

Karaganda State Medical University

Dental instruments

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Dental restoration

A **dental restoration** or **dental filling** is a dental restorative material used to restore the function, integrity and morphology of missing tooth structure. The structural loss typically results from caries or external trauma. It is also lost intentionally during tooth preparation to improve the aesthetics or the physical integrity of the intended restorative material. Dental restoration also refers to the replacement of missing tooth structure that is supported by dental implants.

Dental restorations can be divided into two broad types: *direct restorations* and *indirect restorations*. All dental restorations can be further classified by their location and size. A root canal filling is a restorative technique used to fill the space where the dental pulp normally resides.

Tooth preparation

Restoring a tooth to good form and function requires two steps:

- 1 preparing the tooth for placement of restorative material or materials
- 2 placement of restorative material or materials.

The prepared tooth, ready for placement of restorative materials, is generally called a **tooth preparation**. Materials used may be gold, amalgam, dental composites, glass ionomer cement, porcelain or any number of other materials.

Preparations may be intracoronal or extracoronal.

- **Intracoronal preparations** are those preparations which serve to hold restorative material within the confines of the structure of the crown of a tooth. Examples include all classes of cavity preparations for composite or amalgam, as well as those for gold and porcelain inlays. Intracoronal preparations are also made as female recipients to receive the male components of Removable partial dentures.
- **Extracoronal preparations** are those preparations which serve as a core or base upon which or around which restorative material will be placed to bring the tooth back into a functional or aesthetic structure. Examples include crowns and onlays, as well as veneers.

Materials used

Precious metallic alloys

- gold (high purity: 99.7%)
- gold alloys (with high gold content)
- gold-platina alloy
- silver-palladium alloy

Base metallic alloys cobalt-chrome alloy

- nickel-chrome alloy

Amalgam

- Silver amalgam

Direct Gold

Gold

Although rarely used, due to expense and specialized training requirements, gold foil can be used for direct dental restorations.

Composite resin

Dental composites, also called "white fillings", are a group of restorative materials used in dentistry. Crowns and in-lays can be made in the laboratory from dental composites. These materials are similar to those used in direct fillings and are tooth-colored. Their strength and durability is not as high as porcelain or metal restorations and they are more prone to wear and discolouration. As with other composite materials, a dental composite typically consists of a resin-based matrix, such as a BISMA resin like UDMA, and an inorganic filler such as silica.

Glass ionomer cement

- A glass ionomer cement (GIC) is one of a class of materials commonly used in dentistry as filling materials and luting cements. These materials are based on the reaction of silicate glass powder and polyalkenoic acid.
- As they bond chemically to dental hard tissues and release fluoride for a relatively long period, modern-day applications of GICs have expanded. The desirable properties of glass ionomer cements make them useful materials in the restoration of carious lesions in low-stress areas such as smooth-surface and small anterior proximal cavities in primary teeth. Results from clinical studies also support the use of conventional glass ionomer restorations in primary molars. They need not be put in layer by layer, like in composite fillings.

Porcelain (ceramics)

- *Full-porcelain* dental materials include Dental porcelain (porcelain meaning a high-firing-temperature ceramic), other ceramics, sintered-glass materials, and glass-ceramics as indirect fillings and crowns or metal-free "jacket crowns". They are also used as in-lays, on-lays, and aesthetic veneers. A veneer is a very thin shell of porcelain that can replace or cover part of the enamel of the tooth. Full-porcelain restorations are particularly desirable because their color and translucency mimic natural tooth enamel.
- Another type is known as *porcelain-fused-to-metal*, which is used to provide strength to a crown or bridge. These restorations are very strong, durable and resistant to wear, because the combination of porcelain and metal creates a stronger restoration than porcelain used alone.

Active and passive voice

- Active voice:

subject+verb+object

- Passive voice:

object+verb+subject

Examples

Present Tense

Dentist cures my tooth (A.v.)

My tooth is cured by dentist (P.v.)

Has he filled your teeth? (A.v.)

Have your teeth been filled by him? (P.v.)

Past Tense

Dentist cleaned root canals yesterday (A.v.)

Root canals were cleaned by dentist
yesterday (P.v.)

Had dentist cleaned root canals? (A.v.)

Had root canals been cleaned by dentist
(P.v.)

Future Tense

Dentist won't drill the second tooth (A.v.)

The second tooth won't be drilled by dentist (P.v.)

Will the dentist have removed the bad tooth by the end of the day? (A.v.)

Will the bad tooth have been removed by the dentist by the end of the day? (P.v.)