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Evaluation of Biodentine® and Calcium Hydroxide in the Formation of Dentin Bridge in Deep Carious Lesions

Évaluation de Biodentine® et de l'hydroxyde de calcium dans la formation du pont dentinaire dans les lésions carieuses profondes

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ABSTRACT

BACKGROUND: Indirect pulp capping is the main treatment modality for reversible pulpitis

OBJECTIVE: To evaluate the efficacy of Biodentine® and Calcium hydroxide in the formation of dentin bridge.

MATERIALS AND METHODS: A double blinded, randomized clinical control trial involving 50 consenting subjects, aged 16 to 55 years with deep carious vital teeth. It was a comparative study with intervention comparing Biodentine® (test) and Calcium hydroxide (control). Subjects' teeth were assessed for normal response to pulp testing. Cavity preparation was done and the cavity was dressed with either Biodentine® or Calcium hydroxide (Ca(OH)₂) then restored with Glass ionomer cement. A bitewing digital dental x-ray was taken at the end of the procedure to measure radiographically the dentin depth as base line using a digital meter. The subjects' teeth were examined radiographically at three, six and nine months. The probability level of $p < 0.05$ was considered significant.

RESULTS: There was a progressive increase in dentin formation at three months, six months and a significant increase at nine months: the subjects' teeth in the Biodentine® group recorded an increase in dentin depth of mean 0.67 ± 0.07 mm in the mesial aspect and mean 0.66 ± 0.07 mm in both the middle and distal aspects. The Ca(OH)₂ group recorded an increase in dentin depth of mean 0.55 ± 0.07 mm in the mesial aspect, mean 0.52 ± 0.07 mm in the middle aspect and mean 0.55 ± 0.07 mm in the distal aspect at nine months. (p value 0.001).

CONCLUSION: Biodentine® and Ca(OH)₂ have proven to be efficacious in dentin bridge formation. The Biodentine® group showed a statistically significant increase in mean dentin depth relative to that of Ca(OH)₂ group following indirect pulp capping of deep carious teeth. **WAJM 2024; 41 (9): 927-936**

KEYWORDS: Deep caries, Indirect pulp capping, Dentin depth, Biodentine®, Calcium hydroxide

RÉSUMÉ

CONTEXTE: Le recouvrement indirect de la pulpe est la principale modalité de traitement de la pulpite réversible

OBJECTIF: Évaluer l'efficacité de la biodentine® et de l'hydroxyde de calcium dans la formation du pont dentinaire.

MATÉRIEL ET MÉTHODE: Un essai clinique contrôlé randomisé en double aveugle portant sur 50 sujets consentants, âgés de 16 à 55 ans, présentant des dents vitales carieuses profondes. Il s'agissait d'une étude comparative avec intervention comparant la biodentine® (test) et l'hydroxyde de calcium (contrôle). Les dents des sujets ont été évaluées pour une réponse normale aux tests de pulpe. La préparation de la cavité a été effectuée et la cavité a été pansée avec de la biodentine® ou de l'hydroxyde de calcium (Ca(OH)₂), puis restaurée avec du ciment de verre ionomère. Une radiographie dentaire numérique de l'aile occlusale a été prise à la fin de l'intervention pour mesurer radiographiquement la profondeur de la dentine comme ligne de base à l'aide d'un compteur numérique. Les dents des sujets ont été examinées radiographiquement à 3, 6 et 9 mois. Le niveau de probabilité de $p < 0.05$ a été considéré comme significatif.

RÉSULTATS: Il y a eu une augmentation progressive de la formation de dentine à 3 mois, 6 mois et une augmentation significative à 9 mois : les dents du sujet dans le groupe Biodentine ont enregistré une augmentation de la profondeur dentine de 0.67 ± 0.07 mm en moyenne dans la face mésiale et de 0.66 ± 0.07 mm dans les faces médiane et distale. Le groupe Ca(OH)₂ a enregistré une augmentation de la profondeur de la dentine de 0.55 ± 0.07 mm en moyenne dans la face mésiale, de 0.52 ± 0.07 mm en moyenne dans la face médiane et de 0.55 ± 0.07 mm dans la face distale à 9 mois. (valeur de p 0.001).

CONCLUSION: La biodentine® et le Ca(OH)₂ se sont avérés efficaces dans la formation de ponts dentinaires. Le groupe Biodentine® a montré une augmentation statistiquement significative de la profondeur moyenne de la dentine par rapport à celle du groupe Ca(OH)₂ après le coffrage indirect de la pulpe des dents profondément cariées. **WAJM 2024; 41 (9): 927-936**

MOTS CLES: Carie profonde, Bouchage pulpaire indirect, Profondeur dentine, Biodentine®, Hydroxyde de calcium.

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