

Improper design may be reason for crowns coming loose

Dental crowns are made for many different reasons in routine and advanced dental therapy. They are used to treat fractured teeth, to reconstruct the bite, for esthetic enhancement, to strengthen teeth after root canal therapy, to recontour teeth, and to replace missing teeth that have been replaced by dental implants.

They can be made out of gold, porcelain, composite resin, titanium, or a variety of other materials and combination of materials.

Regardless of what they are made from, the general premise is the same: a tooth is prepared, or "machined", into a shape that will provide space for the restorative material, provide proper resistance to off-angle chewing forces, and provide proper retention of the crown from vertical dislodging.

Some form of dental cement, or "luting agent", is used to fill the space between the crown and the prepared tooth. Over the years, there have been cements that claim to soothe the tooth and obtund sensitivity, that claim to be water insoluble, that claim to be kind to the pulp of the tooth, that claim to release fluoride, and most recently that claim to bond to tooth structure.

For the most part, these



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have proved to be truthful claims. However, the luting agent still primarily provides a space filler between the tooth and the crown. Retention and resistance of crowns is dependent on how the tooth is prepared prior to the impression for the crown.

The walls of the tooth prepared for a crown must be within 10 degrees of parallel from each other for at least 2 millimeters, or 1/8 inch, on all walls of the preparation for adequate retention and resistance form.

These retentive planes must also be on sound, healthy natural tooth structure, which means that if a large filling was present prior to the crown preparation, that the walls of the crown may need to be extended below the gumline.

There are times when surgery is needed to create the necessary room above the gums for proper crown preparations.

Sometimes, this 2 millimeter ferrule rule can be "bent" with the use of accessory grooves, boxes,

or wells cut into the axial walls of the crown preparation to maximize retention. However, these techniques are very difficult and often impossible to perform properly.

Today, we are bonding porcelain to tooth structure frequently. In theory, bonding agents reduce the need for mechanical ferrule preparation on crowns. However, we then rely on a resin bond to tooth structure to retain a crown. Resin is always the weakest link.

However, restorations made entirely of porcelain require bonding and are dependent upon its success rather than mechanical features of the tooth preparation. When strong retention is absolutely necessary, there is no substitute for proper tooth preparation.

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For questions about dental health or to schedule a free consultation, call 330-364-2011 or visit www.doctorhuff.net.