

Effectiveness of 38% Silver Diamine Fluoride with or without Potassium Iodide in Indirect Pulp Capping of Young Permanent Molars (12 M, RCT) جَامَعُتُالْابِيْتُ كَنَاصَّيْتُ ALEXANDRIA UNIVERSITY

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BACKGROUND

- Nowadays, a minimal-invasive approach is advocated in cariology.
- Research into use of indirect pulp capping materials that possess anticariogenic properties has been advocated to assess their impact on prevention of secondary caries, while helping maintain pulp vitality.

INTRODUCTION

- SDF can be used to arrest cavitated lesions, but lesions will stain black.
- Knight et al, 2005 suggested application of KI immediately after SDF to minimize staining of an overlying restoration.
- There is no data in the literature regarding the clinical effectiveness of SDF/KI in indirect pulp therapy, and limited data on SDF.

Aim: To assess the effectiveness of 38% SDF with and without KI under a RMGIC in indirect pulp capping of deep carious lesions in young permanent molars.

- 1. American Academy of Pediatric Dentistry, Reference manual guidelines for pulp treatment for primary and young permanent teeth, Pediatr. Dent. (2021) 399-407.
- 2. G.M. Knight, J. M. McIntyre, G. G. Craig, P. S. Zilm, and N. J. Gully, An in vitro model to measure the effect of a silver fluoride and potassium iodide treatment on the permeability of demineralized dentine to Streptococcus mutans, Aust. Dent. J. 50 (2005) 242-245.

METHODS & RESULTS

Participants screened for RCT → eligibility

Radiographic

statistical

Random Allocation (N=108)

Deep occlusal cavitated

carious lesions ICDAS 5,6

Group I(SDF+KI) (n=36) Group II (SDF) (n=36) Group III (RMGIC) (n=36)

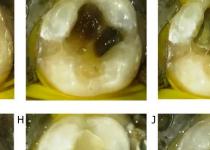
followed by restoration

Radiographic

Assessment for

Clinical Failures (6

and 12 Mo)



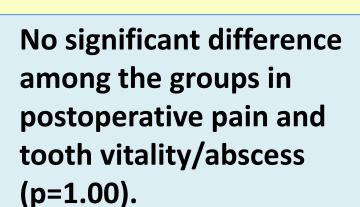






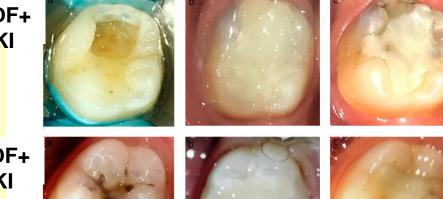
modified USPHS criteria

Statistical analysis of the outcome data



- Secondary caries did not differ among the groups (p=0.17).
- There was a significant difference regarding restoration color (p<0.001), marginal staining (p<0.01) and luster of the restoration (p<0.001) at all-time points, with the RMGIC group outperforming the 2 SDF groups.









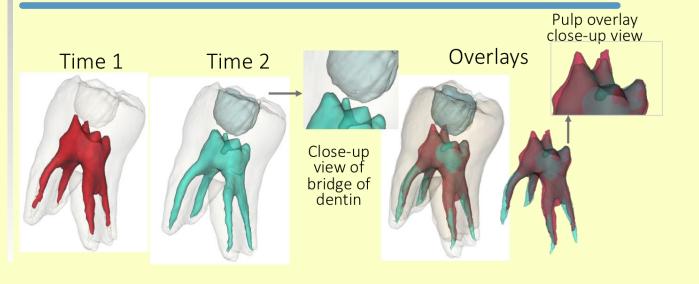
DISCUSSION

- None of the materials used negatively impacted the vitality of the pulp; however, RMGIC group showed better clinical restoration outcomes in color, marginal staining and luster.
- Regarding, postoperative pain and tooth vitality, all materials, used under well-sealed resin composite restorations, showed equal high success rate at 12 months; confirming the success of using selective caries removal, with no difference regarding the indirect pulp capping material used.

SUMMARY

- Clinical and radiographic success of all groups, however, the RMGIC group showed better clinical restoration outcomes in color, marginal staining and luster.
- While addition of KI had a temporary reduction of the black staining effect of SDF, restorations still tended to darken overtime.

Future Direction



analysis showed no

significance (p=1.00)

among all three

and 12 months.

groups for any sign

of failure at both 6

TimepointGroupCompared toP valueGICSDF <0.001 *3 months	
GIC HOUSE	
3 months SDE+KI 0.06	
3 Hondis 3DF RI 0.00	
SDF SDF+KI <0.001*	:
GIC SDF <0.001*	:
Color 6 months SDF+KI 0.003*	
SDF SDF+KI <0.001*	:
SDF <0.001*	
12 months GIC SDF+KI 0.003*	
SDF SDF+KI <0.001*	:
CIC SDF 0.03*	
3 months GIC SDF+KI 1.00	
SDF SDF+KI 0.02*	
SDF 0.02*	
Marginal staining 6 months GIC SDF+KI 1.00	
SDF SDF+KI 0.19	
SDF 0.01*	
12 months GIC SDF+KI 0.39	
SDF SDF+KI 0.41	
SDF <0.001 [*]	
3 months GIC SDF+KI 0.09	
SDF SDF+KI <0.001*	
SDF <0.001 ³	
Luster of 6 months GIC SDF+KI 0.01*	
restoration SDF SDF+KI <0.001*	
SDF <0.001*	
12 months GIC SDF+KI 0.01*	
SDF SDF+KI <0.001*	:

Clinical Assessment

Postoperative pain, tooth vitality, restoration success rates according to