

# Clinical Evaluation of a Dentin Adhesive System: 13 Year Results

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# Objective:

To evaluate the performance of Optibond, a multi component filled adhesive system.

# Methods

# Optibond

## PRIMER

HEMA	(2-hydroxyethyl methacrylate)
GPDM	(glycerylphosphate dimethacrylate)
PAMM	(phthalic acid monoethyl methacrylate)
Water	
Ethyl alcohol	
Camphoroquinone	

## ADHESIVE

### GLASS:

0.6 $\mu$  bariumaluminumborosilicate  
Disodium hexafluorosilicate  
Fumed silica

Bis-GMA	(Bisphenol-glycidyl methacrylate)
HEMA	(2-hydroxyethyl methacrylate)
GDM	(glyceryl dimethacrylate)
BPO	(benzoyl peroxide)
DHEPT	(dihydroxyethyl-p-toluidine)
Camphoroquinone	

Composite:

Herculite XRV







Group 1: Enamel etching only (30s)

Group 2: Enamel etching (30s) + dentin etching (15s)



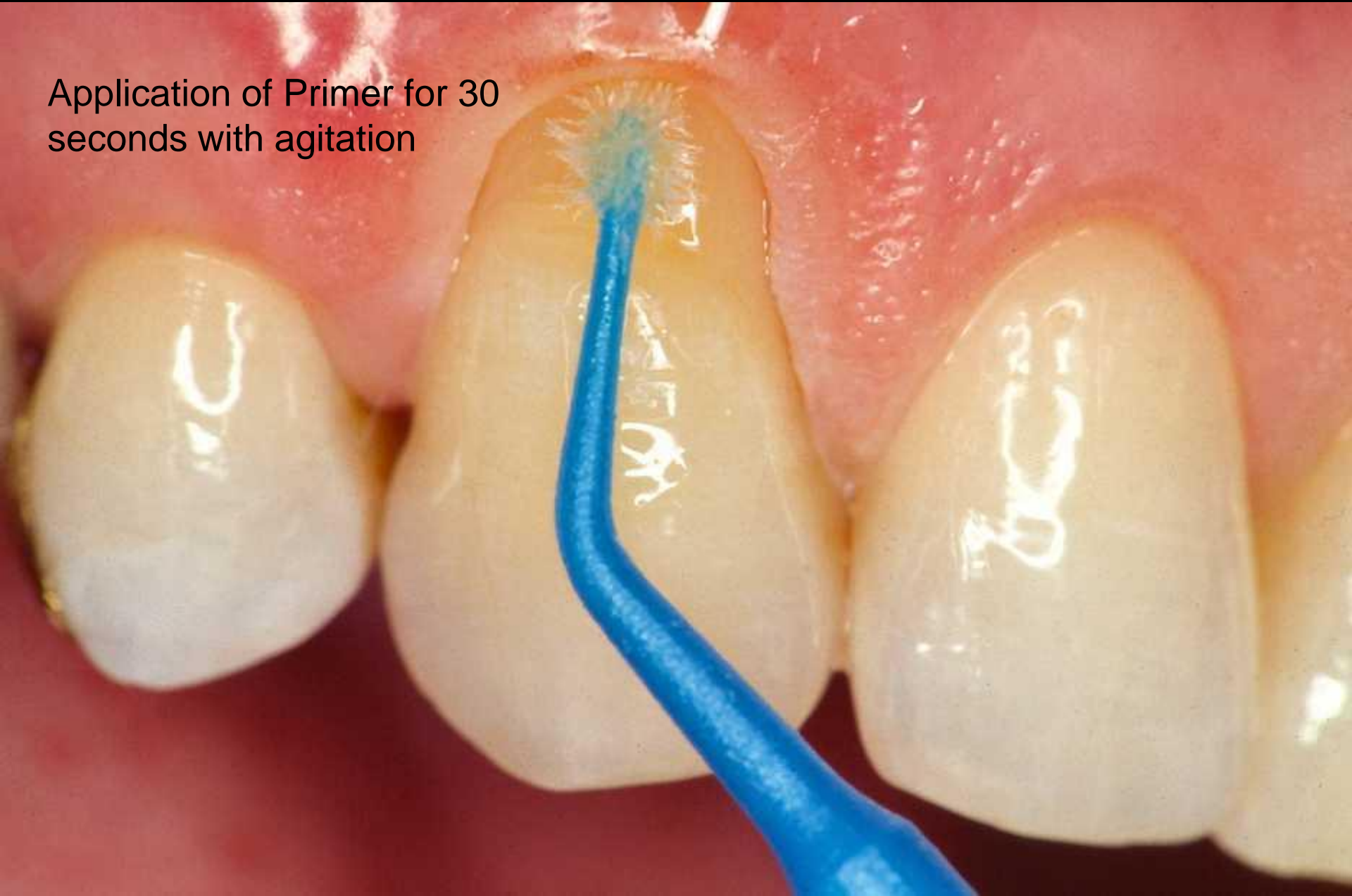


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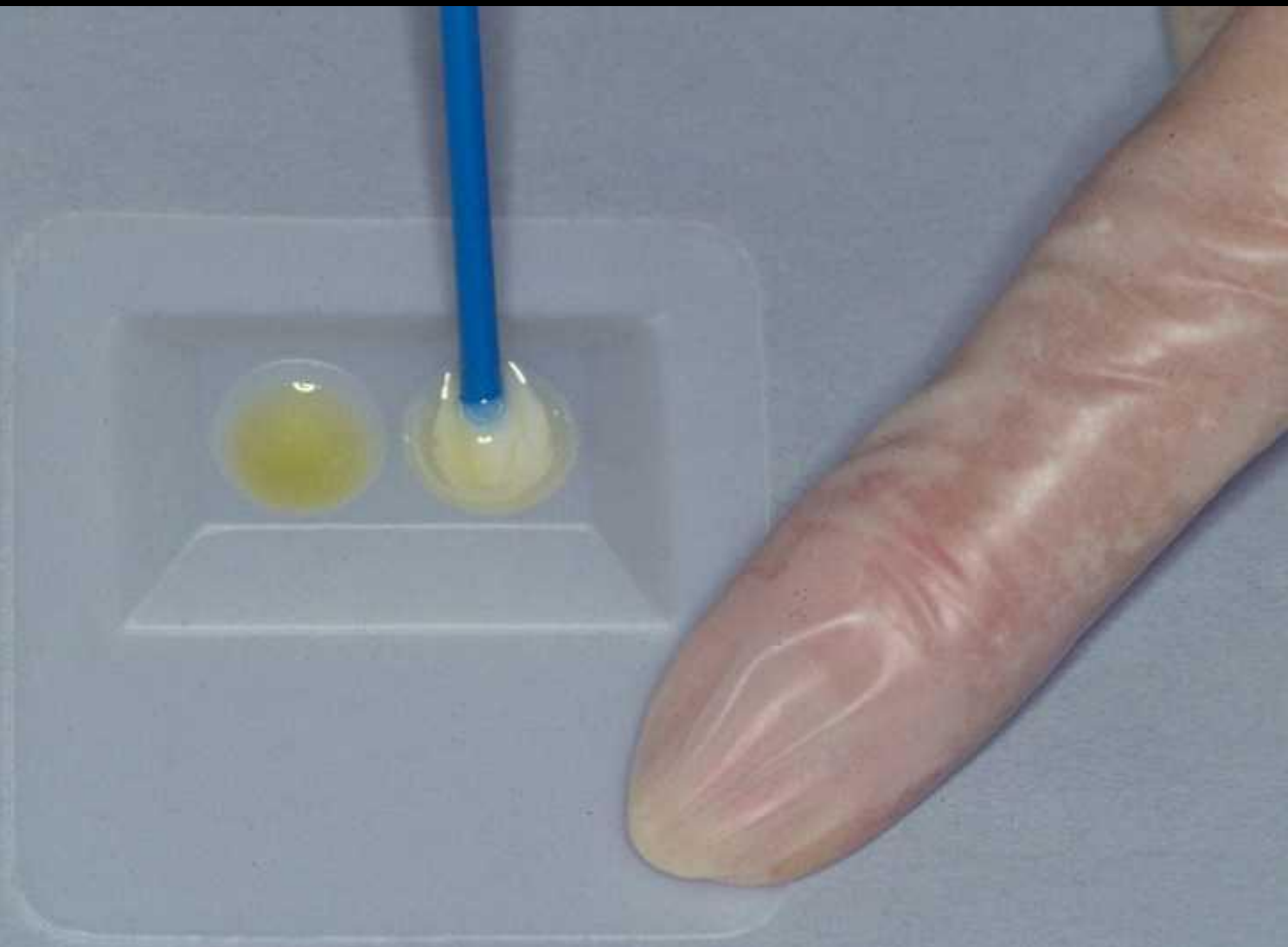
Dr. [Signature]  
Dental  
Sur.

Application of Primer for 30 seconds with agitation



Photoactivation of Primer  
for 20 seconds







Polymerization of Adhesive  
for 30 seconds

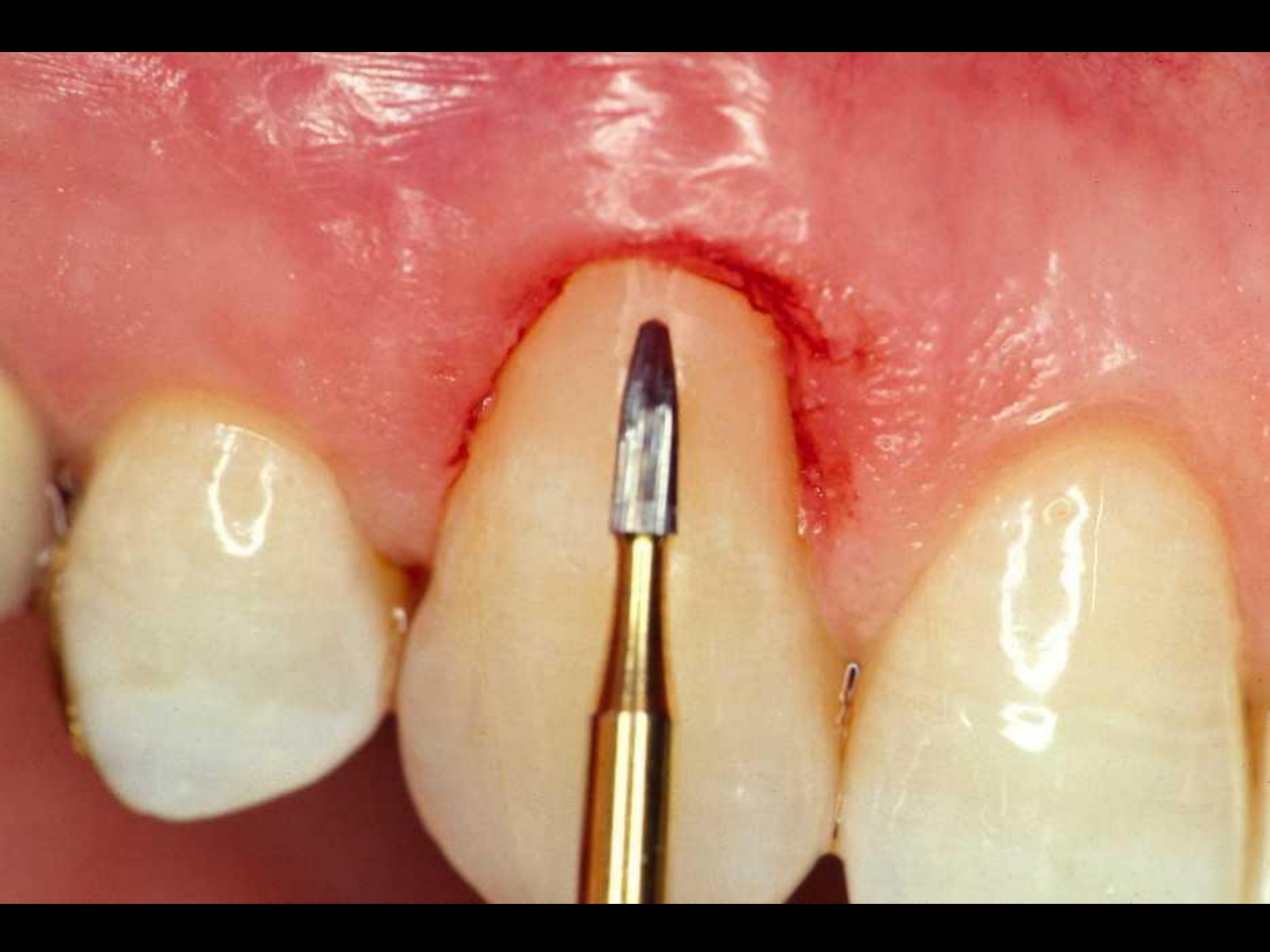






Polymerization of composite,  
≤ 2mm, for 30 seconds





Polishing:

1.0 $\mu$  alumina (30s)

0.3 $\mu$  alumina (30s)





# Population

Patients:	35 (13 Males, 22 Females)
Age Range:	23-77 Years
Median Age:	43 Years

## Restorations Placed

Anterior:	37
Posterior:	43

## Etching

Enamel Only:	48
Dentin and Enamel:	32

# Results

# 13 Year Recall Demographics

Patients: 16 (8 Males, 8 Females)  
Age Range: 40-84 Years  
Median Age: 63 Years

## Restorations Recalled

Anterior: 18  
Posterior: 18

## Etching

Enamel Only: 16  
Dentin and Enamel: 20

# Preoperative Sensitivity Pain Reduction

Number of Patients: 14

Number of lesions: 24

Primer Application:

70% reduction in sensitivity reported

Adhesive Application:

98% total reduction in all patients reported

Restoration Placement:

100% elimination of sensitivity reported



5 years  
13 years







1 Year



2 Years



13 Years, 5 Months



Dentin Etching





1 Year



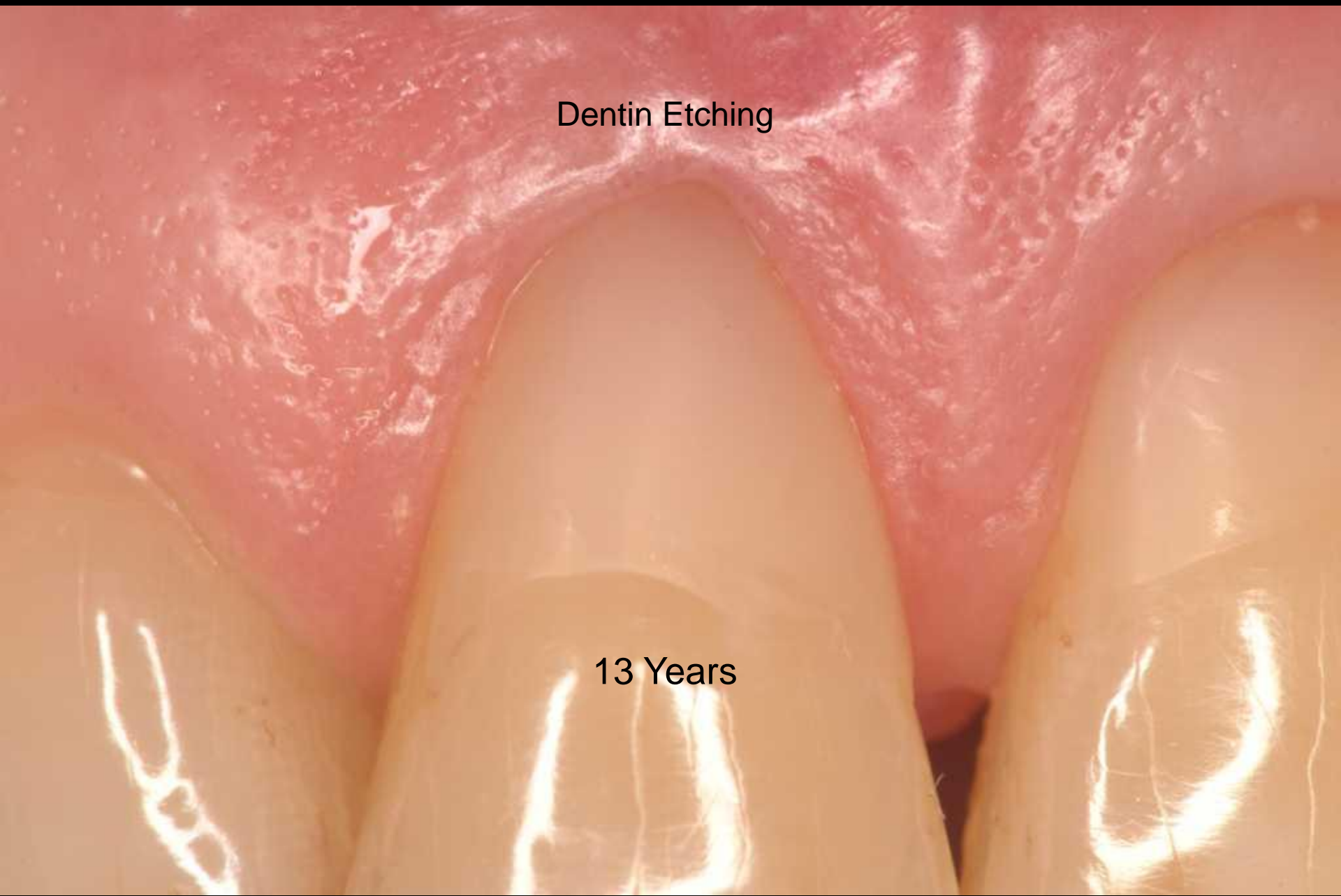
2 Years



5 Years

Dentin Etching

13 Years



13 Years, 3 months





13 Years, 4 Months

Dentin Etching

Dentin Etching



# 13 Year Clinical Evaluation Summary

Total Population

	Alpha	Bravo	Charlie	Delta
Restoration Retention	100% (36)	--	--	--
Post-Operative Sensitivity	100% (36)	--	--	--
Recurrent Caries	100% (36)	--	--	--
Cavosurface Staining	100% (36)	--	--	--
Tactile Marginal Adaptation	92% (33)	8% (3)	--	--
Visual Marginal Adaptation	89% (32)	11% (4)	--	--

# 13 Year Clinical Evaluation Summary

## Dentin and Enamel Etching

	Alpha	Bravo	Charlie	Delta
Restoration Retention	100% (20)	--	--	--
Post-Operative Sensitivity	100% (20)	--	--	--
Recurrent Caries	100% (20)	--	--	--
Cavosurface Staining	100% (20)	--	--	--
Tactile Marginal Adaptation	90% (18)	10% (2)	--	--
Visual Marginal Adaptation	90% (18)	10% (2)	--	--

# 13 Year Clinical Evaluation Summary

Enamel Etching Only

	Alpha	Bravo	Charlie	Delta
Restoration Retention	100% (16)	--	--	--
Post-Operative Sensitivity	100% (16)	--	--	--
Recurrent Caries	100% (16)	--	--	--
Cavosurface Staining	100% (16)	--	--	--
Tactile Marginal Adaptation	94% (16)	6% (1)	--	--
Visual Marginal Adaptation	88% (14)	12% (2)	--	--

# Summary of Clinical Evaluation

% Alpha / (N)

Evaluation Period	N	Restoration Retention	Post-Operative Sensitivity	Recurrent Caries	Cavosurface Staining	Tactile Marginal Adaptation	Visual Marginal Adaptation
Baseline	80	100	100	100	100	100	100
1 Year	73	100	100	100	100	100	100
2 Years	69	98	100	100	98	100	93
5 Years	58	98	100	100	98	100	93
13 Years	36	97	100	100	97	91	89

# Discussion

# Potential Factors Contributing to Optibond's Performance

- **Primer**

- GPDM
- pH 1.8 – 2.0
- Self-etching characteristic

- **Adhesive**

- Fillers enable a uniform coating of tooth structure
- Air inhibited zones are reduced
- Flowable nature of adhesive assists in the restorative procedures

# Conclusion:

At thirteen years, the Optibond adhesive system has demonstrated outstanding performance in both retention and sealing of the tooth. Optibond has further demonstrated effectiveness, in conjunction with composite, eliminating sensitivity resulting from abfraction lesions.

# Acknowledgement:

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