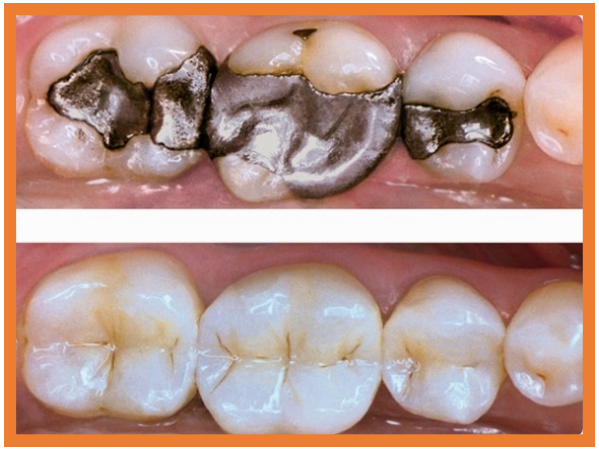
AIU. ALAMEIN INTERNATIONAL UNIVERSITY
جامعة العلمين الدولية

AMALAGAM AND COPPOSITE RESTORSTORATION



Philopater Magdy

23101843

Zeina Hamed Hassanien

23101052

Amalgam:

Material Composition: Amalgam is a durable, metallic restorative material made up of silver, tin, copper, and mercury.

Primary Use:

deal for large fillings, especially in posterior teeth that heavy chewing forces.

longevity:

Average Lifespan: Typically lasts 10-15 years.

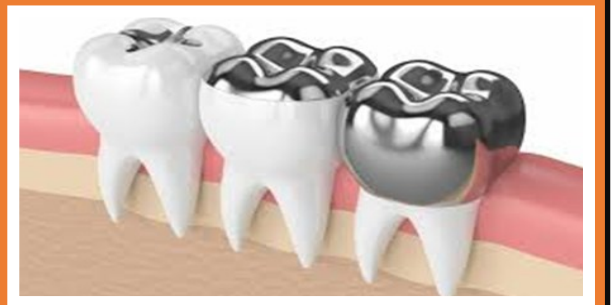
Extended Lifespan: last 20-30 years.

Wear Resistance:

Amalgam is highly resistant to abrasion and wear, making it ideal for chewing forces.

Durability:

Does not chip or crack easily, maintain strength and functionality



No Shrinkage:

Amalgam does not shrink maintaining a tight seal and reducing the risk.

Expansion:

Amalgam expands over time, which may exert pressure on the surrounding tooth structure.

Color Stability:

Amalgam fillings maintain their metallic appearance without discoloration.

Aesthetic Drawback:

Metallic Appearance: Due to its shiny, silver color, amalgam is less suitable for anterior teeth.

Potential for Marginal Wear:

Over time, amalgam fillings may experience slight loosening or secondary decay, particularly in large fillings.

Thermal Expansion:

Amalgam expands and contracts with temperature variations

Composite Restorations:

Definition:

Material Composition: Composites are tooth-colored fillings made from a blend of plastic resins and fine glass particles.

Longevity:

Average Lifespan: Typically lasts 5-10 years.

Resistance to Wear:

Less Wear-Resistant: Composite materials are generally more prone to wear than amalgam, particularly in large fillings or areas subjected to heavy biting forces.

Potential for Breakdown:

Over time, composite restorations may roughen, wear down, or even fracture.

Shrinkage:

Composite resins shrink during the curing process, potentially creating gaps at the filling margins.

Moisture Sensitivity:

Need for a Dry Field: Composite resins are sensitive to moisture during placement.

Aesthetic Appearance:

Composite fillings blend well with natural tooth color and can be polished to a smooth, shiny finish.

Staining:

Composites may become stained or discolored from exposure to food, drinks, or tobacco.

Durability in Large Fillings

Limited Durability in Large Restorations: Composites are better suited for small to medium fillings in moderately stressed areas.

Comparison Between Amalgam and Composite Restorative Materials

SL no	Amalgam	Composite
1.	A mixture of mercury and silver alloy powder that forms a hard solid metal filling	A mixture of submicron glass filler and acrylic resin that forms a solid tooth-coloured restoration
2.	Silver or grey metallic color does not mimic tooth color	Mimics natural tooth color and translucency
3.	Cannot be used as anterior restorations	Can be used as anterior restorations
4.	Requires more removal of tooth structure for adequate retention and thickness of the filling	Adhesive bonding permits Less tooth structure removal
5.	Well defined and skilful cavity preparation is required which may extend beyond the lesion	Depends on extent of lesion
6.	Good in moderate to large size restorations	Good in small-to-moderate size restorations
7.	Moderately tolerant to the presence of moisture during placement	Must be placed in well controlled field of operation; very little tolerance to presence of moisture during placement
8.	Tolerant to a wide range of clinical placement conditions	Direct composite restorations are only indicated when patients have excellent oral hygiene, due to the greater adherence of plaque that occurs on this type of materials
9.	Microleakage is low	High leakage
10.	Despite the development of initial infiltration in the margin of an amalgam restoration, the formation of corrosion products gradually saddles the space between the restoration and the tooth, developing a marginal seal that improves with time	The relatively high incidence of secondary caries may be explained by the negative effects of polymerization shrinkage
11.	Risk of secondary caries is low	High – due to polymerization shrinkage and microleakage

Conclusion and Summary

Final Decision: The choice between amalgam and composite depends on location, aesthetic preferences, and functional needs. Amalgam is the best option for strength and durability in the back teeth, while composite excels in appearance and is better suited for smaller, visible restorations

References: Alreshaid L, El-Badrawy W, Lawrence HP, Santos MJ, Prakki A. Composite versus amalgam restorations placed in canadian dental schools. Operative Dentistry. 2021 Nov 1;46 (6):621-30.