

Comparison of Mineral Trioxide Aggregate and Formocresol as Pulp-capping Agents in Pulpotomized Primary Teeth

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Abstract

Purpose: The aim of this study was to use clinical, radiographic, and histologic examinations to compare the relative success of gray mineral trioxide aggregate (MTA), white MTA, and formocresol as pulp dressings in pulpotomized primary teeth.

Methods: Twenty-four children, each with at least 3 primary molars requiring pulpotomy, were selected for this study's clinical and radiographic portion. An additional 15 carious primary teeth planned for serial extraction were selected for this study's histologic portion. All selected teeth were evenly divided into 3 test groups and treated with pulpotomies. Gray MTA was used as the pulp dressing for one third of the teeth, white MTA was the dressing for one third, and the remaining one third were treated with formocresol. The treated teeth selected for the clinical and radiographic evaluations were monitored periodically for 12 months. The treated teeth selected for histologic study were monitored periodically and extracted 6 months postoperatively.

Results: Four children with 12 pulpotomized teeth failed to return for any follow-up evaluations in the clinical and radiographic study. Of the remaining 60 teeth in 20 patients, 1 tooth (gray MTA) exfoliated normally and 6 teeth (4 white MTA and 2 formocresol) failed due to abscesses. The remaining 53 teeth appeared to be clinically and radiographically successful 12 months postoperatively. Pulp canal obliteration was a radiographic finding in 11 teeth treated with gray MTA and 1 tooth treated with white MTA. In the histologic study, both types of MTA successfully induced thick dentin bridge formation at the amputation sites, while formocresol induced thin, poorly calcified dentin. Teeth treated with gray MTA demonstrated pulp architecture nearest to normal pulp by preserving the odontoblastic layer and the delicate fibrocellular matrix, yet few inflammatory cells or isolated calcified bodies were seen. Teeth treated with white MTA showed a denser fibrotic pattern, with more isolated calcifications in the pulp tissue along with secondary dentin formation.

Conclusion: Gray MTA appears to be superior to white MTA and to formocresol as a pulp dressing for pulpotomized primary teeth. (*Pediatr Dent.* 2004;26:XXX-XXX)

KEYWORDS: PULPOTOMY, PRIMARY TEETH, MINERAL TRIOXIDE AGGREGATE, MTA

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