



Clinical Outcomes of Curodont Application on Incipient Caries of Permanent Teeth

Carleen Tse-Goldstein DMD MPH, Megan Maher-Sandstrom DMD, Ghassam Ansari DDS MSc PhD, Francisco Ramos-Gomez DDS MS MPH
UCLA School of Dentistry - Pediatric Dental Residency



Introduction

Dental caries is the most common chronic childhood disease, often leading to restorative treatment once lesions progress beyond the dentinoenamel junction (DEJ). Current caries management emphasizes early detection and non-invasive prevention of lesion progression.

Self-assembling peptide technology (P11-4) promotes enamel remineralization by forming a scaffold that supports calcium phosphate deposition within subsurface lesions. Clinical data in pediatric settings remain limited.

This prospective feasibility study evaluated whether incipient lesions treated with Curodont (P11-4) progressed into dentin or required restorative treatment. Hypothesis: $\geq 80\%$ of treated lesions would remain stable.

Objectives

- Evaluate the proportion of incipient carious lesions treated with Curodont that do not progress into dentin or require restorative treatment during follow-up in a pediatric clinical setting.
- Assess clinical stability of treated enamel lesions over the follow-up period.
- Evaluate feasibility of incorporating P11-4 treatment into routine pediatric dental practice.
- Explore whether Curodont can reduce the need for surgical intervention.

Materials and Methods

Study Design and Sample Selection

Inclusion: patients not undergoing active orthodontic treatment; non-cavitated white spot lesions, early enamel demineralization, decalcification, or incipient caries in esthetic and non-esthetic zones (facial/buccal, occlusal and interproximal).

Exclusion: cavitated lesions, molar-incisor hypomineralization, or intolerance to isolation/etching. Total: 18 participants, 55 permanent tooth surfaces.

Pre-Operative Assessment

Baseline intraoral photography (flash) for all selected teeth, periapical radiographs for anteriors and bitewing radiographs for suspected interproximal involvement.

Clinical Procedure

Teeth were cleaned with pumice. Isolation via Dryshield or cotton roll. A 37.5% phosphoric acid etchant was applied for 20 seconds to buccal, lingual, and occlusal aspects, then rinsed and air dried.

The Curodont Repair Fluoride Plus applicator was activated per manufacturer instructions and applied to the lesion site for 5 minutes without rinsing. Fluoride varnish was applied post-treatment.

For interproximal lesions, one of the following techniques was used:

- Direct placement into the interproximal space
- Superfloss-assisted delivery into the contact area
- Compression into embrasures with a plastic instrument to facilitate diffusion

Patients instructed to refrain from eating/drinking for 30 minutes post-treatment.

Outcome Assessment and Follow-Up

Post-operative photographs obtained immediately. Follow-up at 3, 6, 12, 18 and 24 months with intraoral photographs and bitewing radiographs to assess lesion progression or remineralization.

Billing and Coding

Billed using CDT code D1354 (interim caries arresting medicament application) on a per-tooth basis.

Results

18 Patients Enrolled	55 Total Surfaces	16 3-Mo Check (88.9%)	50 Assessed Surfaces
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Primary Outcome — Caries Progression at 3 Months

100% Non-Progression Rate		
50 / 50 assessed surfaces — zero lesion advancement		

Outcome	n	% Assessed
✓ No Progression	50	100.0%
Progression	0	0.0%
TOTAL ASSESSED	50	100%

Note: 2 patients pending 3 month follow up; 5 surfaces excluded.

Surfaces per Patient (Descriptive)

3.06 Mean	4.0 Median	1.26 SD
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Results align with literature supporting P11-4 for arresting and reversing incipient enamel caries. Uniform stability across all surface types underscores the versatility of Curodont delivery techniques.

Surface Type Breakdown (n = 50 assessed surfaces)

Surface	n	% Total	Non-Prog
Facial	28	56.0%	100%
Distal	12	24.0%	100%
Mesial	10	20.0%	100%
TOTAL	50	100%	100%

95% CI for Non-Progression Rate

Method	Estimate	Lower CI	Upper CI
Clopper-Pearson (Exact)	100.0%	92.9%	100.0%
Wilson Score	100.0%	93.2%	100.0%

Hypothesis Test — One-Sample Z-Test (one-sided)

H₀: rate = 50% | H₁: rate > 50%

Z = 7.071 | p < 0.0001 | REJECT H₀ ✓

Strong statistical evidence treatment prevents caries progression at $\alpha = 0.05$

Conclusion

At 3-month follow-up, 100% of assessed surfaces (50/50) treated with Curodont Repair Fluoride Plus demonstrated no caries progression — exceeding our pre-specified $\geq 80\%$ stability hypothesis and providing strong evidence for efficacy of P11-4 in a pediatric clinical setting.

- All 50 assessed surfaces remained stable — no lesion advanced to dentin or required restorative intervention.
- 95% CI lower bound: 92.9% (Clopper-Pearson exact), confirming robust efficacy under conservative assumptions.
- Treatment was feasible in routine pediatric workflows and well-tolerated by patients.
- Enrollment completed in 37 days (Jan 26 – Mar 4, 2026). Follow-up at 6 & 12 months is ongoing.

References

- Brunton PA, et al. Treatment of early caries lesions using biomimetic self-assembling peptides. Br Dent J. 2013;215(4):E6.
- Schlee M, et al. Self-assembling peptide matrix for dentin hypersensitivity. J Periodontol. 2009;80(8):1297–1305.
- Alkilzy M, et al. Treatment of carious lesions using self-assembling peptides. Adv Dent Res. 2018;29(1):42–47.
- Pitts NB, et al. Dental caries. Nat Rev Dis Primers. 2017;3:17030.

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