

Preparation of a Porcelain-fused to metal Crown



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Anatomy



Observe the anatomy of the tooth. In an upper first molar the biggest cusp is the mesio-palatal, followed by the disto-buccal, mesio-buccal and finally the disto-palatal. This should be maintained at the end of the crown preparation

Matrix



An accurate, well trimmed silicone matrix is essential for creating a predictable interim restoration or reduction guide

Matrix



Occlusal reduction



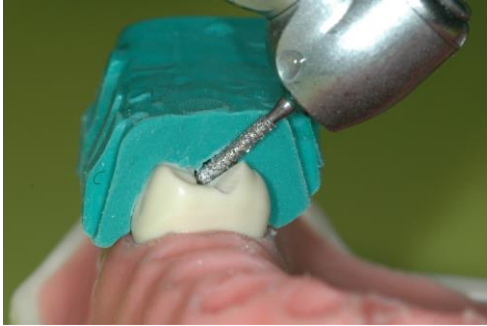
Follow the cusp angles of the tooth when preparing the occlusal surface

Occlusal reduction



Reduction should be with a parallel diamond bur of 1mm to 1 ½ thickness depending on the metal substructure, the functional cusp and whether the occlusal surface is metal, ceramic or both

Occlusal reduction

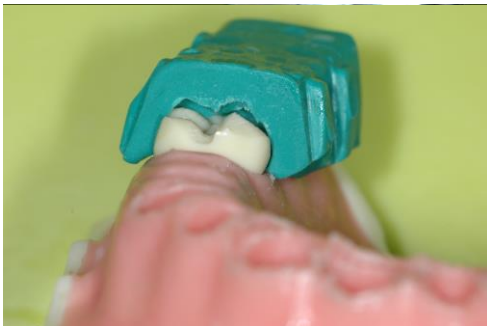


The bur is held against the tooth with the reduction guide in place to confirm the depth of reduction

Occlusal reduction

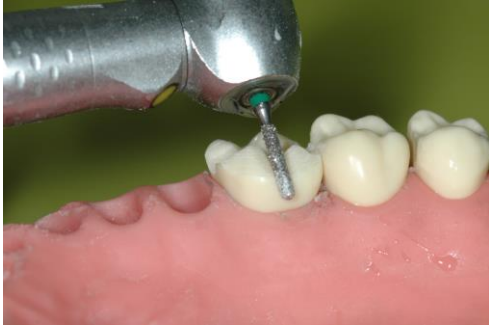


Occlusal reduction



A greater occlusal reduction is undertaken on the visible buccal cusps to allow sufficient room for both metal and ceramic

Cusp bevels



There needs to be separate functional and non-functional cusp bevels

Cusp bevels



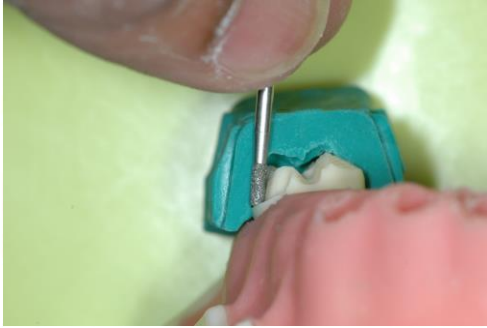
The occlusal view after occlusal reduction. Note the preparation for ceramic extends further proximally at the mesial portion in comparison to the distal portion for aesthetic reasons

Buccal reduction



The cervico-buccal reduction is done to the full depth of a 1.5mm barrel diamond bur.

Buccal reduction



The depth is checked against the silicone reduction guide

Buccal reduction



A short cervico-occlusal reduction is needed to blend the non-functional cusp bevel to the cervico-buccal reduction

Palatal reduction



The cervico-palatal reduction is prepared with a chamfer bur to a depth of between 0.5mm and 0.7mm

An additional palato-occlusal reduction is often required

Proximal reduction



The proximal reduction is completed with a needle bur to maintain a sliver of hard tissue between the prepared tooth and the adjacent one.

The proximal preparation is completed using the chamfer bur to connect the palatal reduction to the shoulder where the clinician wishes the ceramic/metal interface to be

Final Assessment



On the mesial portion of the tooth the chamfer and the shoulder do not blend correctly.

The ceramic shoulder is extended palatally

Polishing



The preparations are polished with modified white stones

The end



The occlusal view of the final preparation. Note that the mesial ceramic/metal interface is past the contact point with the premolar so as not be visible on smiling.

The distal interface is short of the contact point with the second molar

The end



The occlusal view of the final preparation.

Anatomy



The occlusal anatomy marked on the tooth. Note the ratio of cusps has been maintained.

Anatomy



The biggest cusp is still the mesio-palatal, followed by the disto-buccal, mesio-buccal and finally the disto-palatal.

Note the 2 planes of reduction delineated between the cervico-buccal and occluso-buccal reductions.

The end



An occlusal view comparing a full gold crown and a porcelain-fused to metal crown.

The end



A buccal view comparing a full gold crown and a porcelain-fused to metal crown.

Note the significantly increased amount of reduction required for the latter variety of preparation.

RCT



Thus you have to warn patients about the chance of requiring RCT after any type of crown!

RCT



And a restoration/core

RCT



Which is neither cheap nor easy...

Any questions?



Email me if you have any questions

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Good luck!