



Minimally Invasive, or Biomimetic Dentistry

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In traditional dentistry, when repairing teeth we are taught to necessarily destroy a lot of healthy tooth structure to get to a decayed area and repair it, or cut the tooth completely down in order to place a cover (crown) or partial crown over a tooth to keep it from breaking in the future. In doing so, the pulp (nerve) inside the tooth becomes traumatized, often times resulting in pulp death requiring either a need for extraction or root canal treatment.

The word "Biomimetic" is derived from two terms: "biology," the science of life or living matter in all its forms, and "mimic," to imitate or copy. With the advent of adhesive "bonding" technologies in dentistry over the past few decades, materials and techniques have been developed that allow for the removal of almost no healthy tooth structure, followed by adhering tooth-colored material onto, or within the decay removal area that both strengthens and mimics both the form and color of the remaining healthy tooth. Depending upon the individual needs of a tooth, it can be repaired either with bonding material applied directly to the tooth, or with conservative inlays/onlays (partial repairs within or over the tooth) fabricated in a dental laboratory.

The goal of minimally invasive dentistry, or microdentistry, is to conserve healthy tooth structure. It focuses on prevention, remineralization, and minimal dentist intervention. Using scientific advances, minimally invasive dentistry allows dentists to perform the least amount of dentistry needed while never removing more of the tooth structure than is required to restore teeth to their normal condition. In addition, in minimally invasive dentistry, dentists use long-lasting dental materials that conserve the maximum tooth structure so the need for future repairs is reduced.

First your dentist will evaluate your risk for tooth decay. The presence of bacteria, quality and quantity of saliva, and your diet are all contributors to decay. Your dentist will then use strategies to prevent or reduce your risk for tooth decay. For instance, if you have a high level of oral bacteria, you might be advised to use mouthwash daily, limit the intake of certain carbohydrates, and practice good oral hygiene.

Minimally invasive dentistry techniques include:

Remineralization: Remineralization is the process of restoring minerals. Remineralization can repair the damage created by the demineralization process. Fluoride plays a very important role in remineralization.

Air abrasion: When a tooth cannot be remineralized and decay is present, your dentist may use air abrasion to remove the decay. Air abrasion is used instead of a traditional drill and usually does not require anesthesia. It resembles microscopic sand blasting and uses a stream of air combined with a super-fine abrasive powder.

Sealants: Usually made of plastic resin, dental sealants protect teeth from bacteria that cause decay. Sealants fit into the grooves and depressions of the tooth and act as a barrier, protecting against acid and plaque. Sealants do not require any cutting of the tooth and can be placed on teeth that might be susceptible for decay at any time.

Inlays and onlays: Usually dentists use crowns to restore a tooth, but inlays and onlays do not require them to remove as much of the tooth structure. Inlays are similar to fillings except that they are custom-made to fit the cavity in your tooth and are typically the same color as the tooth or gold colored. Onlays are used for more substantial reconstruction and also do not require your dentist to remove as much of the tooth as would a crown.

Minimally Invasive, or Biomimetic Dentistry could be therefore be described as "the use of modern science to provide conservative restorative treatment that gives the best chance of preserving the integrity, form, esthetics and function of a natural tooth."