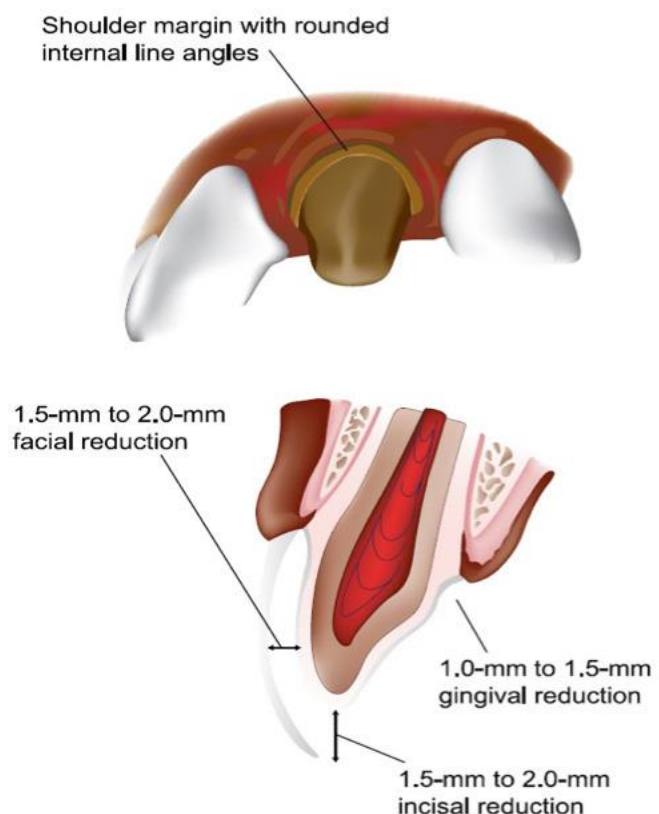


Zirconia crowns preparation guidelines

Since its emergence into the dental arena, Zirconia has increasingly become the material of choice for clinicians who wish to provide their patients with the most technologically advanced metal-free restorations. Zirconia has improved significantly with the introduction of a wider array of available milling pucks which allow for greater shade variation and translucencies that closely resemble natural dentition. In addition to improved aesthetics, the Zirconia physical properties allow for durability, strength, and precision-fitting restorations. To maximize on the success of seating Zirconia restorations, and minimizing chair time, it is essential to ensure that proper preparation guidelines are being followed.

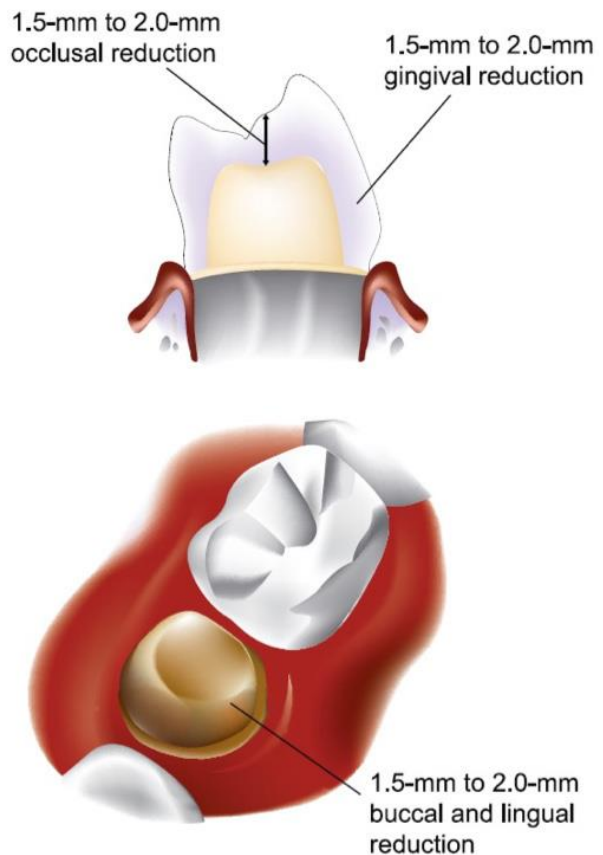
Preparation guidelines for an anterior zirconia crown

When prepping a tooth for an anterior Zirconia crown, you will need to ensure that there is sufficient room for the internal zirconia wall thickness to have a minimum of 0.3 mm and ideally between 1.0 mm and 1.5 mm, or 1.8 to 2.0 mm incisal reduction. There should be a clearly visible and continuous circumferential chamfer with a reduction of at least 0.5 mm at the gingival margin. The horizontal and vertical preparation of the tooth should have an angle of approximately 5° and a bevel is not advisable. A deep chamfer or shoulder prep is required for optimal aesthetics. All the incisal edges should be rounded. never sharp or abrupt line angles.



Preparation guidelines for a posterior zirconia crown

When prepping a tooth for a posterior Zirconia crown, you will need to ensure that there is sufficient room for the wall thickness to have a minimum of 0.5 mm and ideally between 1 mm and 1.5 mm or 1.5 to 2 mm occlusal reduction. The prep should be tapered between 4° and 8°. It will also need to have a clearly visible and continuous circumferential chamfer and a reduction of at least 0.5 mm is required at the gingival margin. Just as with the preparation for an anterior crown, a bevel is not recommended. Ensure that all occlusal edges should be rounded.



Although the Shoulder and Chamfer preparations are the most ideal, Feather edge preparations are typically not recommended, but can be acceptable for Zirconia crowns. Check with us to see if their fabrication process will allow for this form of prep, as different types of Zirconia do have different guidelines.

Factors that may make a crown preparation unacceptable for a zirconia restoration

To be acceptable for a Zirconia crown restoration, the preparation should not have any undercuts and it should not have a gutter preparation. A 90° shoulder is also unacceptable as are parallel wall preparations. Sharp incisal or occlusal edges are not suitable for a zirconia restoration.

Layered or monolithic restorations

For Zirconia restorations within the aesthetic zone or “smile zone”, a zirconia restoration layered with porcelain, or a High Translucent zirconia restoration will usually provide optimal results. A Zirconia crown layered on the facial, will provide optimal results. Over the past few years layering porcelain and techniques have improved significantly so a Zirconia substructure that has been layered with porcelain is unlikely to chip or fracture on the occlusal or incisal. However, if maximum strength is required because a patient has bruxism, a heavy bite or where there is only limited occlusal clearance, a monolithic crown may be a better solution. Monolithic restorations are providing an increasingly aesthetic result with the introduction of High Translucency Zirconia.

Cementing and finishing zirconia restorations

Quite often marginal finishing is required when fitting and cementing Zirconia restorations. Excess cement must be removed to avoid plaque formation which can lead to tooth sensitivity and periodontal disease. Gingival margins can be finished using non-cutting, safe-end finishing burs that will protect the soft tissues. Although these adjustments may slightly roughen the surface of a Zirconia restoration, it should be easy to polish, creating an exceptionally smooth surface.

If adjustments are required, it is important to use an appropriate diamond bur which is suitable for a Zirconia restoration. It is also important to use as little pressure as possible. Less pressure will reduce heat which can cause the Zirconia to fracture. Using water while adjusting will also help keep the restoration cool.