‘Hands-on’ Tooth Preparation Course
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Practical Tooth Preparation, LonDEC, Thursday 10th April 2014
‘Hands-On’ Didactic Teaching
‘A Tooth-Friendly-Approach’
- Hands-on Tooth Preparation Course -

**Dental Simulation**

**to include:**

- Anterior Porcelain Fused to Metal Crown
- Anterior Ceramic labial veneer
- Anterior Dentine bonded crown
• We all need to work hard
• We are using plastic teeth
• I want the focus to be on quality handpiece control and attention to detail
We will not ask you to do anything that we cannot
Rules of the Day

- Reflection on where you are and what you need to improve
- Get feedback from us and your colleagues
- Enjoy the day and have fun but and reflect on at you have done
- Do not just stick together in your Trusts
• It’s not an exam – it’s a day to make mistakes
• We will take photos of the preps so we can discuss them as a group
• We will come round & offer honest but constructive comments
• You will all use putty index impressions of the teeth you are going to prepare
• These can be used as a guide of your tooth preparation – to check how much you have removed
• You will all need a sharp scalpel and a sharp pencil!
• We will be helping to improve ‘hand-piece control’
How many use Putty Index?
They will help demonstrate two plane labial reduction.
• Invest in your skills – know your shortcomings – know how to improve them – most of us need around 2000 hours of experience to develop high level reproducible practical skills

• Cut no corners today

• Remember - no easy way to achieve quality dentistry

• Do not let people allow you to de-skill

• Do your best and you will enjoy the challenge

• If it doesn’t work think why?
Today we are going to prepare:

• We start with an anterior Porcelain Fused to Metal Crown - it still accounts for more than 85% of all prescribed crowns in the UK
PFM Preparation

Preparation Specifications:

Incisal Reduction: 1.5-2.0mm
Labial Shoulder: 1.0-1.5mm
Palatal Chamfer: 0.5mm
Palatal Reduction: 1.0mm Metal
2.0mm Metal/Ceramic
Here are some other aspects that you need to consider:

Take a **pre-preparation putty impression** – cut it from buccal to palatal in middle of crown - to use as a preparation guide

Consider **metal collars** where possible, as this will reduce the extent of cervical tooth preparation. This is beneficial for teeth that have evidence of gingival recession and exposed root dentine.
Here are some other aspects that you need to consider:

**Winged preparation** – this provides the technician with information about where you wish the ceramic/metal junction to be positioned.

There should be an obvious **demarcation interproximally and palatally** where the preparation changes from having sufficient space for metal and ceramic to having metal alone.

We want you to prepare a PFM that has ceramic labial-incisal but metal on the palatal

**Think** very carefully how much and where you need to remove tooth tissue - and why?

We want you to **measure the tips of your burs** and understand how much tooth needs to be removed.
Common errors with PFM Tooth Preparation:

Single labial plane reduction – look carefully at the tooth before you start to work out what you should aim for

Gouging and lipping of labial shoulder – think about bur choice.

Start off by placing your margin supra-gingivally and then refine near the end

Uneven labial shoulder – want consistent depth

‘Universal’ preparation – no information on what surface should be covered by porcelain and metal and which surfaces should be covered by metal alone – think where you want metal only, where metal and ceramic and what this means to your preparation
‘Winged’ PFM preparation (UL1)
The wing is where the palatal metal preparation meets the labial and interdental porcelain and metal preparation.
We need to get the palatal chamfer margin right and note how it slides round the outer aspect of the ‘wing’!
Do not take too much off and let’s do it well
Putty Index – please use them to improve
Multi-plane Reduction
Common errors with PFM Tooth Preparation:

Over-preparation in some areas and under-preparation in others

Over taper

Undercuts - check with sharp pencil and mirror at the line angles

Too aggressive incisal length reduction - think how much you need

Not enough interproximal space between preparation margins and adjacent teeth - technician must be able to section the die - so there must be enough space between the prepared tooth / teeth
Use sharp pencils to assess undercuts (or not) – note how margins have ‘run away’ subgingivally.
Need to know dimension of burs - 1.5mm thickness at the tip!
Common faults of tooth preparation that will be bad news for worn teeth

- Under-preparation and lack of multi-plane reduction
- Don’t take enough off in the right place
- Wrong margin at the wrong place
Two / three plane tooth reduction which relates to crown anatomy. Worn teeth end up thick at incisal tips.
‘Good, better, best. Never let it rest. Until your good is better and your better is best.’ Tim Duncan
For worn teeth the palatal/lingual axial wall is very important as retention is limited.

Friction point(s) providing resistance form

Resistance

Loss of the axial wall

FORCE

De-cementation
Axial Height
Minimum 2mm Ferrule
Remember

- Retention - the direction of the path of insertion (occlusal direction)
- Resistance form any other lateral direction
- A function of:
  - Taper
  - Surface area/bulk of preparation
  - Surface roughness

Jorgensen 1955
Parallelism is essential for short teeth
Now go on and prepare an incisor tooth
3) Ceramic Labial Veneers
Composite, like me, has its problems
Porcelain Veneer preparation:

There are different types of preparation design that relate how the incisal edge is prepared. There is no substantial evidence that the survival of one design is better than another.

Window   Feather Edge   Butt   Overlap
Specification of Veneer Preparation

0.5-1.0 mm **axial** reduction
1.0-1.5 mm **incisal** reduction
Maintain contact points
**Two-plane** reduction
Rounded line angles
• Expose as little dentine as possible
  Supra-gingival margins wherever possible
  Maintain contacts
  Remove existing composite
If restoring the incisal edge then options include: butt, feather-edge or overlap
Remember that retroclined teeth can be treated very conservatively with ceramic labial veneers.
4) **Resin (Dentine) Bonded Crown Preparation - Convert your labial veneers to DBCrown preps**

- Margins (supra-gingival): 0.5 - 0.75mm
- Veneer dimensions both labial, interdental and lingual / palatal
- 1mm inter-occlusal clearance
- Two plane labial reduction
- Palatal reduction with rugby ball burs
Tooth Destruction

INDIRECT COMPOSITE

DBC

PJC
Aesthetic restorations looking good comes at a biological price

DBC prep = 63% off tooth

PFM prep = 72% off tooth

PFM prep 20% > FGC prep

PFM prep x5 > Porcelain veneer (feathered) x3 > Porcelain veneer (butt joint)


360° Heavy Veneer Preparation
Resin Bonded Adhesive Ceramic crown
Dentine-Bonded Crown

- ‘Ceramic-Veneer’ concept around the whole tooth
- Adhere hopefully to a good amount of enamel (as well as dentine)
- Can use with one or two stage Dahl
- Need significant convergence taper as neo-parallel will threaten # of crown on seat
- Most feel less tooth tissue removed – however you will be surprised
- Usual labial planes of preparation
Rounded Contours

No Undercuts
Convergence Taper
15-20°

Occlusal Reduction
1.0-1.5mm

Axial Reduction
0.5-1.0mm

Heavy Chamfer

Dentine Resin Bonded Ceramic Crown
Note the difference - in my view it is much more destructive palatally than a PFM
0.5-1.0mm Circumferential Chamfer
Can use RB Ceramic ‘Hats’ or Crowns – manage what is in front of you
Clinically the use of Retained Retraction cord is essential at time of cementation

Still need to use conventional sense – e.g. good separation of ID margins but keep enamel peripherally if possible
Indirect Palatal Veneers

- Adhesive Type III Cast Gold – where strength and performance essential
- Can use ceramic – where aesthetics important
Hope that you enjoyed the day