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## Post-Endodontics Teeth Coverage in Order to Maintain Teeth Both Functioning and Esthetically Pleasing

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### Abstract

Crowning an endodontically treated tooth is quite challenging especially in cases of badly decayed teeth. There have been different types of fixed restorations for endo-treated teeth (full coverage, endocrowns, ...etc.) with different materials (Metals, Gold, PFMs, Zirconium, E-max, ...etc.). Some of them have become outdated, while others have become gold standard. This review will examine the different crown materials with their usage and teeth preparation in order to retain endodontically treated teeth functioning and esthetically pleasing.

### Introduction

Restoring an endodontically treated tooth is essential for maintaining the health of the oral cavity hence the health of the body. There are different treatment options, therefore planning a treatment has been quite challenging especially in cases with significant tooth structure loss.

When finishing RCT of a tooth, the dentist is challenged to restore not only the function of the tooth but also the form and esthetics. The restoration of choice should provide adequate retention to the tooth in concern without affecting the adjacent teeth. Ferrule, location of the tooth in the oral cavity, function and esthetics all should be considered when determining the type of the fixed restoration.

Studies have proven that cases with extensive teeth loss beneath the cemento-enamel junction especially in premolars and anterior teeth must be restored with full coverage restorations in order to maintain proper function and esthetics. The following case shows the use of two different fixed restorations made of two different dental materials that are used in the same oral cavity. Why? That is what we are going to discuss in this review.

## **Methods and Findings**

The choice of the restoration depends mainly on your needs. E-max crowns can give the perfect esthetics while Zirconia crowns can provide you with the adequate strength. Gold crowns are durable but PFMs combine both the metal strength and the porcelain esthetics. So let's discuss one material at a time.

### **Metal or gold crowns**

Gold is the most durable dental material that is proved to last up to fifteen years (in case of proper dental care) when used to cover an endo-treated tooth, However its noticeable gold appearance makes it least preferable especially in cases with esthetics requirements. Same goes for the different metal alloys used.

### **Porcelain Fused to Metal crowns (PFMs)**

PFMs are well-known and widely used as it has achieved the difficult equation. It provides the strength of metal and the natural appearance of porcelain. However the quite transparency of the porcelain can give an opaque appearance due to the underlying metal giving an end-result of an unnatural appearance. Needles to mention the complications of porcelain chipping and metal line at the gingiva especially in cases of gingival recession. That is why PFMs usage has grossly decreased to an extent that some dentists prefer it in limited cases such as posterior long span bridges.

### **Zirconia crowns**

Zirconia crowns are now the material of choice for endodontically treated teeth. As it combined the strength of metal with the esthetics of porcelain excluding the opacity giving the restoration a natural yet strong properties. Not only this but also zirconia crowns require less teeth preparations which makes it more conservative compared to its alternatives.

### **Metal or gold crowns**

The ability of lithium disilicate to mimic natural teeth in both appearance and strength made it the most suitable material for restoring endo-treated teeth especially anteriorly. However their technique sensitive adhesion protocol and the need for good oral hygiene have made their usage quite challenging.

## **Choosing the suitable crown according to the case**

Many factors affect the crown type and material:

1. **Ferrule:** The amount of tooth structure remaining is the milestone in determining the type of coverage and its material. The less tooth structure remaining, the more need for a full coverage restoration. For example, Endocrowns can only be used if there are at least 2-3 walls of the tooth remaining. If not, the need for a full coverage restoration is required.
2. **Location of the tooth in the oral cavity:** Endocrowns can only be used in molars and rarely in premolars while full crowns can be used in anteriors, premolars and molars. Also E-max and zirconia are preferred in anterior teeth rather than gold or PFMs.
3. **Oral hygiene:** cases with bad oral hygiene require less sensitive restorations. That is why endcrowns are contraindicated in cases with bad oral hygiene. PFMs or metal crowns would be the materials of choice in these cases.
4. **Esthetics:** cases with esthetics need will require certain materials such as E- max or zirconia.
5. **Function:** E-max provides great function but in cases with malocclusion such as bruxism might alter your choice to a more durable and strong material such as gold or zirconia. PFM can be used however chipping of porcelain might occur.

## Discussion

In the following case two teeth are endo-treated a premolar and a molar. However every tooth has been covered with a different type of restoration. The premolar was covered by a full coverage zirconia crown as it was missing 2 walls and it was also partly in an esthetic zone so it required a natural yet strong functioning and retentive restoration. That is why a full coverage zirconia crown was chosen. However in the molar, only one wall was missing, sufficient amount of tooth structure was remaining and normal occlusal forces were present. That is why an E-max endocrown was chosen to restore it.

## Results

There are different types of fixed restorations and different types of materials. There are no certain rules to choose the suitable restoration for every case. A dentist can use different types of restorations with different materials even in the same case according to his own judgement following a sequela of planning to ensure optimum end results achieving dental needs.



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