Practical Prosthodontics for the Dental Team

2015 BDA Conference
Sensible Tips and Messages on Prosthodontics for the Dental Team

Peter Briggs BDS (Hons) MSc MRD FDS RCS(Eng)
Specialist Practitioner / hodsollhousedental.co.uk
BSSPD means a lot to me

For Me

- Learn & Knowledge
- Have fun – conferences, discussions, webinars
- Learn how others do it
- Get honest advice
- Meet people from across the UK – broad group
- Something for all

Peter Briggs  BDS (Hons) MSc MRD FDS RCS(Eng)
Consultant / Senior Lecturer QMUL / Bart’s Health Trusts (London)
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:

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

Effective team work reduces risk
Where are the Pros / Endo interface risks?

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

Abbott 2004
Knowing what is predictable to restore – TRI
And what is not! – are too many restorable teeth being extracted?
2015 Terminal abutment – team needs to bring in their ‘A game’ – lots of new things to help

Foundation (perio / endo), core design, preparation, impression, static jaw registration, temporisation, crown construction, try-in, cementation and polish
Agreed Team Standards

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

E-max Monolith UR6 – single strategic RCT’d tooth
Where are the Pros / Endo interface risks?

What is your diagnosis and what should be done?

Never let the **sun** go down on **pus** – knowing what antibiotics will and will not do?
Systemically unwell? - need to find out with a **thermometer**
Knowing what antibiotics will and will not do and knowing how to use LA to numb ‘hot’ pulps

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

Mohammad Dil Kanaav, MPhil, DDS, John Martin Whitworth, PhD, BChD, Ian Porter Corbett, PhD, BDS, and John Gerard Meecbun, 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 31 healthy adult volunteers. Electronic pulp testing was undertaken at baseline and at 5 minute intervals until 30 minutes post-injection. A successful outcome was recorded in the absence of pulp sensaion on two consecutive maximal pulp test stimulations (86% of 4% articaine and 64% of lidocaine infiltrations were successful, p = 0.001). Articaine infiltration produced significantly more episodes of no response to maximum stimulation in first molars than lidocaine (23% 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;32:296–298)

How do you make the patient numb?

Only 50% of IDBs will fully work with hyperaemic mandibular molars – will need top up
Where are the risks – C & B?

- Abutment condition and prognosis
- Static Jaw Registration / Occlusion
- Impression quality & fit
- Posts / Cores – as abutments
- Aesthetics / shade / shape / margin etc
Prevention & Identification of Identifying Partial De-Cementation

Conventional Bridges (Briggs et al 2013)
75% of dentists questioned used porcelain on the occlusal surfaces of premolars and molars most or all the time for their patients

Christensen, G. J. J.
73% of the same dentists would use metal occlusal surfaces for their own teeth or those of their family – the friends or family test has been around for a long time!

Figure 4A. Preoperative view of the combined abrasive-erosive defects on the posterior teeth on the right side of the mandible. The vertical dimension of occlusion (VDO) was affected significantly by severe loss of enamel. B. After fabrication of an analytic wax-up and three months’ successful therapy with a modified Michigan splint for reconstruction of the VDO, onlays with a minimum thickness of 1 millimeter were fabricated (IPS e.max Press HT, Ivoclar Vivadent, Amherst, N.Y, with the staining technique). C. Postoperative view of the final onlays after adhesive placement with a light-curing low-viscosity resin cement (Variolink II Base, transparent, Ivoclar Vivadent). The onlays exhibited an enamellike appearance and the color adapted well to the surrounding tissues owing to a high degree of translucency.

Honesty

My suggestion: mix and match – where is in the best interest of patient
Team Standards – Impression quality

The Use of Gingival Retraction Cord

Seems that we struggle

Storey and Coward (2013)
We as a team must know what is an acceptable / decent impression in 2015 – many C&B complaints relate to suboptimal marginal fit / recurrent caries and sensitivity – your nurse should be able to tell you yes or no – before your technician.
Plan A: Single Retained Gingival Retraction Cord

- Pack dry cord apical to the preparation margins
- Take the impression with cord in place
- The impression then has to come out!
Plan A: Single Retained Gingival Retraction Cord / Injectable Expansion Matrix

• Occasionally the cord will come out with the impression - it can be easily peeled out without problem.
• The cord can be left in after impression taking to facilitate construction of provisional restorations.
• Remember to remove the cord before the patient leaves!

Expasyl 3rd Party Data

Clinical Cases

Every so often, a product is introduced that has a significant impact on the way we practice dentistry. When that product provides quick, predictable soft-tissue management for crown and bridge procedures, it's a certain success. Expasyl has proven to be a valuable adjunct for taking accurate impressions. One significant advantage of Expasyl versus conventional retraction methods is its time savings. Also, the control of soft-tissue deflection combined with hemostasis means the quality of final impressions and the fit of laboratory restorations are significantly improved. Expasyl also creates the ideal environment for bonding of final restorations. It's just one of the fine Kerr products that help make crown and bridge work exceptional.

Case courtesy of John Cranham, DDS

A safe, painless breakthrough for gingival retraction, Expasyl is injected into the sulcus, physically displacing the tissue. Easy application. Easy on the patient. Significant time savings.

Left for 1-2 minutes and then rinsed, Expasyl's 15% aluminum chloride controls bleeding and endodontal seepage.

After rinsing, Expasyl leaves the sulcus open and dry. Excellent marginal exposure.

Combine Expasyl with the accuracy of Take 1 Advanced™ polyvinyl impression material and you have an easy-to-use impression with every detail recorded clearly.
Plan B(1) – I like the yellow tip for moderate cases

Overgrowth of inflamed tissue over the crown margin - we need a different strategy
- remove the excess tissue and create a gulley around the tooth in which the impression material will flow
Electro-Surgery / Diathermy / Radio Waves (Moderate)

• Sub-gingival margin(s)
• Thick (and often inflamed) gingival tissue which has rolled over the preparation margin
• Need for good quality impression in one visit – instant trough around tooth in which impression material will flow – time is money to patients and dental practices in the real world
Plan B(2) – aggressive use of electro-surgery with good biological width and attached gingivae – to create ferrule

Optimise coronal height
Plan C

- Where you cannot create 3mm of crown height with shortened teeth – e.g. broken down tooth / #’d tooth / tooth wear – with soft tissue loss alone
- Where thick gingival and connective tissue are not primarily responsible for the issue

Crown Lengthening Surgery – moving the ‘whole attachment apparatus’ level up the root of the tooth
Agreed Team (Band) Standards for dentist, nurse, technician

- Flash of impression material around the tooth/teeth
- No ‘blows’ in essential areas (e.g. margin)
- No drags in essential areas
- Support for impression material especially distal tooth

Impression Standards
Metal or Glass-Fiber?

- The less tooth-tissue you have remaining—the more you will rely on the attachment of the core.
- Survival better for glass fiber posts and all ceramic crowns if you have 3 or 4 remaining walls of tooth tissue.
- If you have less go for an indirect arrangement.
Good or Bad?

Grieve & McAndrew (1993)

- Radiographic examination of 327 post-retained crowns
- 20% had deviated posts
- 10% had no root filling
- 50% inadequate RCT
- 47% had radiolucent areas
- 74% of posts tapered
End cutting post burs can create significant greater deviations from the centre of canals compared to non-end cutting burs like Gates Glidden (Gegauff et al. 1988) Therefore safest to use measured GGs first to remove (mostly by heat) the GP and then prepare / cut a post channel within the root.
Why is cementation and seating of posts so important?
The ‘Moshonov’ Gap to be avoided


The effect of the distance between post and residual gutta-percha on the clinical outcome of endodontic treatment.

Moshonov J¹, Slutzky-Goldberg I, Gottlieb A, Peretz B.

Author information

Abstract
To determine whether the distance between the post and the residual gutta-percha influences the clinical outcome of endodontic treatment, 94 endodontically treated teeth following post and core restoration were evaluated radiographically. The teeth were divided into three groups: (I) no gap between the gutta-percha and the post; (II) a gap of >0 to 2 mm; (III) a gap of >2 mm. Treatment outcome was evaluated in follow-up radiographs, taken 1 yr after treatment and up to 5 yr posttreatment. In group I, 83.3% of the teeth were evaluated normal, 53.6% of group II, and only 29.4% of group III. A gap between the gutta-percha and the post was related to an increased rate of emerged disease in endodontically treated teeth restored with a post and core.

Team work: nurse, technician & dentist
Greater risk of periapical infection when there is a radiographic space between the root filling and the post (Moshonov et al 2005)

Team work: mind the gap
No Gap - 83.3% PAH normal
GAP 0-2mm - 53.6% PAH Normal
GAP greater than 2mm - 29.4% PAH Normal
We need to get the cement right down the root and not just place on the post to wipe up and out coronally when you insert the post!
Assuming the root intact, good 5mm RCT, decent ferrule, decent length post, a single crown, no deep localised pockets and treatment done well - then one is looking at a very high survival of single and multi-rooted teeth supporting single fixed restorations (Salvi et al 2007).

Team work must ensure good execution – ‘band’ standards

Creugers and Mentink

The amount, height, thickness & ferrule of remaining tooth structure is the most important factor on outcome - much more so than the type & length of post and the type of core.
The two significant things to note about the UK picture compared to other countries at present are the prominence of:

- Implant cases of all kinds
- Allegations of a failure to diagnose and adequately treat periodontal disease
Aesthetics - Fixed or Removable?

Starts with Prosthodontic Team Planning

- Tooth position
- Face and Lip support
- Flangeless denture try in – can give patient to take home
- Agreeing aesthetics and then attempting to deliver – bone graft to create enough facial and upper lip support without denture
Assess how much dento-facial support you lack (lip and mid face support) and can this be returned with fixed Prosthodontics or do you need a flange?
As a team you do not want to do all of this and find at the end that the upper lip and face ‘is still flat’ (unhappy POP)
Team planning is the gateway to success for both sides

Team work: CAD CAM Titanium screw retained superstructure
Implants can be disappointing – remember that the planning should always be driven Prosthodontically.
Diagnostic wax up to dictate tooth position, relate this to bone anatomy (+/- CBCT), make stent, XYZ team execution
Team work – think XYZ responsibility

What are you aiming for Screw-retained or Cemented?
We often blame (someone else’s) restorative work for causing gingival inflammation – remember crowns are usually over-contoured compared to natural teeth and therefore tend to deflect toothbrush bristles over the gum – we do not usually need to replace them to resolve this problem - even when they are far from perfect.

We cannot control inflammation.
Home cleaning and care is the **Treatment** – it starts with a **tooth brush** and a **patient** - we all need to be able to show and motivate people how to **brush their teeth**

**Clearly Understood Goals**

- Make the gums bleed
- Make the gums sore - 2-3 weeks of pain
- Expect recession – where puffy inflamed gums
- Gums will turn pink rather than red / purple inflamed
- The gums will settle down – you will be able to clean as aggressively as you wish without bleeding or pain in a month

‘…..Inflamed and bleeding sites are the most at risk of long-term deterioration….’

‘….The oral hygiene of the patient is more important than the number of recall hygiene visits during long term maintenance…..’

Westfelt E.
Supportive periodontal care, Scientific basis for long term success, Rationale of mechanical plaque control

A Long-Term Survey of Tooth Loss in 600 Treated Periodontal Patients
by Leonard Hirschfeld, d.d.s.* 1978

600 patients were below 60 years of age (Table 1), with 362 (60.3%) between the ages of 21 and 49. The average age of all patients was 42.

The distribution of patients according to years of maintenance can be seen in Table 2. Two patients originally had been treated more than 10 years before this survey. 15 more than 20 years before, and 60 more than 30 years before. The average duration of maintenance was 22 years and the median was 20 years.

At the original examination of all patients, and at remaintenance, the periodontal condition was charted

Well-maintained [WM] group, lost 0 to 3 teeth (over 60% lost none)
Downhill (D) group, lost 4 to 9 teeth
Extremen Downhill (ED) group, lost 10 to 23 teeth

On the basis of these groupings, the study population was distributed as follows:

Well-maintained 495 (83.2%)
Downhill 76 (12.6%)
Extremen Downhill 25 (4.2%)

How do the teeth in patients with periodontal disease perform over 30 years maintenance?
Surely, we should be most interested in maintaining attachment levels - but why does everyone ‘over focus’ on pocket depths?
Patient’s must be shown how to clean under the pockets – single-tufted brush or Tepe sub-gingival therapy

8 week review
Patients must ‘earn’ their RSD followed by Supportive Periodontal Therapy SPT - if lots of inflammation (means poor OH) – it’s a waste of time. It is no use starting with the scaling!

Minimally-Invasive Non-Surgical Periodontal Therapy

Abstract: Periodontitis is a complex disease that has both oral and systemic consequences. The treatment of periodontitis may be both surgical and non-surgical but, in recent years, there has been a shift towards managing disease non-surgically in preference to surgery. Fundamental to all types of therapy is the patient’s role in disease control, in the form of self-performed plaque control, and it is important that the patient understands this. Non-surgical periodontal therapy has a long history and has traditionally been carried out using a variety of hand and powered instruments, the objective being root surface disinfection by the removal of plaque, calculus and contaminated root cementum. However, over the last 30 years or so, it has become apparent that calculus does not cause disease, cementum does not become significantly infected and bacteria and their toxins are only loosely adherent to the diseased root surface. This has led to the development of less invasive instrumentation principles which may be better for patients, more cost-effective and more easily applied in different clinical settings.

Clinical Relevance: This paper aims to describe and justify a minimally-invasive approach to disease in periodontitis, to clarify the terminology used and to suggest how these principles may be applied.


Patients must earn their right to RSD
Summary: A Successful Team for Prosthodontics

• Able to communicate with patients and each other
• Follow your instincts
  – ‘….be careful of this patient I think that they will be impossible to please…’
• Well informed
  – share information
  – compliment each other’s weaknesses
• Develop your culture and ‘band’ standards
  – what are you all about?
• Trust each other and know that your view may not be agreed with but will be heard
• Remember that there is no ‘I’ in team
• Share and deflect the glow of success
• All learn from disasters and share the blame
• Prosthodontic Outcome and standards will be dictated by the weakest member of your team