS Cavity
(Lipping - a common error)

If the access cavity is wrong then many bacteria will be left behind to re-inflect the root canal.
70% of bugs in coronal 1/3 of canal!
Morphological measurements of anatomic landmarks in human maxillary and mandibular molar pulp chamber.

IEJ 2004; 30: 388-390

<table>
<thead>
<tr>
<th>Dimension (mm)</th>
<th>Cusp Tip to Pulp Roof</th>
<th>Pulp Floor to Furcation</th>
<th>Pulp Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary Molar</td>
<td>6.24</td>
<td>3.05</td>
<td>1.88</td>
</tr>
<tr>
<td>Mandibular Molar</td>
<td>6.36</td>
<td>2.96</td>
<td>1.57</td>
</tr>
</tbody>
</table>

6.5mm Look
8.0mm Caution
11.0mm Reach for the MTA!
Secondary dentine is deposited on the floor, of the pulp, rarely the roof.
Sclerosed root canals – an ‘old tooth’ problem

Conventional Dentistry will eventually fail however well it is executed

Modern Skill set

- Prevention
- Minimal intervention
- Adhesive intervention
- Conventional re-intervention/re-treatment
Pre-bend and ‘Watch-Winders’ movement of #10 K file in combination with AL
Asymptomatic apical areas – what to do?

50% of RCT’d teeth have areas in UK (Saunders & Saunders, 1998)

*Indications for endodontic revision:*
- Apical pathology worsening
- Evidence of infection / symptoms
- Poor coronal seal and apical pathology
- Apical path / inadequate endodontics and need for replacing definitive coronal restoration
- Need a new spare wheel for the Range Rover

Do we need to re-treat them? - No

Van Nieuwenhuysen et al 1994 IEJ 27:75-81
97% of radiographically monitored non symptomatic areas did not change or improved over 10 years
Endodontic revision that we can predict to work?

- The poorer the quality of the primary root filling in situ the easier and more predictable will be your re-treatment. You can then expect a 80% positive outcome (NG et al 2011) if you can achieve your objectives.
- Ideally you want to revise a short poorly obturated root fillings!
Retreatment or radiographic monitoring in endodontics

Re-treatment usually means removing Gutta Percha - do not be scared of the stuff it will not bite! - You need to get to the end of the canal very early in your technique and achieve patency.
This gives much more time to get the irrigation right – we need it at the apex
Re-treatment has just got quicker too
Re-Endodontics has got easier and much quicker
(reciprocation and MB2)
Electronic Apex Locators
always use the tip (not the clip) - your nurse can put hold it on
the head of the hand-piece it doesn’t need to be on the file.
Endodontic revision we can predict is likely not to work?

- High risk: perforations, resorption, ledges, blockages, iatrogenic error – anything that stops you reaching your objectives – in this case ledge within curved MB1 (stopping me reaching an ideal length) and not also able not able to identify MB2
Pre-operative factors that made a difference to outcome:

- Presence of periapical lesion (49% lower)
- Size of periapical lesion (14% lower for every 1mm)
- Presence of sinus (48% lower)
- Presence of root perforation (56% lower)

Is our Endodontology going to work?

Intra-operative:

- Achieving patency (Two-fold increase)
- Canal prepared short of terminus (12% lower for every 1mm short)
- Long root filling (62% lower odds of success)
- Using Chlorhexidine as Irrigant (53% lower)
- Using EDTA (Re-RCTx) (Two-fold increase)
- Inter-appointment swelling/pain (47% lower)
The likelihood of a UK dentist facing some kind of regulatory challenge (i.e. by the GDC) is much greater than for:

- *Dentists anywhere else in the world – including USA*
- *UK medical practitioners (3.5 times risk)*
- *Any other kind of registered healthcare professional in the UK*
- *Any other dentists, anywhere else in the world – period!*
2015 pyramid of risk:
top of the dental pops

- Endodontics
- C & B
- Periodontontology (or missed perio)
- Nerve Damage
- Implants
- Orthodontics
- Veneers
- Oral Surgery

Effective team work reduces risk
You will see that Prosthodontics is very well represented within the major risk groups:

- 1 Endodontics
- 2 Crown & Bridge
- 3 Periodontics
- 4 Nerve Damage
- 5 Implants
- 6 Orthodontics
- 7 Veneers
- 8 Oral Surgery
Knowing what is predictable to restore – TRI
And what is not! – are too many restorable teeth being extracted?
The two significant things to note about the UK picture compared to other countries at present are the prominence of:

- Allegations of a failure to diagnose and adequately treat periodontal disease
- Implant cases of all kinds
So what does this mean for those of you setting out on a clinical dental career?

• How do I learn and make my mistakes in clinical practice in the UK without running into trouble?
• If I accept that I will have my clinical problems - how can I minimize the chance of my patients making a complaint against me when there is a problem?
• Is my clinical experience the only thing or does my personality and my core values make a difference to my risk?
NHS Issues

• Contract – promotes quality?
• Associate contract – attractive for quality or is it about quantity?
• Associate contract – are we *all-in-it-together* (practice manager / owner / you) when a problem occurs?
• Commissioning levels 1, 2 & 3 – where will that leave me with my skills? - will I end up being a glorified therapist / hygienist?
• Am I going to be able to make a good living out of all this?
That’s the bad news – but how can you control your own risk(s)
Adventurous Souls – Risk taker

Dangers:

• *May be a little overconfident on occasions*
• *Too dismissive of the risks – I can always re-do it*
• *The challenge - as always - is to find the right balance*
• *Achieve balance that serves the best interests of the individual practitioner as well as that of the patient*
Adventurous Souls – Risk taker
- What’s the problem I can always re-do it – if there is a problem
FATALISTS

What will be, will be. You might as well manage problems as they arise rather than go looking for them.

Tend to be optimists and survivors. They become very confident in their ability to manage problems and this makes them less likely to plan ahead.

HIERARCHISTS

Are organised in their approach to risks (and to life). They adopt a scientific approach to assessing and prioritising risks, and managing them.

Are cautious and sometimes fearful of risks, making them risk averse (avoiding risky situations). They don’t understand risk seeking behaviour.

INDIVIDUALISTS

KEEP CALM AND BE a risk-taker

EGALITARIANS

STOP BEING RISK AVERSE AND FAIL MORE
• Professor John Adams of the Adam Smith Institute (in his 1999 book “Risky Business” - ISBN 1902737067, 9781902737065) suggests that we all have a “default” approach to risk.

• The two groups on the left are essentially problem solvers and see no need to do anything until a problem arises
• So much so that they are so confident of their **problem solving** skills they will give anything a go as they can repair any complication - *what will be - will be!*

• The two groups on the right anticipate and plan for risks in order to manage them effectively (**problem finders**).
• What you need is to develop the personality traits of the people on the right – STEP ONE

• Work out your personal development plan to learn and develop problem-solving (clinical) skills of the left – STEP TWO
If however you remain only on the right you will remain risk adverse and not Skill-Up
A revealing insight comes from the work of Bunting and others, who found that many complaints are triggered not just by the actual event(s) that tipped the patient over the edge into complaining (“precipitating factors”) – like an adverse outcome of some kind – but also because other things had already happened (“predisposing factors”) to create doubts and concerns.
Predisposing factors included: poor communication, a perceived lack of interest, rudeness or a lack of respect and it is significant that these are “people” issues that have little or nothing to do with clinical dentistry or the actual procedures undertaken.
Complaint will be ‘triggered’ by:

• Precipitating factor(s) (a final straw event)
• Predisposing factors (pre-existing doubts and concerns)
STEP ONE: Why do you need skills on the right?

• If only a precipitating factor is present (clinical incident e.g. fat face after endodontics / cut lip / failed veneers / failed implant / failed bridge) with no major predisposing factors beforehand – then only 2% of patients will make a complaint to the practice, NHS, GDC or litigate when you have made a clinical mistake

• In absence of predisposing factors they appreciate your honesty, your offer of solutions (including offer of refund), your trust, that you are caring for them and that you have done your very best
Professionalism 2015
– predisposing factors -
• Be careful calling people by their Christian name – it may not go down well with some
• Do not get too chummy with patients – they want you to be their dentist (professional) not a chummy friend
• Be careful how you look, dress and behave
So if we all accept that we need to learn and improve - how do we best make our mistakes in 2015?

• **At start of your career - STEP ONE** - learn the communication skills and professional approaches of the people on the right so patients that think you have done your best, that you have been kind to them and they trust you – few predisposing factors
• At start of your career – when you have made a mistake – learn to be able to look the patient in the eye and apologise for it

• Believe the view of the patient - they are usually right

• With aesthetics - the patient has the last word – and must be happy before anything is fitted / cemented definitively

• Most who have been honestly appraised of the nature and reason for a clinical error - with options for remedial action clearly explained – will be on your side

• Clearly do not charge for suboptimal work – it will only make things far worse - money back at the beginning
We will all experience failure

• What will you say and how will you manage the patient?
• If you remain only on the left without developing skills from the right – you are dangerous (you have no insight)
Why do you need skills on the right?

• In such circumstances only 2-3% of these patients will make a complaint to practice, NHS, GDC or litigate where you have make a clinical mistake

• They appreciate your honesty, your offer of other options (including refund), your trust, that you are caring for them, that you have done your very best
Why do you need skills on the right?

- They can see that you are genuinely disappointed for the poor result and that you have tried to put their interests first and will commit to improve yourself so not to have the same problem with others.
Many dentists and dental practices seem to believe that they are in the dentistry business, or the tooth business, or the implant, or the veneer business or the money business. In fact they are all in the **people business**, and people buy people, long before they buy implants, bridges or veneers from them.
The most successful dentists are in the people business – they treat people - not teeth!
Personality – are you adventurous or not?

• Some practitioners are cautious by nature
• Others are more adventurous and perhaps less conscious of risks (or more willing to disregard them)
• My decision making is to the right – but once I know and agree what is to be done I am comfortable working on the left
So your bar of competence will increase the better you get

- True experts will learn not to ‘charge in’ – because they better understand what is in the best interest of their patient
- They will want to ‘buy time for the patient’ – using less aggressive and cheaper treatment plans
Developing competence

MATTHEW SYED

• Sign up to the mission and criticism
• Learn from mistakes (reflective learning)
• Learn from others better than you
Learning expertise / proficiency

• Knowledge
• Experience
• Critical feedback
• Raise bar of your own expectation
• Benchmark against others
• 10,000 hours – to fully master an expert skill
Peter Briggs  BDS (Hons) MSc MRD RCS FDS RCS (Eng)
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www.hodsollhouse dental.co.uk