

# Single visit minimally invasive restorations of dental fluorosis; Case Report

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## INTRODUCTION

Dental fluorosis is a developmental enamel defect caused by excessive fluoride intake during amelogenesis, resulting in hypomineralized enamel characterized by diffuse or poorly demarcated opacities. In addition to optical changes, fluorotic enamel may also present with superficial surface irregularities, including mild concavities and uneven enamel texture, which can further compromise esthetics.

Minimally invasive treatment approaches, such as microabrasion and resin infiltration, have gained increasing attention in the management of fluorosis. While microabrasion enables the removal of superficial enamel irregularities and the hypermineralized outer layer, resin infiltration improves the optical properties of the lesion by penetrating subsurface porosities and altering the refractive index.

This case report aims to present the clinical outcome of a single-visit combined microabrasion and resin infiltration approach,



Initial



Initial



Lateral View



Cross-polarize View

## PURPOSE

To evaluate the clinical effectiveness of a single-visit minimally invasive approach combining microabrasion and resin infiltration for the esthetic management of dental fluorosis, particularly in the presence of superficial enamel irregularities such as mild concavities. Microabrasion was primarily performed to smooth and regularize the enamel surface, followed by resin infiltration to improve the optical properties of the lesions.

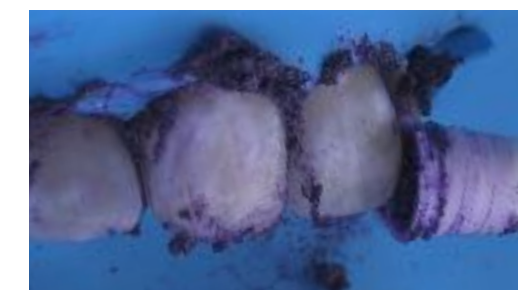
## CASE REPORT

A 12-year-old female patient presented with esthetic concerns related to generalized white discolorations affecting the dentition. Clinical examination revealed widespread, poorly demarcated white opacities consistent with dental fluorosis, with the most prominent lesions located on the maxillary central and lateral incisors (teeth 11, 12, 21, and 22). These anterior lesions were identified as the primary source of the patient's dissatisfaction.

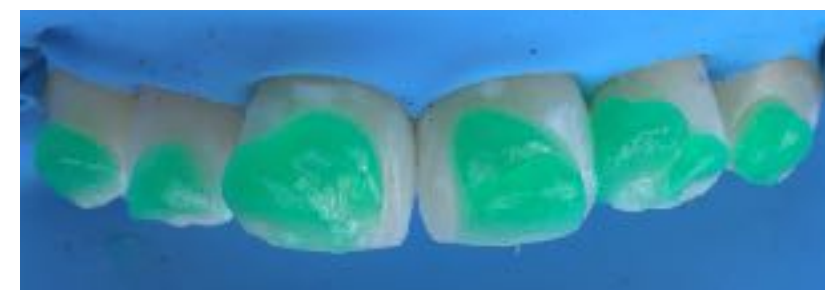
At the initial visit, standardized intraoral photographs were obtained using a digital camera (EOS R7, Canon Inc., Tokyo, Japan) equipped with a macro lens (Canon RF 100 mm), twin flashes (Canon 24EX), and a cross-polarization filter (Cross Polar, Spain) to enhance lesion visualization and eliminate surface reflections.

Following rubber dam isolation, enamel microabrasion was performed using a 6.6% hydrochloric acid slurry (Opalustre, Ultradent, USA) to selectively remove the superficial hypermineralized enamel layer. Immediately after microabrasion, resin infiltration (ICON, DMG, Germany) was carried out within the same session.

The enamel surfaces were etched with ICON Etch (15% HCl) for 2 minutes, followed by thorough rinsing and air-drying. ICON Dry (99% ethanol) was then applied to assess lesion masking potential and facilitate dehydration. Subsequently, the resin infiltrant was applied with gentle rubbing motions to allow penetration into the porous enamel structure and light-cured (SmartLite Pro, Dentsply Sirona, USA) according to the manufacturer's instructions. A second application was performed to enhance infiltration depth.



Microabrasion



ICON-Etch



After etching



ICON-Dry



ICON-Infiltrant

Final polishing was completed using polishing rubbers (Enhance Flex, Dentsply Sirona, USA). The patient was recalled after two weeks to allow for enamel rehydration and gingival healing. Clinical evaluation demonstrated a significant improvement in the optical integration of the lesions with surrounding enamel and high patient satisfaction.



Finishing



Polishing



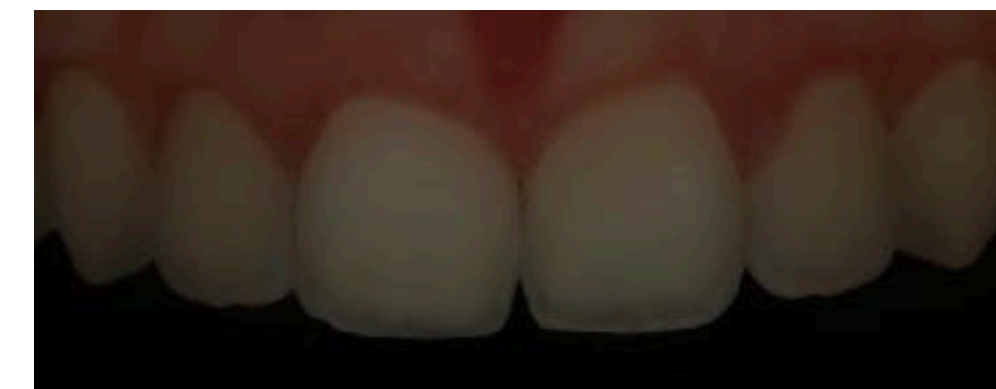
After polishing

## CONCLUSION

Microabrasion was primarily performed to eliminate superficial enamel irregularities and to create a smoother and more homogeneous enamel surface. Additionally, removal of the outer hypermineralized layer likely facilitated deeper penetration of the resin infiltrant into the porous subsurface lesion. This sequential approach enhances both the structural and optical integration of the lesion with surrounding sound enamel. The subsequent application of resin infiltration improved the refractive index mismatch between the lesion and healthy enamel, resulting in effective masking of white opacities. Performing both procedures in a single visit offers a significant clinical advantage by reducing treatment time and improving patient compliance, particularly in pediatric patients. Overall, the combination of microabrasion and resin infiltration provides a synergistic effect, addressing both surface irregularities and subsurface porosity, and represents a conservative and esthetically successful treatment strategy for dental fluorosis.



2-week-follow-up



Cross-polarized photography check



Final