

Color Stability Following Biodentine Pulpotomy in Primary Maxillary Incisors

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Introduction

Calcium silicate-based cements are widely regarded as the gold standard for pulpotomy procedures in both primary and permanent teeth. The most commonly used materials in this category are mineral trioxide aggregate (MTA) and Biodentine. Both MTA and Biodentine have shown strong success rates when used as materials for vital pulp therapy. However, the original formulation of MTA is generally not advised for use in esthetic areas because of its potential to cause discoloration. In contrast, in vitro studies and limited clinical evidence in permanent teeth indicate that Biodentine does not result in noticeable color changes.

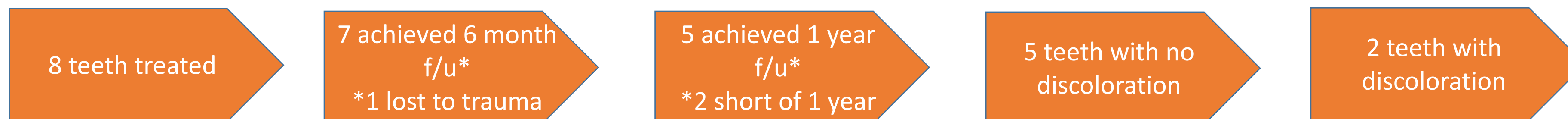
Objectives

The purpose of this prospective clinical study was to evaluate the color stability over time of primary maxillary incisors treated with Biodentine pulpotomy and restored with resin-based strip crowns. Our hypothesis is that teeth treated in this manner will not discolor over time.

Materials & Methods

Eight out of an intended twenty healthy children 3 to 5 years-old who underwent comprehensive dental rehabilitation under general anesthesia were enrolled. One of these children lost their tooth to trauma, so 7 patients were followed completely. Vital maxillary primary incisors with carious pulp exposure received a pulpotomy. Upon hemostasis, Biodentine was applied, the pulp chamber was filled with glass ionomer, and a composite strip crown was placed and polished. Teeth were photographed at treatment, 6 and 12 month follow-ups. Two calibrated investigators independently evaluated the images for color stability over time. In case of disagreement, consensus was achieved through discussion.

Results



Representative case – No Discoloration

Pre-op radiograph and photo (tooth #F enrolled)



Post-op photo



1 year follow up photo and radiograph



Representative case – Discoloration

Pre-op radiograph (tooth #G enrolled)



Post-op photo



1 year follow up radiograph



1 year follow up photo



Conclusions

- Within the limitations of this small sample size, Biodentine demonstrated favorable esthetic outcomes when used for pulpotomy in vital maxillary primary incisors restored with composite strip crowns
- Definitive conclusions could not be drawn. However, these preliminary findings suggest that Biodentine may be a viable esthetic option for vital pulp therapy in the anterior primary dentition. Further studies with a large sample size are needed.