

Repairing Damaged Teeth – *Fillings*

by Scott F. Kenward, DMD

Advances in modern dental materials and techniques increasingly offer new ways to create more pleasing, natural-looking smiles. Researchers are continuing their often decades-long work developing esthetic materials, such as ceramic and plastic compounds that mimic the appearance of natural teeth. As a result, dentists and patients today have several choices when it comes to selecting materials used to repair missing, worn, damaged or decayed teeth.

What's Right for Me?

Several factors influence the performance, durability, longevity and expense of dental restorations. These factors include: the components used in the filling material; where and how the filling is placed; the chewing load that the tooth will have to bear; and the length and number of visits needed to prepare and adjust the restored tooth.

There are two types of dental restorations: *direct* and *indirect*. Direct restorations are fillings placed immediately into a prepared cavity in a single visit. The two main types of direct fillings are *dental amalgam* (silver fillings) and *composite resin* fillings. The dentist prepares the tooth, places the filling and adjusts it in one appointment.

Indirect restorations generally require two or more visits. They include inlays, onlays, veneers, crowns and bridges fabricated with gold, ceramics or composites. During the first visit, the dentist prepares the tooth and makes an impression of the area to be restored. The impression is sent to a dental laboratory, which creates the dental restoration. At the next appointment, the dentist cements the restoration into the prepared cavity and adjusts it as needed.

The ultimate decision about what to use is best determined by the patient in consultation with the dentist. Before your treatment begins, discuss the options with your dentist.

Dental Amalgam

Used for well over a century, dental amalgam is a compound of silver, mercury and other metals mixed together in precise amounts. While dental amalgam continues to be a commonly used restorative material, some have raised concerns because of its mercury content. Although mercury by itself is classified as a toxic material, the mercury in amalgam chemically combines with other metals to render it stable and safe for use in filling and restoring teeth.

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Extensive long-term research in the United States as well as internationally, has shown time and time again that amalgam fillings are safe. Although allergies to dental amalgam are possible, fewer than 100 cases have ever been reported. Patients should feel very secure that the many organizations responsible for protecting the public's health have confirmed the safety of silver fillings. Those organizations include the World Health Organization, the United States Public Health Service, the National Institutes of Health and the Food and Drug Administration.

Despite its safety and reliability, there are nevertheless some drawbacks to the use of amalgam fillings. Metal conducts temperature very well and short-term sensitivity to hot and cold temperatures after the filling is placed is common. The mechanical properties of silver fillings usually require that more tooth structure be removed to allow placement of the filling than for composites. In some cases, this can eventually result in stress fractures of the supporting tooth, necessitating a more extensive restoration such as an onlay or crown. And lastly, the silver-colored filling is not as esthetically pleasing as one that is tooth-colored, especially when the restored tooth is near the front of the mouth, visible when the patient laughs or speaks.

Composite Resin

Now in their third decade of use as a dental restorative material, composite resins are tooth-colored, hybrid materials, made of micro-fine glass particles in a resin matrix. Although they are usually slightly more expensive than amalgam, composite resin fillings offer several advantages over traditional silver fillings.

Advancements in dental adhesive systems permit the dentist to chemically bond the composite filling material to the tooth. This often allows for a more conservative tooth preparation and a stronger restored tooth. There is generally less temperature sensitivity after placement of a composite filling than with dental amalgam.

Because they are tooth-colored, it is difficult to distinguish composites from natural teeth. Composites are often used on the front teeth where a natural appearance is important. They can be used on the back teeth as well, depending on the location and extent of the tooth damage.

Inlays & Onlays

Traditional fillings can reduce the strength of a natural tooth by up to 50 percent. As an alternative, inlays and onlays, which are bonded directly onto the tooth using special high-strength resins, can actually increase the strength of a tooth by up to 75 percent. As a result, they can last well over 10 years. In some cases, where the damage to the tooth is not extensive enough to merit an entire crown, onlays can provide a very good conservative alternative.

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Inlays and onlays can be made of porcelain, gold, or composite resin. These pieces are bonded to the damaged area of the tooth. An inlay, which is similar to a simple filling, is used inside the cusp tips of the tooth. An onlay is a more substantial restoration, similar to the inlay but extending out over one or more of the cusps of the tooth.

Traditionally, gold has been the material of choice for inlays and onlays. In recent years, however, porcelain has become increasingly popular due to its strength and color, which can be matched to the natural color of your teeth.

Inlays and onlays require two appointments to complete the procedure. During the first visit, the filling being replaced or the damaged or decaying area of the tooth is removed, and the tooth is prepared for the inlay or onlay. To ensure proper fit and bite, an impression of the tooth is made by the dentist, and sent to a dental laboratory for fabrication. Your dentist will then place a temporary filling on the tooth and schedule the next appointment.

At the second appointment, the temporary filling is removed. Your dentist will then make sure that the inlay or onlay fits correctly. If the fit is satisfactory, the inlay or onlay will be bonded to the tooth with a strong resin and polished to a smooth finish.

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