Intentional Bioceramic Pulpotomy When Restoration Gingival Margin Failure is Anticipated

Kiskaddon K*, Fetner J, Smith N, Guelmann M
Department of Pediatric Dentistry, University of Florida College of Dentistry, Gainesville, FL

INTRODUCTION

In primary molars, when proximal restorative margins are located at or below the cemento-enamel junction (CEJ), teeth are generally considered non-restorable and may require extraction due to the difficulty in obtaining a tight marginal seal.

Calcium silicate-based cements are biocompatible materials with excellent sealing properties and recommended as pulpotomy medicaments in primary molars.

OBJECTIVE

To preserve vital primary molars with proximal caries at or below the CEJ by intentionally performing a calcium silicate-based pulpotomy and stainless steel crown (SSC).

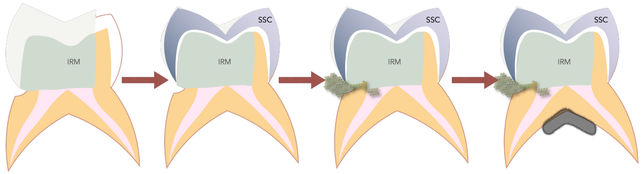
METHODS

A prospective clinical study was conducted at the University of Florida Pediatric Dental Clinic. Healthy, cooperative 5-10 year-old children with deep proximal lesions in primary molars were recruited.

INCLUSION CRITERIA	
Clinical	• Normal pulp or diagnosis of reversible pulpitis • No signs of mobility or percussion sensitivity • Restorable with SSC
Radiographic	• Proximal caries at or below the CEJ • Minimum of 1-2mm of sound dentin separating the deepest portion of the lesion and the pulp • No furcal or periapical pathology

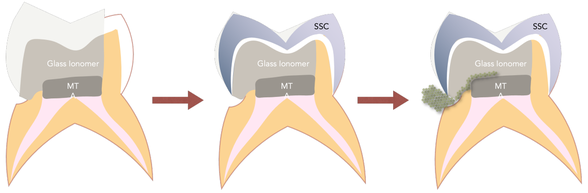
Traditional Pulpotomy Technique

Pulp Medicament + IRM + SSC



Experimental Intentional Pulpotomy Technique

Calcium Silicate-Based Cement + GI + SSC



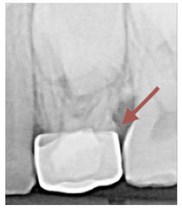
Experimental Technique:

1. Local anesthesia and rubber dam isolation
2. Caries removal followed by intentional pulp exposure
3. Pulpotomy performed
4. Hemostasis obtained within 3-5 minutes using moist cotton pellets
5. NeoPutty MTA + Fuji IX Glass Ionomer base
6. SSC restoration

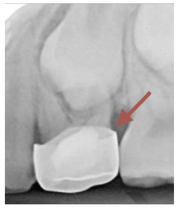
RESULTS

	6 months	12 months
Success (Clinical and Radiographic)	16	15
Failure (Clinical and Radiographic)	1	0
N = 19*	*3 teeth were lost to follow-up	

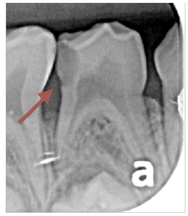
Pre-op radiograph #I



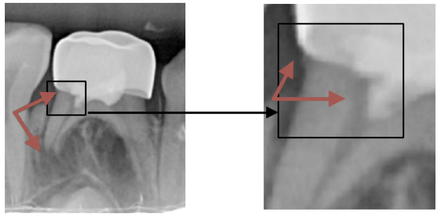
6-month post-op
Radiographic success



12-month post-op
Radiographic success



Pre-op radiograph #S



6-month post-op showing radiographic failure due to open distal margin of SSC and inadequate packing of MTA

CONCLUSIONS

Our data shows promising results using this protocol when the restorability of teeth is questionable due to the cervical extent of the lesion.