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001 Glass ionomers and caries preventive effect

Mickenausch S, Yengopal V, Bönecker M, Leal SC, Bezerra AC, Oliveira LB

The combined results of all identified trials indicate that GIC has a caries preventive (anticariogenic / cariostatic) effect.

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Objectives

To assess whether glass ionomers have any caries preventive/cariostatic effect.

Search strategy

The trials were identified from a search of PubMed and LILACS databases on March 03, 2008 using the terms: ("Cariostatic Agents"[Mesh] OR "Dental Caries"[Mesh] OR "Cariostatic Agents"[Pharmacological Action]) AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh]); (GIC sealant* OR Glass ionomer cement sealant) AND (caries OR tooth decay); ("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh] OR "Tooth Demineralization"[Mesh]) AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh] AND "Pit and Fissure Sealants"[Mesh] AND Resin modified glass ionomer cement; ("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh] OR "Tooth Demineralization"[Mesh]) AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh]) AND ("Cariostatic Agents"[Mesh] OR "Dental Caries"[Mesh] OR "Cariostatic Agents"[Pharmacological Action]) AND ("Dental Amalgam"[Mesh] OR "silver mercury amalgam"[Substance Name]); ("Cariostatic Agents"[Mesh] OR "Dental Caries"[Mesh] OR "Cariostatic Agents"[Pharmacological Action]) AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh]) AND ("Composite Resins"[Mesh]); cariostáticos and cimentos and de and ionômeros and de and vidro and is updated regularly.

Inclusion criteria

Reviews and in vivo randomized, quasi-randomized trials published in English, Portuguese and Spanish.

Exclusion criteria for reviews

Lack of clear search strategy, key words and databases used, no clear inclusion and exclusion criteria for reviewed publications and includes no study-by-study critique table or discussion of study qualities

Exclusion criteria for trials

Insufficient description of randomization process; insufficient accounting for included subjects at the end of the study; high loss-to-follow up < 33%

Data collection and analysis

63 articles were identified and reviewed. Of these, 28 articles were rejected; 35 articles were accepted, 6 of which were systematic reviews and 29 were clinical trials.

Main results

29 trials were accepted for data extraction and further meta-analysis. Dichotomous data of the accepted trials were pooled, indicating a pooled odds ratio (OR = Global results) of 1.32 (CI 95% 1.10 - 1.58). This means that GIC appears to increase the odds of absence of caries by 32%. The observation that GIC has an anticariogenic effect, as compared to other materials, is supported by available continuous data for restorations and orthodontic cementation. The available continuous data for fissure sealants confirms the observation that low viscosity GIC and resin-based fissure sealants do not differ in their caries preventive effect. These findings are also in line with the results of most rejected trials but not with the conclusions of most of the accepted systematic reviews by other authors. Clinical heterogeneity between trials was identified.

Authors' conclusions

The results suggest that glass ionomers have a (anticariogenic/cariostatic) effect. However, due to the observed clinical heterogeneity between trials, these results need to be regarded with caution and sub-group analysis is recommended in order to confirm these findings.

002 Caries preventive effect - glass ionomer versus resin-modified glass ionomer (RMGIC) based fissure sealants

Mickenausch S, Yengopal V, Bönecker M, Leal SC, Bezerra AC, Oliveira LB.

No evidence could be found that either material is superior above the other as fissure sealant in the prevention of caries.

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fissure sealants. Minim Interv Comp Database Syst Rev 2008; 1: RV00920080805.

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Last revised: August 05, 2008

Objectives

To compare the caries preventive effect of glass ionomer with RMGIC based fissure sealants.

Search strategy

The trials were identified from a search of PubMed and LILACS databases on January 05, 2008 using the terms: (("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh] OR "Tooth Demineralization"[Mesh]) AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh]) AND "Pit and Fissure Sealants"[Mesh] AND Resin modified glass ionomer cement; cárie dentária; cimentos de ionômeros de vidro; selantes de fossas e fissuras and is updated regularly.

Inclusion criteria

Reviews and in vivo randomized, quasi-randomized trials published in English, Portuguese and Spanish.

Exclusion criteria for reviews

Lack of clear search strategy, key words and databases used, no clear inclusion and exclusion criteria for reviewed publications and includes no study-by-study critique table or discussion of study qualities

Exclusion criteria for trials

Insufficient description of randomization process; insufficient accounting for included subjects at the end of the study.

Data collection and analysis

The literature search did identify only one clinical trial in compliance with the broad inclusion criteria.

Main results

Its results (OR 0.87; CI 95% 0.48 - 1.58) indicate no difference in the caries preventive effect between conventional glass ionomer cement (low-viscosity) and resin-modified glass ionomer cement. No meta-analysis was possible. More studies are needed.

Authors' conclusions

No evidence could be found for either of the materials being superior above the other as fissure sealant in the prevention of caries. Further trials are needed.

003 Compomer versus glass ionomer cement - cytotoxicity

Midentistry review group

No conclusive evidence found.

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This record should be cited as: Midentistry. Compomer versus glass ionomer cement - cytotoxicity. Minim Interv Comp Database Syst Rev 2010; 1: RV00120101307.

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Objectives

To assess whether compomers in deep cavities of primary teeth are more pulp friendly than conventional GIC.

Search strategy. The trials were identified from a search of the PubMed database on: January 8, 2010 using the terms: (((("Compomers"[Mesh] AND "Glass Ionomer Cements"[Mesh]) OR "glass ionomer "[Substance Name])) AND "Dental Pulp"[Mesh])

Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question; published in English.

Exclusion criteria

Not all entered subjects were accounted for at the end of the trial; subjects of both groups not followed up the same way; no randomized, quasi-randomized controlled study design for in-situ and in-vivo trials; contains no computable data.

Data collection and analysis

The systematic literature search found 10 articles of which 3 in-vitro trials were identified to be in line with the inclusion criteria. Of these, 2 trials were accepted for data extraction. From the reviewed trials 6 individual datasets were extracted and analysed.

Main results

All datasets showed clinical and methodological heterogeneity and therefore could not be combined using meta-analysis. As only laboratory/in-vitro trials were identified, it is not possible to answer the review question on clinical basis. In addition, the results of the 6 (in-vitro) datasets are conflicting. Although a higher number of viable cells 2 days after exposure to Compomer was found, as compared to GIC, the number of viable cells after 5 days was statistically significantly higher for GIC. The number of remaining active mitochondria was higher 2 and 5 days after Compomer exposure than after GIC exposure. No difference in the cell growth was found 2 days after exposure with either material.

Authors' conclusions

Further in-vitro trials are needed to clarify the current conflicting results. In order to answer the review question clinically, high quality randomized-control trials (RCT) are required.

004 Compomer versus resin-modified glass ionomer cement: cytotoxicity

Midentistry review group

No conclusive evidence found.

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This record should be cited as: Midentistry. Compomer versus resin-modified glass ionomer cement: cytotoxicity. Minim Interv Comp Database Syst Rev 2010; 1: RV00220101407.

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Objectives

To assess whether compomers in deep cavities of primary teeth are more pulp friendly than resin-modified glass ionomer cement.

Search strategy

The trials were identified from a search of the PubMed database on: January 8, 2010 using the terms: (((*"Compomers"*[Mesh] AND *"Glass Ionomer Cements"*[Mesh]) OR *"glass ionomer "*[Substance Name])) AND *"Dental Pulp"*[Mesh]

Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question; published in English.

Exclusion criteria

Not all entered subjects were accounted for at the end of the trial; subjects of both groups not followed up the same way; no randomized, quasi-randomized controlled study design for in-situ and in-vivo trials; contains no computable data.

Data collection and analysis

The systematic literature search found 10 articles of which 4 in-vitro trials were identified to be in line with the inclusion criteria. Of these, 3 trials were accepted for data extraction. From the reviewed trials 14 individual datasets were extracted and analysed.

Main results

As only laboratory/in-vitro trials were identified, it is not possible to answer the review question on clinical basis. In addition, the results of the 14 (in-vitro) datasets are conflicting. Both type of materials appear to act cytotoxic on cells at various degrees. The strength of this effect appears to be depended on the individual chemical composition of each Compomer or RMGIC product and its subsequent ability to release toxic components after curing.

Authors' conclusions

Further in-vitro trials are needed to clarify whether Compomers and RMGIC differ in their cytotoxicity as such. In order to answer the review question clinically, high quality randomized-control trials (RCT) are required.

005 Resin-modified glass ionomers versus compomers - cariostatic effect

Midentistry review group

The combined results of all identified trials indicate no difference between both materials.

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Objectives

To assess whether in patients with comparable caries risk, resin-modified glass ionomer cement (RMGIC) has a better cariostatic effect than compomer.

Search strategy

The trials were identified from a search of the PubMed database on: January 01, 2009 using the terms: (((*"Dental Caries"*[Mesh] OR *"Dental Caries Susceptibility"*[Mesh] OR *"Root Caries"*[Mesh])) AND *"Glass Ionomer Cements"*[Mesh] AND *"Compomers"*[Mesh]). Reference check of included articles.

Inclusion criteria

All prospective, 2-arm trials with relevance to the review question; published in English; containing computable (dichotomous or continuous) data for both, test- and control group.

Data collection and analysis

17 trials were selected. Of these, 12 were traced and included for assessment of internal validity and for data extraction.

Main results

From the 12 trials the following independent datasets were extracted: 10 datasets from 1 in-vitro trial on animal tissue; 4 data sets from 1 in-situ trial on animal tissue, 24 datasets from 4 in-vitro trials on human tissue; 16 datasets from 1 in-situ trial on human tissue and 14 datasets from 5 randomized control trials. All datasets differed substantially in aspects with potential influence on study outcome (= clinical and methodological heterogeneity). For that reason it was not possible to combine datasets for meta-analysis. Instead datasets were sub grouped per outcome measure and analysed individually. From the in-vitro/in-situ trial results following hypotheses could be formulated: H1: Both materials (RMGIC and Compomer) have generally similar caries preventive properties (with exception of individual products see H2 - 4); H2: The resin-based GICs Fuji II LC, Vitremer and Photac are more caries preventive than the compomer Dyract; H3: The compomer Compoglass F is more caries preventive than resin-based GIC Vitremer; H4: The resin-based GIC Vitremer is more caries preventive than the compomer F2000. The results from all 14 datasets of the randomized control trials (RCT) show no difference between both types of materials. This seems to confirm the hypothesis (H1) that both

materials have generally the same caries preventive effect. However, the RCT results do not confirm hypothesis H2 and provided no data for testing the hypotheses H3 and H4.

Authors' conclusions

The evidence, so far, suggests no difference between resin-modified glass ionomer cement (RMGIC) and compomers in their cariostatic effect.

006 ART restorations versus resin-modified glass ionomers fillings with drill - survival rate

Midentistry review group

The combined results of all identified trials indicate no difference between both materials.

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Objectives

To assess whether in cavities of comparable size and tooth location, ART restorations have a better survival rate than restorations with resin-modified glass ionomer cement (RMGIC) after cavity preparation with conventional high-speed drill.

Search strategy

The trials were identified from a search of the PubMed database on: March 16, 2009 using the terms: "atraumatic restorative treatment". Reference check of included articles.

Inclusion criteria

All prospective, 2-arm trials with relevance to review question; published in English; containing computable (dichotomous or continuous) data for both, test- and control group; with test group using the ART approach, defined as treatment approach including caries removal by hand excavation and cavity restoration with high-viscosity glass ionomer cement.

Data collection and analysis

One single trial was selected, traced and included for assessment of internal validity and for data extraction.

Main results

From the single trials 2 independent dichotomous datasets were extracted. The datasets differed in clinical and methodological aspects (heterogeneity) that may have an influence on the established success rate. In order to address heterogeneity, meta-analysis was not conducted and the results of

the datasets analysed and reported separately. The identified Relative risk (RR) of 0.95 (95%CI 0.86 – 1.04) and 0.94 (95%CI 0.83 - 1.06) indicate no significant difference in the success rate of both type of restorations after 6 and 12 months, respectively.

Authors' conclusions

There is no difference between both types of restorations in their survival rates.

007 Glass-ionomer cement versus amalgam – retention

Midentistry review group

The combined results of all identified trials indicate higher retention of amalgam than low-viscosity glass-ionomer cement for Class I and II restorations.

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This record should be cited as: Midentistry. Glass-ionomer cement versus amalgam - retention. Minim Interv Comp Database Syst Rev 2009; 2: RV00420090119.

This version first published online: January 30, 2009
Last revised: January 30, 2009

Objectives

To assess whether in cavities of comparable size and tooth location, Glass Ionomer Cement (GIC) have a better retention than amalgam.

Search strategy

The trials were identified from a search of the PubMed database on: January 19, 2009 using the terms: ("Glass Ionomer Cements"[Mesh] OR "glass ionomer "[Substance Name])) AND "Dental Amalgam"[Mesh]. Reference check of included articles.

Inclusion criteria

All prospective, 2-arm trials with relevance to review question; published in English; containing computable (dichotomous or continuous) data for both, test- and control group. Articles reporting on GIC based Tunnel- or Atraumatic restorative treatment (ART) restorations were not included.

Data collection and analysis

One single trial was selected, traced and included for assessment of internal validity and for data extraction.

Main results

From the single trials 3 independent dichotomous datasets were extracted. The datasets differed in clinical and methodological aspects (heterogeneity) that may have an influence on the established success rate. Due to heterogeneity, meta-analysis was not conducted and the results of the datasets analysed and reported separately. The results of the

separate datasets show that amalgam has higher retention in Class I and II cavities than low-viscosity GIC. No difference was found between both materials in Class III & V cavities.

Authors' conclusions

The available evidence shows a higher retention of amalgam than low-viscosity GIC for Class I and II restorations.

008 Glass-ionomer cement (GIC) versus resin-modified GIC – retention

Midentistry review group

The combined results of all identified trials indicate no difference between both types of material.

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Last revised: December 30, 2008

Objectives

To assess whether in cavities of comparable size and tooth location, Glass Ionomer Cement (GIC) have a better retention than resin-modified GIC.

Search strategy

The trials were identified from a search of the PubMed database on: December 15, 2008 using the terms: "Glass Ionomer Cements"[Mesh] AND resin modified AND ("Dental Restoration, Permanent"[Mesh] OR "Dental Restoration, Temporary"[Mesh]) AND material retention. Reference check of included articles.

Inclusion criteria

All prospective, 2-arm in-vivo or in-situ randomized/quasi-randomized control trials including human tissue with relevance to review question; published in English; containing computable (dichotomous) data for both, test- and control group.

Data collection and analysis

One single trial was selected, traced and included for assessment of internal validity and for data extraction.

Main results

From the single trials 4 independent dichotomous datasets were extracted. The datasets differed in clinical and methodological aspects (heterogeneity) that may have an influence on the established success rate. In this trial resin-modified GIC was compared with a low-viscosity (LV-) GIC. No

statistically significant difference was observed.

Authors' conclusions

The available evidence shows no difference between both materials.

009 Lamination technique versus direct composite resin restorations - survival rate

Mickenautsch S, Yengopal V, Leal SC, Bezerra AC

No relevant research data found.

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This record should be cited as: Mickenautsch S, Yengopal V, Leal SC, Bezerra AC. Lamination technique versus direct composite resin restorations - survival rate. Minim Interv Comp Database Syst Rev 2008; 1: RV02320080105.

This version first published online: April 30, 2008
Last revised: April 30, 2008

Objectives

To assess whether in cavities of comparable size and tooth location, Lamination/Sandwich technique restorations have a better survival rate than composite restorations.

Search strategy

PubMed database was searched on: January 5, 2008 using the terms: ("Dental Caries"[Mesh] OR "Dental Cavity Preparation"[Mesh]) AND Lamination OR Sandwich technique AND "Survival Rate"[Mesh] AND ("Composite Resins"[Mesh] AND ("Dental Restoration, Permanent"[Mesh])). LILACS database was searched on: April 7, 2008 using the terms: Restaur\$ and lamin\$ and resina.

Inclusion criteria

All in-vivo or in-situ randomized/quasi-randomized control trials including human tissue with relevance to review question; published in English or Portuguese.

Data collection and analysis

No trials found

Main results

No results.

Authors' conclusions

There is lack of in-vivo or in-situ randomized/quasi-randomized control trials including human tissue to this topic.

010 Salivary buffer and caries

Mickenausch S, Yengopal V, Bönecker M, Oliveira LB

There is inconclusive evidence.

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This record should be cited as: Mickenausch S, Yengopal V, Bönecker M, Oliveira LB. Salivary buffer and caries. Minim Interv Comp Database Syst Rev 2008; 1: RV02420080909.

This version first published online: September 30, 2008
Last revised: September 30, 2008

Objectives

To assess whether salivary buffer capacity is associated with the caries rate.

Search strategy

The trials were identified from a search of the PubMed database on: September 9, 2008 using the terms: ("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh]) AND saliva buffer and from a search of the LILACS database on: September 23, 2008 using the terms: Cárie dentária AND saliva

Inclusion criteria

All in-vivo or in-situ randomized/quasi-randomized control trials; case control trials (CCT) and COHORT studies with relevance to review question; published in English or Portuguese.

Data collection and analysis

A total of 15 articles were identified reporting on 18 separate trials: 2 COHORT studies; 16 CCTs.

Main results

The results of the COHORT studies show no association (or causality) between low buffer capacity and caries rate. Of the 16 CCTs, 7 showed a significantly lower buffer capacity ($p < 0.05$) in the test group than in the control group. Nine CCTs showed no significant difference. They had a significant weighted mean difference ($p < 0.05$) in the caries rate between test- and control group, despite the fact that the buffer capacity of both groups was the same ($p > 0.05$) thus indicating a lack of association between low buffer capacity and caries rate.

Authors' conclusions

So far only conflicting data containing a high degree of potential bias could be identified. More high quality studies are need in order to answer this question.

011 Salivary buffer and diet

Mickenausch S, Yengopal V, Leal SC, Bezerra AC

There is inconclusive evidence.

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This record should be cited as: Mickenausch S, Yengopal V, Leal SC, Bezerra AC. Salivary buffer and diet. Minim Interv Comp Database Syst Rev 2008; 1: RV02520080105.

This version first published online: January 30, 2008
Last revised: April 30, 2008

Objectives

To assess whether salivary buffer capacity is associated with diet.

Search strategy

The trials were identified from a search of the PubMed database on: January 5, 2008 using the terms: "Diet"[Mesh] AND Salivary buffer activity and a search of the LILACS database on: April 7, 2008 using the terms: Diet\$ and saliva\$ and tamp\$

Inclusion criteria

All in-vivo or in-situ randomized/quasi-randomized control trials; case control trials (CCT) and COHORT studies with relevance to review question; published in English or Portuguese.

Data collection and analysis

The systematic literature search identified 3 articles in compliance with the broad inclusion criteria. Of these, 1 article was rejected due to insufficient internal validity. Meta-analysis was not conducted.

Main results

In the 2 accepted trials a significantly lower buffer capacity was observed in association with high-energy intake in diet, low intake of fibres in diet and chronic protein-energy malnutrition. However, no causal relationship could be found.

Authors' conclusions

Only 2 trials have been found indicating that a high-energy intake in diet, low intake of fibres in diet and chronic protein-energy malnutrition are associated with low buffer capacity of stimulated saliva. These results are still insufficient in order to draw any reliable conclusions.

012 Salivary buffer and diabetes

Mickenausch S, Yengopal V, Bönecker M, Oliveira LB

There is inconclusive evidence.

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and diabetes. Minim Interv Comp Database Syst Rev 2008; 1: RV02620080105.

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Last revised: April 30, 2008

Objectives

To assess whether diabetes is associated with the salivary buffer activity.

Search strategy

The trials were identified from a search of the PubMed database on: January 5, 2008 using the terms: "(Diabetes Mellitus"[Mesh] OR "Diabetes Mellitus, Type 2"[Mesh] OR "Diabetes Mellitus, Type 1"[Mesh] OR "Diabetes Mellitus, Experimental"[Mesh] OR "Diabetes Mellitus, Lipoatrophic"[Mesh]) OR ("Diabetes Mellitus"[Mesh] OR "Diabetes Mellitus, Type 2"[Mesh] OR "Diabetes Mellitus, Type 1"[Mesh] OR "Diabetes Mellitus, Experimental"[Mesh] OR "Diabetes Mellitus, Lipoatrophic"[Mesh]) AND Salivary buffer activity and a search of the LILACS database on: March 25, 2008 using the terms: "diabetes mellitus AND saliva"

Inclusion criteria

All in-vivo or in-situ randomized/quasi-randomized control trials; case control trials (CCT) and COHORT studies with relevance to review question; published in English or Portuguese.

Data collection and analysis

The systematic literature search identified 5 articles in compliance with the broad inclusion criteria. Of these, 1 article was rejected due to insufficient internal validity. Four articles were accepted for data extraction and further meta-analysis. Clinical, methodological and statistical heterogeneity between studies was observed. One further study could not be included for meta-analysis due to missing standard deviation (SD). Meta-analysis was conducted using the remaining 3 articles.

Main results

The results show a weighted mean difference (WMD) of the buffer capacity between non-diabetics and diabetics of 0.10 (0.07 - 0.14). Statistical heterogeneity was observed.

Authors' conclusions

In light of existing heterogeneity, low number of articles and low weighted mean difference, the result provides an inconclusive answer to the question, whether the saliva buffer capacity is associated with diabetes. In order to answer the review question more studies are needed.

013 Topical fluoride application and salivary fluoride concentration

Mickenausch S, Yengopal V, Bönecker M, Oliveira LB

Fluoride concentration of saliva significantly increases after topical fluoride application.

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Objectives

To assess whether the fluoride concentration of saliva is influenced by topical fluoride application.

Search strategy

The trials were identified from a search of the PubMed database on: September 9, 2008 using the terms: "Fluorides, Topical"[Mesh] AND salivary fluoride and a search of the LILACS database on: September 23, 2008 using the terms: "Fluor AND saliva".

Inclusion criteria

All 2-arm in-vivo or in-situ randomized/quasi-randomized control trials on human tissue with relevance to review question including computable data; published in English or Portuguese.

Data collection and analysis

No trial was found comparing the effect of topical fluoride application against placebo application as control. The literature search could only identify 4 trials with longitudinal data. Therefore available longitudinal data was analysed instead, with baseline data (= salivary fluoride concentration directly before topical fluoride application) as control.

Main results

The global results of this data shows that the fluoride concentration of saliva significantly increases ($p < 0.00001$) after topical fluoride applications. Most effective seem to be phosphate fluoride gels.

Authors' conclusions

The available evidence shows that the fluoride concentration of saliva significantly increases after topical fluoride application. However, the longitudinal data suggest a low internal validity/high danger of bias. Randomized control trials or observational studies using placebo application as control would assure higher internal validity.

014 Salivary fluoride concentration and tooth remineralization

Mickenausch S, Yengopal V, Leal SC, Bezerra AC

No data found.

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This record should be cited as: Mickenautsch S, Yengopal V, Leal SC, Bezerra AC. Salivary fluoride concentration and tooth remineralization. Minim Interv Comp Database Syst Rev 2008; 1: RV02820080105.

This version first published online: April 30, 2008
Last revised: April 30, 2008

Objectives

To assess whether salivary fluoride concentration is influencing tooth remineralization

Search strategy

The trials were identified from a search of the PubMed database on: January 5, 2008 using the terms: "Salivary fluoride AND "Tooth Remineralization"[Mesh] and a search of the LILACS database on: April 7, 2008 using the terms: "Reminer\$ and saliva and fluor\$".

Inclusion criteria

All 2-arm in-vivo or in-situ randomized/quasi-randomized control trials; COHORT studies; case control trials (CCT) on human tissue with relevance to review question including computable data; published in English or Portuguese.

Data collection and analysis

No trials found

Main results

No data

Authors' conclusions

So far no research data could be found in order to answer this question satisfactory.

015 Salivary fluoride concentration and tooth caries

Mickenautsch S, Yengopal V, Leal SC, Bezerra AC

In communities with low salivary fluoride concentration a significantly higher caries experience has been observed

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This record should be cited as: Mickenautsch S, Yengopal V, Bönecker M, Oliveira LB. Salivary fluoride concentration and tooth caries. Minim Interv Comp Database Syst Rev 2008; 1: RV02920080105.

This version first published online: March 30, 2008
Last revised: March 30, 2008

Objectives

To assess whether salivary fluoride concentration is influencing caries incidence.

Search strategy

The trials were identified from a search of the PubMed database on: January 5, 2008 using the terms: "Salivary fluoride AND ("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh] OR "Tooth Demineralization"[Mesh]) and a search of the LILACS database on: March 23, 2008 using the terms: "flúor AND saliva AND cárie dentária".

Inclusion criteria

All 2-arm in-vivo or in-situ randomized/quasi-randomized control trials; COHORT studies; case control trials (CCT) on human tissue with relevance to review question including computable data; published in English or Portuguese.

Data collection and analysis

The systematic literature search identified 2 articles in compliance with the broad inclusion criteria. Of these, 1 article was rejected due to insufficient internal validity. Meta-analysis was not conducted.

Main results

In the accepted trial a significantly higher caries experience was observed in communities with low salivary fluoride concentration. However, no causal relationship between both parameters could be found. The results of both accepted and rejected trial were consistent with each other. Further well-designed trials are needed.

Authors' conclusions

A significantly higher caries experience was observed in communities with low salivary fluoride concentration. Further well-designed trials are needed.

016 Salivary calcium concentration and tooth caries

Mickenautsch S, Yengopal V, Leal SC, Bezerra AC

Inconclusive data found.

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This record should be cited as: Mickenautsch S, Yengopal V, Leal SC, Bezerra AC. Salivary calcium concentration and tooth caries. Minim Interv Comp Database Syst Rev 2008; 1: RV03020080105.

This version first published online: August 30, 2008
Last revised: August 30, 2008

Objectives

To assess whether salivary calcium concentration is influencing caries incidence.

Search strategy

The trials were identified from a search of the PubMed database on: June 17, 2008 using the

terms: "Salivary calcium AND ("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh] OR "Tooth Demineralization"[Mesh]) and a search of the LILACS database on: August 25, 2008 using the terms: "salivary and dental caries AND Salivary Calcium and tooth demineralization AND cárie dentária and Calcio and saliva AND carie dentária and saliva and desmineralização".

Inclusion criteria

All 2-arm in-vivo or in-situ randomized/quasi-randomized control trials; COHORT studies; case

control trials (CCT) on human tissue with relevance to review question including computable data; published in English or Portuguese.

Data collection and analysis

The systematic literature search identified 8 articles in compliance with the broad inclusion criteria. Of these, 3 articles were rejected due to insufficient internal validity. Five articles, reporting on 10 separate results, were accepted. All studies differed substantially in type of saliva measured, age and gender of subjects, method of measurement and group differentiation. For these reasons no META analysis was done.

Main results

The results are conflicting: 8 of the 10 individual study results show no difference in salivary calcium concentration between the no/low caries and caries groups. Only one article shows in 2 of its 4 results an association between no/low caries activity and higher calcium concentration in saliva and these finding is in line with the results of 2 out of the 3 rejected trials.

Authors' conclusions

So far there is only conflicting and inconclusive data available in order to answer this question. More studies are needed.

017 Salivary phosphate concentration and tooth caries

Mickenausch S, Yengopal V, Leal S, Bezerra AC

The evidence suggests that absence of caries is associated with a higher salivary phosphate content.

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This record should be cited as: Mickenausch S, Yengopal V, Leal SC, Bezerra AC. Salivary phosphate concentration and tooth caries. Minim Interv Comp Database Syst Rev 2008; 1: RV03120080303.

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Last revised: April 30, 2008

Objectives

To assess whether salivary phosphate concentration is influencing caries incidence.

Search strategy

The trials were identified from a search of the PubMed database on: March 3, 2008 using the terms: ""Saliva"[Mesh] AND "Phosphates"[Mesh] AND ("Dental Caries"[Mesh] OR "Dental Caries Susceptibility"[Mesh] OR "Root Caries"[Mesh] OR "Tooth Demineralization"[Mesh]) and a search of the LILACS database on: April 7, 2008 using the terms: "cárie and dentária and saliva and fosfato".

Inclusion criteria

All 2-arm in-vivo or in-situ randomized/quasi-randomized control trials; COHORT studies; case control trials (CCT) on human tissue with relevance to review question including computable data; published in English or Portuguese.

Data collection and analysis

The literature search identified 1 article in answer to the review question.

Main results

The result showed that caries free patients had a slightly higher salivary phosphate concentration than patients with caries.

Authors' conclusions

So far results of only one trial could be found. The results suggest that absence of caries is associated with a higher salivary phosphate content.

018 Resin-modified glass ionomer cement and compomers - fluoride release

Midentistry review group

Resin-modified glass ionomer cements (RMGIC) have a higher fluoride-releasing efficacy than compomers in-vitro.

This abstract is prepared and maintained by Midentistry, currently published in The MI Compendium, 3rd edition, Copyright © 2009 Midentistry. The full data of this review is available in <http://www.midentistry.com/secure-folder/content/3/mic11A7.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Midentistry. Resin-modified glass ionomer cement and compomers - fluoride release. Minim Interv Comp Database Syst Rev 2009; 2: RV00720090708.

This version first published online: May 30, 2009
Last revised: May 30, 2008

Objectives

To assess whether from restorations of comparable size, does RMGIC release more fluoride than compomers.

Search strategy. The trials were identified from a search of the PubMed database on: May 21, 2009 using the terms: "("Elan (compomer)"[Substance Name] OR "MagicFil "[Substance Name] OR "Dyract

Flow Compomer "[Substance Name] OR "Freedom Compomer "[Substance Name] OR "dyract flow "[Substance Name] OR "compoglass flow "[Substance Name] OR "Vivaglass Fil "[Substance Name] OR "Vivaglass Cem "[Substance Name] OR "Dyract "[Substance Name])) AND "Glass Ionomer Cements"[Mesh] AND "Fluorides"[Mesh]. Reference check of included articles.

Inclusion criteria

All progressive 2-arm in-vivo or in-situ trials; with relevance to review question including computable data; published in English.

Data collection and analysis

The systematic literature search found 38 trials of which 24 were identified to be in line with the inclusion criteria. Of these, 22 trials could be traced for review. From the reviewed trials 481 individual datasets were extracted and analysed.

Main results

The overall result of the in-vitro trials showed a higher fluoride-releasing efficacy of RMGIC than Compomers. This was not confirmed, however, by the results of the single in-vivo trial, which showed no difference in the fluoride content of plaque adjacent to Class III restoration with either material.

Authors' conclusions

The results of laboratory studies indicate that resin-modified glass ionomer cements (RMGIC) have a higher fluoride-releasing efficacy than compomers.

019 Resin-modified glass ionomer cement and composite resin - fluoride release

Midentistry review group

Resin-modified glass ionomer cements (RMGIC) release more fluoride than fluoride-containing composite resin in-vitro.

This abstract is prepared and maintained by Midentistry, currently published in The MI Compendium, 3rd edition, Copyright © 2009 Midentistry. The full data of this review is available in <http://www.midentistry.com/secure-folder/content/3/mic11A6.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Midentistry. Resin-modified glass ionomer cement and composite resin - fluoride release. Minim Interv Comp Database Syst Rev 2009; 2: RV00820090812.

This version first published online: August 12, 2009
Last revised: August 12, 2009

Objectives

To assess whether from restorations of comparable size, RMGIC release more fluoride than fluoride-containing composite resin.

Search strategy

The trials were identified from a search of the PubMed database on: May 21, 2009 using the terms:

Glass Ionomer Cements"[Mesh] AND "Composite Resins"[Mesh] AND "Fluorides"[Mesh] Reference check of included articles.

Inclusion criteria

All progressive 2-arm in-vivo or in-situ trials; with relevance to review question including computable data; published in English.

Data collection and analysis

The systematic literature search found 47 trials of which 32 were identified to be in line with the inclusion criteria. Of these, 30 trials could be traced for review. From the reviewed trials 466 individual datasets were extracted and analysed.

Main results

The overall result of the in-vitro trials showed a higher fluoride-releasing efficacy of RMGIC than fluoride-containing composite resin. This was not confirmed, however, by the results of the single in-vivo trial, which showed no difference in the fluoride content of plaque adjacent to Class III restoration with either material.

Authors' conclusions

The results of laboratory studies indicate that resin-modified glass ionomer cements (RMGIC) have a higher fluoride-releasing efficacy than fluoride-containing composite resin.

020 Glass ionomer cement and composite resin - remineralizing effect

Midentistry review group

Glass ionomer cements (GIC) have a higher remineralizing effect on enamel than composite resin (with or without fluoride content) in-vitro and in-situ.

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This record should be cited as: Midentistry. Glass ionomer cement and composite resin - remineralizing effect. Minim Interv Comp Database Syst Rev 2009; 2: RV00920091104.

This version first published online: August 12, 2009
Last revised: November 4, 2009

Objectives

To assess whether GIC have a better remineralization effect than composite resin (with and without fluoride).

Search strategy

The trials were identified from a search of the PubMed database on: September 28, 2009 using the terms: *"Tooth Remineralization"[Mesh] AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh]) AND ("Composite Resins"[Mesh])*

Reference check of included articles. Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question including computable data; published in English.

Data collection and analysis. The systematic literature search found 139 trials of which 8 were identified to be in line with the inclusion criteria. Of these, 5 trials (4 in-vitro, 1 in-situ) were accepted for data extraction. From the reviewed trials 12 individual datasets were extracted and analysed.

Main results. The overall result of the in-vitro trials showed a higher remineralizing effect of GIC than composite resin. This was not confirmed, however, by the results of one dataset, which showed in-vitro no difference with either material under exposure of fluoride from tooth paste.

Authors' conclusions. The results show that GIC has a higher remineralizing effect than composite resin (with or without fluoride content) in absence of additional fluoride exposure from external sources. However, these finding need to be confirmed through further in-situ and in-vivo trials. It is recommended that such in-vivo trials should follow a randomized controlled study design and its reporting be based on the CONSORT statement.

021 Glass ionomer cement and composite resin - antibacterial effect

Midentistry review group

Glass-ionomers have a higher inhibitory effect on bacterial growth than composite resin materials in vitro.

This abstract is prepared and maintained by Midentistry, currently published in The MI Compendium, 3rd edition, Copyright © 2009 Midentistry. The full data of this review is available in <http://www.midentistry.com/secure-folder/content/3/mic11G1.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Midentistry. Glass ionomer cement and composite resin - antibacterial effect. Minim Interv Comp Database Syst Rev 2009; 2: RV01020091107.

This version first published online: August 12, 2009
Last revised: November 7, 2009

Objectives

To assess whether GIC have a better antibacterial effect than composite resin (with and without fluoride).

Search strategy. The trials were identified from a search of the PubMed database on: September 30, 2009 using the terms: *"(Anti-Bacterial Agents"[Mesh] OR "Anti-Bacterial Agents "[Pharmacological Action]) AND ("Glass Ionomer Cements"[Mesh] OR "Cermet*

Cements"[Mesh]) AND ("Composite Resins"[Mesh])

Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question including computable data; published in English.

Exclusion criteria. No computable continuous data for both, test- and control group; not all data from investigated units reported; no randomized or quasi-randomized study design for in-situ and in-vivo trials

Data collection and analysis

The systematic literature search found 129 trials of which 13 were identified to be in line with the inclusion criteria. Of these, 5 in-vitro trials were accepted for data extraction. From the reviewed trials 200 individual datasets were extracted and analysed.

Main results

The results show that cured GIC appears to have an overall higher inhibitory effect on the bacterial growth of *S. mutans*, *S. mitis*, *S. oralis* and *S. sanguis* than composite resin materials with or without fluoride content. No difference was found between both material groups for *Lactobacillus* and *S. sobrinus*.

Authors' conclusions

The results from laboratory studies suggest that glass-ionomers have a higher inhibitory effect on bacterial growth than composite resin materials. No in-situ or in-vitro trials could be identified to this review question and that limits the clinical applicability of the current results, which require confirmation in-situ and in-vivo.

022 Glass ionomer cement and composite resin - fluoride release

Oliveira LB, Bönecker M, Mickenautsch S

Glass-ionomers release more fluoride than composite resin materials in vitro.

This abstract is prepared and maintained by Midentistry, currently published in The MI Compendium, 3rd edition, Copyright © 2009, 2010 Midentistry. The full data of this review is available in <http://www.midentistry.com/secure-folder/content/3/mic11H1.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Oliveira LB, Bönecker M, Mickenautsch S.. Glass ionomer cement and composite resin - fluoride release. Minim Interv Comp Database Syst Rev 2010; 1: RV00420102202

This version first published online: February 22, 2010
Last revised: February 22, 2010

Objectives

To assess whether GIC have releases more fluoride than composite resin (with fluoride).

Search strategy

The trials were identified from a search of the PubMed database on: September 01, 2009 using the terms: Search ("Fluorides"[Mesh] AND "Glass Ionomer Cements"[Mesh]) AND "CompositeResins"[Mesh]

Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question including computable data; published in English.

Exclusion criteria. No computable continuous data for both, test- and control group.

Data collection and analysis. The systematic literature search found 317 trials of which 37 were identified to be in line with the inclusion criteria. Of these, 25 in-vitro trials were accepted for data extraction. From the reviewed trials 163 individual datasets were extracted and analysed.

Main results and Authors' conclusions. The results show that cured GIC appears to release significantly more fluoride (p<0.05) than composite resin materials with fluoride content.

023 Glass ionomer cement and compomers - fluoride release

Oliveira LB, Bönecker M, Mickenautsch S

Glass-ionomers release generally more fluoride than compomers in vitro.

This abstract is prepared and maintained by Midentistry, currently published in The MI Compendium, 3rd edition, Copyright © 2009, 2010 Midentistry. The full data of this review is available in <http://www.midentistry.com/secure-folder/content/3/mic11H3.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Oliveira LB, Bönecker M, Mickenautsch S. Glass ionomer cement and compomers - fluoride release. Minim Interv Comp Database Syst Rev 2010; 1: RV00520100403

This version first published online: March 04, 2010
Last revised: March 04, 2010

Objectives

To assess whether GIC have releases more fluoride than compomers.

Search strategy

The trials were identified from a search of the PubMed database on: November 25, 2009 using the terms: *Fluorides AND Glass Ionomer Cements OR Cermet Cements AND Compomer*

Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question including computable data; published in English.

Exclusion criteria. No computable continuous data for both, test- and control group.

Data collection and analysis. The systematic literature search found 47 trials of which 17 were

identified to be in line with the inclusion criteria. Of these, 9 in-vitro trials were accepted for data extraction. From the reviewed trials 62 individual datasets were extracted and analysed.

Main results and Authors' conclusions. The results show a significantly higher fluoride release (p<0.05) of GIC in most datasets. No dataset favoured compomers above GIC in terms of the amount of fluoride released.

024 Conventional and resin-modified glass ionomer cement - fluoride release

Oliveira LB, Bönecker M, Mickenautsch S

Resin-modified glass-ionomers release more fluoride in vitro.

This abstract is prepared and maintained by Midentistry, currently published in The MI Compendium, 3rd edition, Copyright © 2009, 2010 Midentistry. The full data of this review is available in <http://www.midentistry.com/secure-folder/content/3/mic11H2.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Oliveira LB, Bönecker M, Mickenautsch S. Conventional and resin-modified glass ionomer cement - fluoride release. Minim Interv Comp Database Syst Rev 2010; 1: RV00620101203.

This version first published online: March 12, 2010
Last revised: March 12, 2010

Objectives

To assess whether GIC have releases more fluoride than resin-modified GIC (RMGIC).

Search strategy

The trials were identified from a search of the PubMed database on: November 17, 2009 using the terms: *"Fluorides"[Mesh] AND ("Glass Ionomer Cements"[Mesh] OR "Cermet Cements"[Mesh]) AND ("resins, plant"[MeSH Terms] OR ("resins"[All Fields] AND "plant"[All Fields]) OR "plant resins"[All Fields] OR "resin"[All Fields]) AND modified[All Fields] AND ("glass ionomer cements"[MeSH Terms] OR ("glass"[All Fields] AND "ionomer"[All Fields] AND "cements"[All Fields]) OR "glass ionomer cements"[All Fields] OR ("glass"[All Fields] AND "ionomer"[All Fields] AND "cement"[All Fields]) OR "glass ionomer cement"[All Fields])*

Inclusion criteria. All progressive 2-arm in-vitro, in-situ or in-vivo trials; with relevance to review question including computable data; published in English.

Exclusion criteria. No computable continuous data for both, test- and control group.

Data collection and analysis. The systematic literature search found 171 trials of which 46 were identified to be in line with the inclusion criteria. Of these, 26 in-vitro trials were accepted for data extraction. From the reviewed trials 184 individual datasets were extracted and analysed.

Main results and Authors' conclusions. There was no conclusive difference found between both materials in their cumulative fluoride release. However, the fluoride release at time intervals appeared to be higher for RMGIC.

025 Resin infiltration versus topical fluoride: carious lesion progression

Midentistry review group

There is less lesion progress after resin infiltration.

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This record should be cited as: Midentistry. Resin infiltration versus topical fluoride: carious lesion progression. Minim Interv Comp Database Syst Rev 2010; 1: RV00720103003.

This version first published online: March 30, 2010
Last revised: March 30, 2010

Objectives

To assess whether resin infiltration technique is more effective to stop progression of caries lesions than remineralisation therapy.

Search strategy

The trials were identified from a search of the PubMed database on: March 27, 2010 using the terms: *"resin infiltration OR caries infiltration"* plus grey literature search in Google using same search terms.

Inclusion criteria.

1. Relevant to review question / outcome measure: stop of caries progression on human tissue
2. Published in English or German language
3. Clinical randomized or quasi randomized control trial (RCT, quasi-RCT)

Data collection and analysis

The systematic literature search identified one splitmouth (quasi-RCT) containing 2 datasets in which the treatment effect of resin infiltration therapy was compared to topical fluoride application after 1 year. Quality assessment of the trial gave following results:

- (1) Generation of randomized sequence (allocation) = A (adequate)
- (2) Allocation concealment = B (unclear)
- (3) Blind outcome assessment reported = A (yes)
- (4) Completeness of follow up (clear explanation for withdrawals and loss-to-follow-up in each treatment group) = A (yes, drop out less than 30%)

Data extraction from the trial resulted in 2 separate datasets: DS01- Clinical assessed lesion progression

after 1 year; DS02- radiographic assessed lesion progression after 1 year.

Main results and Authors' conclusions

The established relative risks (RR) indicated that resin infiltration reduced the chance of lesion progression after 1 year by 60% (clinical assessment) / 62% (radiographically assessment) than if the lesions would have been treated with topical fluoride. However, possibility of selection bias influence/overestimation of results may exist due to unclear concealment of the random allocation (B). The results of the single trial indicate that resin infiltration technique may be more effective in the prevention of progression of carious lesion than topical fluoride application after 1 year. Further high quality trials are needed in order to confirm these initial findings.

026 Composite resin versus amalgam - effect on pulp tissue

Midentistry review group

There is no difference between both type of materials

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This record should be cited as: Midentistry. Composite resin versus amalgam - effect on pulp tissue. Minim Interv Comp Database Syst Rev 2010; 1: RV00820101904

This version first published online: April 19, 2010
Last revised: April 19, 2010

Objectives

To assess whether composite resins in deep cavities are more pulp friendly than amalgam.

Search strategy

The trials were identified from a search of the PubMed database on: January 08, 2010 using the terms: *"(Dental Amalgam)[Mesh] AND Composite Resins"[Mesh] AND Dental Pulp"[Mesh]"*.

Inclusion criteria

- Relevant (comparing Comp vs Amalgam)
- In-vivo
- 2-arm
- Published in English

Data collection and analysis. No clinical trials on human subjects could be found to this topic. The systematic literature search identified 5 in-vivo trials on animals (monkeys) from which a total of 83 datasets [DS] were extracted. Due to large methodological heterogeneity of trials, only 9 datasets of 2 trials could be pooled in 3 separate meta-analyses.

Main results and Authors' conclusions.

From the 83 extracted datasets, 79 showed no difference between both type of materials. The results of 4 datasets were in favor of composite resin. However, all 4 results were observed under condition of a significantly larger ($p < 0.05$) Remaining Dentin Thickness (RDT) for cavities restored with composite resin. This may have reduced the effect of composite

resin on the pulp tissue - thus confounded the results in favor of composite resin. The meta-analyses did not consider possible differences between the pooled datasets in RDT during the 2 trials; differences between composite inlay and composite restoration and differences in the bonding materials used. For that reason a random effects model was applied. The results of the 3 meta-analyses showed no differences between both materials regarding inflammatory cell infiltration; reparative dentin formation and bacteria staining after 30 days. Quality assessment of the 5 accepted trials: Three of the trials reported randomization but failed to describe how the random sequence was allocated and whether/how such allocation was concealed. In addition, in no trial was reported whether different persons conducted clinical treatment and the evaluation in the laboratory, nor was a blind (laboratory) outcome assessment reported. Hence, the results of all trials may be limited by potential selection and detection bias. As these trials were all conducted on living animals - caution is warranted in extrapolation of the results to humans. High quality trials are needed in order to confirm the current results. It is recommended that reporting of such trials should follow the CONSORT statement.

027 Resin-modified GIC versus compomer restorations - longevity in primary teeth

Midentistry review group

There is no difference between both types of materials

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This record should be cited as: Midentistry. Resin-modified GIC versus compomer restorations - longevity in primary teeth. Minim Interv Comp Database Syst Rev 2010; 1: RV00920102104

This version first published online: April 21, 2010
Last revised: April 21, 2010

Objectives

To assess whether restorations in primary teeth placed with compomers have a higher survival rate than restorations placed with RMGIC.

Search strategy

The trials were identified from a search of the PubMed database on: January 07, 2010 using the

terms: *("Compomers"[Mesh] AND "Glass Ionomer Cements"[Mesh]) OR "glass ionomer "[Substance Name]) AND "Tooth, Deciduous"[Mesh]*

Inclusion criteria

- Relevant (comparing resin-modified GIC versus Compomers in primary teeth)
- 2-arm trials
- Published in English

Data collection and analysis. In line with inclusion criteria, the systematic literature search identified 5 (one clinical and 4 laboratory) trials of which a total of 47 separate datasets (DS) could be extracted.

Main results and Authors' conclusions

From the 36 datasets of the single clinical trial, 34 extracted datasets showed no difference between both type of materials in terms of caries, wear, restoration fracture, tooth fracture, loss of material retention and endodontic complication after 7 years. The results of 2 datasets were in favor of compomer. These results were observed when restorations were placed after cavity conditioning. Without cavity conditioning the results of both materials were similar. The results from the 11 datasets of the laboratory trials are conflicting in terms of higher material shear bond strength to dentin. No difference was observed between both materials in terms of microleakage. Due to large methodological heterogeneity between trials, no meta-analysis was done. Quality assessment was conducted by 2 different reviewers using a structured checklist. Differences were resolved by discussion and consensus. During the assessment, randomization of the sequence allocation and concealment of the allocation was judged as inadequate since alternate use of both materials during the trial was reported. The reporting of assessor assignment (whether the assessor was a different person than the operator) was judged as unclear and the lack of reported blind outcome assessment was considered to be inadequate. The overall clinical results show no difference between both type of materials after 7 years. The clinical result for loss of retention appears to be confirmed by conflicting laboratory data regarding material shear bond strength to dentin. It has to be noted that the available clinical results may be limited by potential selection and detection bias. Further high quality randomized control trials are needed to answer the review question more conclusively.

028 Conventional GIC versus compomer restorations - longevity in primary teeth

Midentistry review group

There is no difference between high-viscosity GIC and compomer.

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<http://www.midentistry.com/secure-folder/content/3/fur0102.asp> (ISBN: 0-620-34080-0)

This record should be cited as: Midentistry.

Conventional GIC versus compomer restorations - longevity in primary teeth. Minim Interv Comp Database Syst Rev 2010; 1: RV001020100405.

This version first published online: May 04, 2010
Last revised: May 04, 2010

Objectives

To assess whether restorations in primary teeth placed with compomers have a higher survival rate than restorations placed with GIC.

Search strategy

The trials were identified from a search of the PubMed database on: January 06, 2010 using the terms: ("(*Compomers*"[Mesh] AND "*Glass Ionomer Cements*"[Mesh]) OR "*glass ionomer*"[Substance Name]) AND "*Tooth, Deciduous*"[Mesh]

Inclusion criteria

- Relevant (comparing resin-modified GIC versus Compomers in primary teeth)
- 2-arm clinical trial
- Published in English

Data collection and analysis.

In line with inclusion criteria, the systematic literature search identified 3 trials of which a total of 58 separate datasets (DS) could be extracted.

Main results and Authors' conclusions

Due to high methodological heterogeneity only 2 datasets were pooled for meta-analysis (RR 0.99 - 95%CI 0.96 - 1.03; p = 0.63). The meta-analysis results showed no difference in recurrent caries between high-viscosity GIC and compomer after 12 months. No difference was found between high-viscosity GIC and compomer in restoration longevity, specifically in bulk fracture, margin integrity, original surface texture, wear and postoperative sensitivity. When the compomer *Dyract* was compared to the non-high viscosity (older, obsolete type) GIC *Chemfil Superior* the following observations could be made: *Dyract* had a 71% higher chance to resist wear after 42 months. *Dyract* had a 59% higher chance to retain marginal integrity after 42 months. *Dyract* had a 94% higher chance to retain a surface texture similar to polished enamel after 36 months. *Dyract* had a 99% higher chance to retain its interproximal contact points after 12 months. No difference between *Dyract* and *Chemfil Superior* was observed regarding post-operative sensitivity, material discoloration and recurrent caries after 42 months. Quality assessment was conducted by 2 different reviewers using a structured. Differences were resolved by discussion and consensus. During the assessment, randomization of the sequence allocation was done in all trials, however, how the random sequence was allocated remained unclear (= A*) in 2 trials. Concealment of allocation was not reported in all trials (= B). There was inadequate assessor assignment (= C) in one trial as the evaluator and operator was the same person. The assessor assignment was unclear (= B) for the other 2 trials. Assessment blinding was not reported (= C) in all trials. The results of the quality assessment suggest that the outcome of all included trials may be limited by selection and detection bias. In addition, further

factors may have had a confounding influence on the trial results, such as the lack of information regarding possible exposure to external fluoride sources, lack of differentiation between type of teeth or cavities, as well as unclear baseline caries prevalence among the treated children. The overall clinical results show no difference between high-viscosity GIC and compomers in primary teeth. It has to be noted that the available clinical results may be limited by potential selection and detection bias as well as due to further confounder effect, i.e. due to possible access to external fluoride sources. Further high quality randomized control trials are needed.

029 Composite resin versus amalgam - toxicity

Midentistry review group

Both materials appear to have toxic effects on animal tissue in vivo and in vitro.

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Objectives

To assess whether allergic reactions of oral tissues in contact with composite resin are less common than for oral tissues in contact with amalgam.

Search strategy

The trials were identified from a search of the PubMed database on: January 04, 2010 using the terms: "*toxicity*"[Subheading] AND "*Composite Resins*"[Mesh]

Inclusion criteria

- Relevant (comparing Composite resin vs. Amalgam)
- 2-arm trials(in vivo, in situ, in vitro)
- Published in English

Exclusion criteria

- No computable data (dichotomous, continuous) reported
- Single chemical components of composite resins and amalgam investigated, only

Data collection and analysis.

The systematic literature search identified 3 controlled in vivo trials on animals and 3 in vitro trials. Of these a total of 145 separate datasets (DS) could be extracted.

Main results and Authors' conclusions

Due to high methodological heterogeneity no meta-analysis was conducted. The results of the 145 individual datasets are difficult to interpret in terms

which material is more toxic. The results also seem to be dependent on the type of composite or amalgam studied. Composite resin seems to lose its toxic impact in terms of the number of inflammatory cells in time but not in terms of antibody responds (in rats). Amalgam appears to be more toxic in terms of its inhibiting effect of monkey kidney cells after 7 days. Cell lysis of mouse fibroblasts is higher for composite regardless whether the material is freshly mixed or not. Both materials appear to act more toxic than the other or equally toxic depending on the method of measurement; type of dental product per material or type of exposed tissue studied. The overall results do no provide conclusive evidence to which material is more toxic. However, both materials appear to have toxic effects on animal tissue in vivo and in vitro.

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