Clinical Case Discussions
Dental Medicine
Professionalism in 2017
Generation Y & the younger dentists
Complete Dentures – forgotten Skills?
Strategic Teeth – important things to get right – need to replace and restorability
The big challenge for the future – ageing patients
Foundation Health of Root: Periodontal Health and Endodontic 2014 option appraisal & why?
Dental Salvage
Prognosis and outcome comparison of re-restored natural teeth compared to implants?
Case

• Pain and infection for the last nine months.
• /2 lost several years ago and an adhesive bridge /1P3 placed to restore the space
Case

Idiopathic/Iatrogenic
Vascular:
Inflammatory
Traumatic
Autoimmune
Metabolic
Infective
Neoplastic
Degenerative

- Pain and infection for the last nine months.
- Soft intermittent swelling opposite UL2
- /2 lost several years ago and an adhesive bridge /1P3 placed to restore space
Soft tissue intra-oral examination

Clinical Tip:
Use soft tissue sinuses to help diagnosis with special tests.
Use a big GP point and secure with ribbon wax so it does not move. Check that it’s not old and brittle!
Case

- Without examining the patient - what do you think the problem is likely to be?
- What’s the likely solution?
Case

• What do you think was the dental history of the missing /2?
Case

• CAP – Acute episode and exudation and soft-tissue abscess from UL1
• No clear radiographic appearance of apical area – swelling not opposite the tooth
• Need other special tests – e.g. Electric pulp tester
Case – Reflections
Case Discussion - Recurrent caries with no de-cementation – which is worst and why?
Case Discussion – how do you remove crown and bridges?
Section to allow passive ‘lift-off’ to protect what is underneath
Why is the caries there and what am I going to do to stop it returning after my Rx

- Plaque-trapping
- Saliva
- Diet
- Drugs
- Fluoride

Remove the pontic and restore as single teeth
Long term cuspal coronal protection and then asking the tooth to look after itself is the key.
Predictive and honest discussions with the and carers

- Reduce failure cycles – ‘restorative’ prevention
- Restored teeth to look after themselves not lost friends
- Maintain live pulps if possible
- Only restore spaces when necessary
- Understand predictors of success & failure
- Logical approach to problem-solving
The ‘Older’ Dentate Problems

- Caries
- Plaque, Gingivitis & Chronic Periodontitis – keen to avoid dentures
- Xerostomia / reduced volume and effectiveness of saliva
- Medical problems – stroke / drugs / CVA / dementia / arthritis / MND / drug interactions etc.
- Patient needs care & reassurance
General ‘Older’ Challenges

- Is low-seated dentistry possible?
- Time – everything much, much slower
- Communication – more difficult - need a quiet environment
- Different needs in terms of reception & waiting room
- Confusion/ memory / cognitive problems / fragile
- Carer / family may be involved
- Mobility issues
- Medical compromise and array of medications (particularly dry out drugs)
- Expectations may outweigh possibilities
- Retired & financially prudent
Practical Differences of the Solutions for Older Patients

- Needs and demands are different
- Know what will work in your hands / learn from failures
- Volumetric clinical experience with reflective learning
- Tackle the majority & refer the minority - otherwise you are a de-skilled dental surgeon
Fixed OI – less maintenance complications than removable OI (particularly in maxilla) - but long-term results reliant on patient’s biological ability to maintain
Implant supported dentures – can be a ‘game changer’
The problem of maintenance

Prosthodontic Complications with Implant Overdentures: A Systematic Literature Review

Marina Andreettielli, DDS, Dr Med Dent\textsuperscript{a}/Wael Att, DDS, Dr Med Dent\textsuperscript{b}/Jörg-Rudolf Strub, DDS, Dr Med Dent, PhD, Prof Dr Dr hc\textsuperscript{c}

**Purpose:** Problems associated with a complete denture, such as lack of stability and retention, can be solved with the use of implant-retained or implant-supported overdentures. However, controversy exists as to the anchorage system used and indications for both the maxilla and mandible. The purpose of this review was to identify the prosthetic complications associated with the different attachment mechanisms used for implant-supported or implant-retained overdentures. **Materials and Methods:** A search of the MEDLINE and PubMed databases was conducted to find articles in English and German peer-reviewed journals published between 1980 and 2008. The search focused on randomized controlled clinical trials and prospective studies with follow-up periods of at least 5 years that contained clinical data regarding success, failure, and prosthetic complications. **Results:** The search yielded a limited number of randomized controlled clinical trials referring to implant-supported or implant retained overdentures. Very few studies have prospectively compared prosthetic complications for a period longer than 5 years after delivery of the prosthesis. **Conclusions:** Implant-supported or implant-retained overdentures in the mandible provide predictable results with improved stability, retention, and patient satisfaction. Scientific evidence shows a lower rate of implant survival and a higher frequency of prosthetic complications for maxillary implant-retained or implant-supported overdentures. Although the literature presents considerable information on complications of implant prosthesis, variations in study design preclude proper analysis of certain complications. Well-designed longitudinal studies are required to establish evidence-based treatment planning principles. *Int J Prosthodont 2010;23:195–203.*

Facial support and lip line – low risk - acrylic will replace everything cosmetically
So are these the answer?

- Angulation of fixtures
- Position of implants – essential to avoid ‘AP rock’
- Length of locator abutments
- Patient need to buy the Locator tool and learn to replace the plastic inserts – add parafunction then ++++return visits
Bar constructed in 1995 in March 2017
Who will look after patients like this in the residential home?

- Le Fort II fracture – maxilla & nasal complex displaced to right. Mandible intact – ‘fell from a ‘tractor fork’ when cleaning out a gutter
- Terminal damage to remaining maxillary teeth and loss of alveolar bone and processes – upper clearance and OI complete denture – accepting right shift of maxilla and cross-bite – palatal acrylic maintains anterior occlusion
- Conventional removable prosthodontics provides facial and lip support – implants keep the denture stable and retained
Replacement of missing teeth

• Just because there is a space – it does not mean that we should replace and fill it in 2017

• Patients worry much more about aesthetic impact than function – they always have and always will

• Some operative and replacement clinical and laboratory skills are being lost
Replacement of missing teeth

- Fixed implants, Conventional and Resin bonded Bridges are predictable and preferred by patients (and probably dentists) to removable alternatives – all options have a downside

- UK leads the world with development & performance of CRBB – however there are big differences in performance between centres (e.g. King et al (2015) / Garnett et al (2006))

- If teeth in good condition then I feel it difficult to defend conventional tooth preparation to allow prescription of a conventional bridge in 2017
Replacement of missing teeth

- Canines, mandibular central incisors and molars are all difficult to restore with conventional & RBBs
- Implants probably are a best alternative for canines and molars in 2017 – although the less native bone the more complications one can expect
- There is still a place for dentures; particularly where spaces are big and tissue-loss significant and where funds limited
- The digital revolution will help us: (intra-oral) scanning, 3D printing, CAD-CAM, move away from casting alloys to milling zirconium, titanium, alloys etc. – reduce turn around and costs
- Digital memory – remake / refurbish & copying
Refurbish, Remove, Repair or Replace?

Steele: rehab work needed for over-45s

By Robert Merrick, parliamentary correspondent

Older patients will require better-surgel treatment than permitted by the planned new contracts for dentists. MPs have been told that the age gap over 45, who grew up before significant improvements in dentistry practices, will continue to need rehabilitation work, such as a new focus on preventive treatment, a missing tooth.

Professor Merrick said the Westmead medical, who the patient, apparent systems in the elderly citizen that the current plan looks towards for high-quality care, has delivered an outcome, a root canal, for the patient.

But he said 25% of work in over-45s would be rehabilitation, adding: "It will also mean that a dental patient, who wants to retain the 50-year-old woman, will have to pay up, though that may be.

In the future, rehabilitation will be just as important as how we treat those happening, if we want to ensure all of our patients gain.

In September, the Government of Health (DH) announced new changes to the current contact at £6 dental practice, but there is no date for introducing new contact across the board.

Professor Merrick also called for more information about what is available on the DHCE as well as consideration of the 'automated' fees. The call was not without its critics, particularly in the United States.
‘Middle’ to ‘Old Age’
Roy Briggs (53) with his bothers in 1978

Figure 1.1 Trends in percentage edentate by age: England, 1978 to 2009
There will be more restorative replacement and repair in my generation compare to the last – but people can start to lose teeth and dentitions in the last few years of their life.
The older ‘middle age’ are coming – they are more heavily restored – with bigger challenges

• By contrast, 97 per cent of dentate adults aged 45 to 54 had a filled tooth and they had 9.1 teeth affected on average.

• Adults aged under 45 years were less likely to have any fillings, and those who did had relatively low numbers of filled teeth.
Should be confident with management of failing restorations

- 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.
Dismantle – over 70% of all dentistry is re-do

Only for strategically important teeth - Repair, Re-treat, Restore or Replace?
You will often need to section through or remove bridges or crowns – can I introduce you to the Jet carbide bur (64177) 

never tap off
How do we avoid this then?
The reality of Clinical Life for the Community Dentist without amalgam

• Are the materials different and how do they perform in ‘real-world’ dental practice?
65% of all restorative dentistry is replacement dentistry.
Dismantling – in 2013 around 70% of our dentistry is re-do
Refurbish, Remove, Repair or Replace?

We must look at this with reference to posterior amalgam and composites – what are we left with at failure?
Summary

• Even extensive amalgams seem to perform and survive very well
• The indications of when to ‘replace’ an amalgam restoration with a crown are unclear
• Posterior composites are more difficult to place; are more prone to recurrent caries, sensitivity, micro-leakage and earlier failure than amalgam restorations
The reality of Clinical Life for the Community Dentist without amalgam

- How do posterior Amalgam Restorations go in the UK GDS (and how will they do in CDS)?
- How do posterior NHS amalgams compare to NHS composite resin (used to restore anterior teeth)?
- What are the clinical implications to you of the differences between them?
Survival in NHS GDS

Lukarotti et al. Outcome of direct restorations placed within the general dental services in England and Wales (Part 1): Variation by type of restoration and re-intervention J Dent 2005
## Survival

**Table 1** Restoration survival by treatment type.

<table>
<thead>
<tr>
<th>Treatment type</th>
<th>Percentiles (days)</th>
<th>Survival rates</th>
<th>n</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Upper quartile</td>
<td>Median</td>
<td>1 year</td>
</tr>
<tr>
<td>Single surface amalgam</td>
<td>1510</td>
<td>N/A</td>
<td>93%</td>
</tr>
<tr>
<td>Two surface amalgam, not MO or DO</td>
<td>1005</td>
<td>3461</td>
<td>89%</td>
</tr>
<tr>
<td>MO or DO amalgam</td>
<td>1116</td>
<td>3488</td>
<td>90%</td>
</tr>
<tr>
<td>MOD amalgam</td>
<td>893</td>
<td>2759</td>
<td>88%</td>
</tr>
<tr>
<td>Tunnel amalgam</td>
<td>1443</td>
<td>N/A</td>
<td>93%</td>
</tr>
<tr>
<td>Resin composite</td>
<td>809</td>
<td>2645</td>
<td>87%</td>
</tr>
<tr>
<td>Glass ionomer</td>
<td>656</td>
<td>2138</td>
<td>84%</td>
</tr>
</tbody>
</table>
| Root filling + indirect restoration   | 872                | 3166           | 86%   | 62%    | 46%     | 12,277  

Lukarotti et al. Outcome of direct restorations placed within the general dental services in England and Wales (Part 1): Variation by type of restoration and re-intervention J Dent 2005
Outside UK – Randomised Comparison Studies seem to suggest caution when dealing with 3 surfaces or more

**Results.** Subjects received a total of 1,748 restorations at baseline, which the authors followed for up to seven years. Overall, 10.1 percent of the baseline restorations failed. The survival rate of the amalgam restorations was 94.4 percent; that of composite restorations was 85.5 percent. Annual failure rates ranged from 0.16 to 2.83 percent for amalgam restorations and from 0.94 to 9.43 percent for composite restorations. Secondary caries was the main reason for failure in both materials. Risk of secondary caries was 3.5 times greater in the composite group.

**Conclusion.** Amalgam restorations performed better than did composite restorations. The difference in performance was accentuated in large restorations and in those with more than three surfaces involved.

**Clinical Implications.** Use of amalgam appears to be preferable to use of composites in multisurface restorations of large posterior teeth if longevity is the primary criterion in material selection.

**Key Words.** Amalgam; composite; randomized controlled clinical trials; dental restoration failure.  
*JADA 2007;138(6):775-83.*
Small composites go well, small and large amalgams go well
With the issues of dismantling and failure in mind

PV Abbott (2002) removed every (1200) post with less than 0.1% risk of root #

Assessing restored teeth with pulp and periapical diseases for the presence of cracks, caries and marginal breakdown

PV Abbott®
Teeth requiring RCT or Re-RCT – What should we do with the restorations – RCT through the restoration or crown or totally remove? Abbott (2004)
Aims:

• Determine whether restorations should always be removed prior to commencing endodontic treatment

• Whether the type of restoration affected: pre-op disguise of caries & cracks / time in-situ prior to referral / pulpal or periapical disease
Pre-op and post-op comparisons

• Long Cone Periapical Radiographs were found **unreliable** indicators of their presence

• He suggested that we should use **bitewings** in addition to LCPAs for this assessment
• Amalgam restorations had generally been in service for a long time before the patients presented with the pulp disease (68.7% over 10 years, and 10.7 per cent between 6-10 years).

• In contrast, 91% of the composite resins had pulp and periapical disease within three years and the remainder by seven years.
• Commonest pulpal condition associated with amalgam restorations was irreversible pulpitis (50.4%)

• 72.7% of the composite resins had infected canals (pulpless and infected 40.2%; or previously root-filled and infected 32.5%)
Abbott (2004) - take home messages

- There is only a **56.1%** chance of predicting / finding **caries, cracks and marginal breakdown** in **95% of restored teeth** that have pulp and/or periapical disease.
- **It is therefore essential to remove all existing restorations** from teeth with pulp and/or periapical disease prior to commencing endodontic (re)treatment.
- **Amalgam seals and protects the pulp for longer** than composite.
- **Composite more often associated with pulpal necrosis at an earlier stage than AF.**
- **More difficult to predict caries with composite.**
Amalgam and conventional dentistry seems biologically ‘more forgiving’ than composite and maintains pulpal protection / seal for longer? 

Percy Pulp seems happier with the mercury
• Does amalgam remain an important restorative tool for the community patient?

The reality of Clinical Life for the Community Dentist without amalgam

**Yes** – for many clinical circumstances that you come across it is not replaceable and it is very biologically forgiving – even when placed suboptimally
Amalgam Advantages

• Easier to place
• Easier to develop good interdental contacts
• Cheaper
• Quicker to place
• Dentine bond not does not breakdown with moisture over time
• There is excellent long term outcome data of the same material over many years
• Easier to remove
Amalgam is still first choice for intra-coronal posterior teeth:

- Deep intra-coronal posterior caries
- Deep inflamed boggy gums
- Sub-gingival boxes
- Compromised moisture control
- Patient who cannot lie down in the chair
- A patient that moves and cannot settle
- ‘sea of saliva’ scenario
Please continue to use Amalgam to build up RCT’d posterior teeth

Nayyar (1991)
## Table 1 Core-build up for vital teeth (n = 701)

<table>
<thead>
<tr>
<th>Material</th>
<th>Number of respondents (%)</th>
</tr>
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<tbody>
<tr>
<td>Amalgam</td>
<td>418 (60)</td>
</tr>
<tr>
<td>Glass-ionomer cements</td>
<td>329 (47)</td>
</tr>
<tr>
<td>Light cured resin composite</td>
<td>296 (42)</td>
</tr>
<tr>
<td>Compomer</td>
<td>203 (29)</td>
</tr>
<tr>
<td>Resin modified glass-ionomer cements</td>
<td>170 (24)</td>
</tr>
<tr>
<td>Dual cured resin composite</td>
<td>82 (12)</td>
</tr>
<tr>
<td>Chemically cured resin composite</td>
<td>69 (10)</td>
</tr>
</tbody>
</table>
In my experience there tends to be less gross caries and contamination into the pulp with failing amalgams – how would you restore this tooth?
What are the training implications for dentists working in primary care with posterior composite?

• Identify suitable cavities for resin: lots of enamel / smaller restorations / less deep / controllable moisture etc
• Proficiency in use of rubber dam and other isolation tools
• Proficiency in layering techniques
• Use of specialised matrix systems (e.g. Garrison Bands and Ring)
What are the training implications for dentists working in primary care with composite?

- Access to good low shrinkage (2-3%) composites
- Provide more time to bond, place, contour, & finish
- Understand Dentine Bonding systems - 3 bottles (separate etch, prime & bond) 2 bottles (etch / prime together & then bond). 1 bottle (self etch/prime & bond together)
So yes - continued access to use Dental Amalgam must be fought for and argued for by Community / Special Care teams / GDS / National Specialist Societies / BDA etc

Get involved
Identify Teeth of Strategic Worth / Importance

• Teeth that are important in maintaining function, aesthetics and that avoid the need for a denture
• Important prosthodontic abutments
• Extraction associated with significant medical risk to patient (IV Bisphos for oncology / Radiotherapy to jaws etc)
Dealing with dental disease / failure of strategically important teeth
• Bitewing & PA
• Strip down
• Remove caries
• Assess restorability in context with plaque, caries activity, periodontal ability, pulpal status and ability of patient to tolerate the Rx
• Consider most simple plastic restorative option first – composite not likely to be the best choice for significantly damaged posterior teeth
• Be careful with composite in such teeth – amalgam goes much better and is much more forgiving & less damaging to the pulp in sub-optimal circumstances
Restorability & Restoration – Coronal Seal

Post-operative:

- Good coronal restoration (Eleven-fold increase in odds of success)
  - Ng et al (2011) Ng, Mann & Gulabivala; International Endodontic Journal, 2011

THE ROLE OF THE CORONAL RESTORATION ON ROOT FILLED TEETH


Results: 97% of these teeth were retained after eight years following non-surgical root canal treatment.

The Failures: The majority (85%) of the extracted teeth had no complete coronal restoration, which was significantly different from those teeth will full coverage.

Can we objectivise decision – making on tooth restorability? - we can try but - **NO!**
Can you objectivise decision – making on restorability?
Can I get an impression of a sound tooth margin & what will I need to do to get it? / What am I asking of the tooth? / If lost will the patient want the space filled?
Strategic importance – teeth do best looking after themselves (not lost friends)

Think Single Teeth
How would you take a jaw registration to ensure that your chosen crown for the strategically important LR6 conforms to the existing occlusion?
Clinical Examples

Do we need to take a jaw registration and if so why?
Learning point: If the stool falls down you need to put something between the teeth to ‘prop-it-up’ when the natural teeth are together in ICP.
May I suggest a good paper on the subject:

Warren K. and Capp N.

A review of Principles and Techniques for Making Interocclusal Records for Mounting Working Casts

Most of the time we need to use conformative jaw registrations.

Registration material should only be placed between your preparations.
Restorations using existing intercuspal relationships

- When enough tooth contacts and working conformatively most accurate record is with no intervening record (i.e. Hand-Help Articulation) Strohaver 1972
- The accuracy of the mounting can be improved by coating the posterior teeth with separating medium and rigidly ‘fixing them’ together with impression plaster Warren & Capp 1990
Restorations using existing intercuspal relationships

- Strohaver 1972

When enough tooth contacts and working conformatively, the most accurate record is with **no intervening Record** (i.e. Hand-Help Articulation)

Principles of Working Jaw Registrations

- Always taken at the vertical dimension you plan to place your restoration(s)
- Only exception is a Remount procedure or a pre-centric C/C check record
Beauty wax (or equivalent) over the occlusal surface of distal molar refine with Temp-bond

What about this situation?

I like firm Optosil putty in such circumstances.
Patient’s must be shown how to clean under the pockets – single-tufted brush sub-gingival therapy
8 week review
recession and reduced inflammation
Patients need to ‘earn’ their right to RSD (professional therapy) if OH poor it is a waste of time. No use whatsoever starting with the scaling – this is totally illogical!

- For pockets of 4mm or more
- Will only be effective where OH / plaque / inflammation are under control
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 the management of the diseased root surface in periodontitis, to clarify the terminology used and to suggest how these principles may be applied in general practice.

Periodontal Therapy works
Hirschfeld & Wasserman (1978)

- 85% of cases well maintained over 22 years and lost few teeth
- 10% of cases downhill – losing around 3-4 teeth a decade
- 5% rapidly downhill – losing 10 or more teeth per decade

A long-term survey of tooth loss in 600 treated periodontal patients.

Hirschfeld L, Wasserman B.

Abstract
1. Six hundred patients in a private periodontal practice were reexamined an average of 22 years after their active treatment and the patterns of tooth loss were observed. 2. During the post-treatment period, 300 patients had lost no teeth from periodontal disease, 199 had lost one to three teeth, 76 had lost 4 to 9 teeth and 25 had lost 10 to 23 teeth. 3. Of 2,139 teeth that originally had been considered of questionable prognosis, 666 were lost. Of these, 384 were lost by one sixth of the patients and only 272 by the other five-sixths. 4. Of 1,454 teeth which originally had furcation involvements, 460 were lost, 240 of them by one-sixth of the patients who deteriorated most. 5. The mortality of teeth which were treated with periodontal surgery was compared with that of teeth which did not have surgery. Tooth retention seemed more closely related to the case type than the surgery performed. 6. In general, periodontal disease is bilaterally symmetrical and there is a predictable order of likelihood of tooth loss according to position in the arch.
Essential Prevention – for all ages

1. **Diet Sheet** – quantity and frequency
2. **Plaque control** – simple messages – must use something specific to get between the teeth. Employ the help of carers and family – spread the responsibility
3. **Tooth protection** – smoothing / reshaping / remove or open up interdental contacts / remove undermined enamel in root caries lesions /
4. **Fluoride** – topical with remineralisation strategies / Chlorhexidine applications
5. **Medication History** – we need to know