

Plain language systematic review summary:**New evidence supporting the use of Atraumatic Restorative Treatment as viable alternative for tooth restoration***The MI Review Group*

New evidence is now available supporting the use of Atraumatic Restorative Treatment (ART) as viable alternative for tooth restoration. In a systematic review, scientists identified and analysed seven studies of good and acceptable quality. The studies compared tooth restorations placed using ART with amalgam fillings in Class I, II and V cavities of primary and permanent teeth after 1 to 6 years. This systematic review provides the best evidence that is currently available to this topic [1].

What is the ART?

ART is a minimally invasive tooth procedure that involves removing softened carious enamel and dentine, using only hand instruments and then restoring the resulting cavity with an adhesive restorative material. Although developed for use in the less industrialized parts of the world ART has now been accepted as part of the minimum intervention (MI) philosophy in developed countries. At present the restorative material of choice for ART is high-viscosity glass ionomer cement (GIC). The glass ionomer adheres to this enamel and dentine primarily via calcium bonds to the mineral content of the tooth structure. This adherence provides an adaptive seal and as the material slowly leaches fluoride ions into the adjacent tooth tissue, GICs are capable of halting or slowing the progression of carious lesions.

Dental amalgam as "gold standard"

Amalgam has been used successfully as a universal tooth filling material for over a century. However, much controversy still exists regarding its use in dentistry, mainly because of its mercury content. The search for a suitable replacement for this material continues. Its operative advantages of being relatively simple to place, its intrinsic strength and the longevity of the final restoration has led to amalgam being considered the "gold standard" against which all new materials are measured for outcomes such as the effectiveness and durability of the restoration.

How well does ART work?

The results of most of the 27 comparisons that were done during the seven studies showed no difference between the success rates of ART and amalgam restorations in primary and permanent teeth. However the results of four comparisons were in favor of ART:

- In the ART group 80 Class V fillings out of 100 were successful in permanent teeth

over 6 years, compared to 63 out of 100 for the amalgam group.

- In the ART group 94 Class I fillings out of 100 were successful in permanent teeth over 2 years, compared to 89 out of 100 for the amalgam group
- After 4 years, 95 Class I ART fillings out of 100 were successful in permanent teeth, compared to 88 out of 100 amalgam fillings.
- In the ART group 9 Class II fillings out of 10 were successful in permanent teeth over 2 years, compared to 6 out of 10 for the amalgam group.

This means that in these four cases teeth that were filled using ART benefited more than teeth restored with amalgam.

What is the bottom line?

ART restorations with high-viscosity GIC appear to be equally successful and their survival rate may even exceed that of similar amalgam fillings.

References:

1. Mickenautsch S, Yengopal V, Banerjee A. Atraumatic restorative treatment versus amalgam restoration longevity: a systematic review. Clin Oral Investig 2010; 14: 233-40.

See also: <http://www.mi-compendium.org> free downloadable eBook, as well as: MI Compendium section {C-GIC versus Amalgam → Restoration longevity/survival}

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