Digital Plaque Monitoring: Brushing with Magnesium Containing Toothpaste

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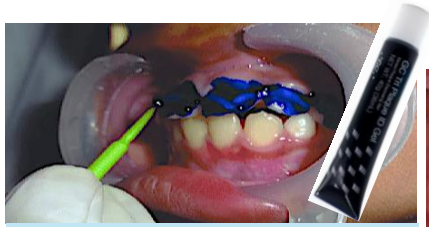
PURPOSE : Dental plaque assessment is essential for monitoring oral hygiene and evaluating preventive strategies in pediatric patients. This study aimed to assess the reliability of three-dimensional (3D) image analysis for the quantification of dental plaque by digitally analyzing color 3D images obtained from an intraoral scanner and intraoral camera, and to evaluate its agreement with clinical examination findings, in which plaque scores were determined using the Turesky Modified Quigley-Hein Plaque Index (TMQHPI), before and after brushing with a magnesium (Mg)-containing toothpaste..

MATERIALS & METHODS

A 9-year-old-boy with a high plaque score



Plaque was disclosed (Tri Plaque ID Gel, GC)

Turesky Modified Quigley-Hein-Plaque-Index (TMQHPI)

Mg containing toothpaste (R.O.C.S Active Mg)

Camera images (EOS 760D, Canon)

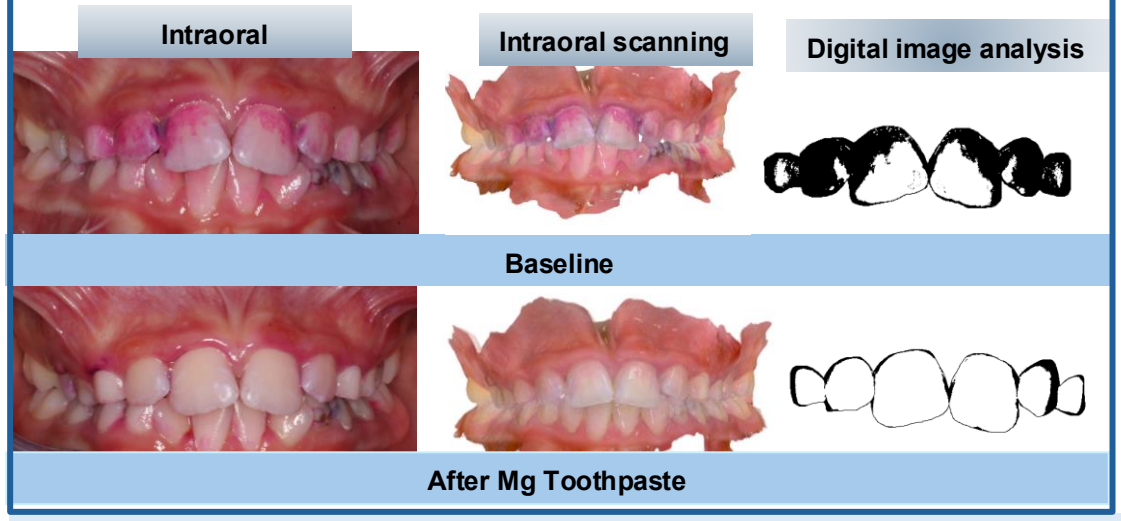
3D-intraoral-scanner (iTero Lumina, Align Tech.)

ImageJ

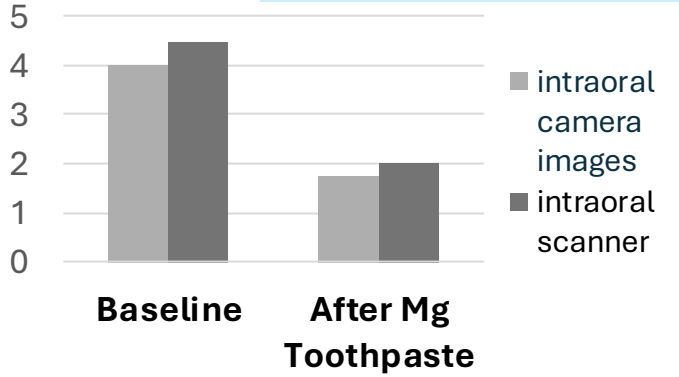
Image Processing & Analysis in Java

Calculating the Plaque Area-to-Tooth Surface Percentage (P%) and Digital Area (pixel).

RESULTS



Digital Plaque Area	Pixel	Fraction (%)
Baseline	591,76	52%
After Mg Toothpaste	224,37	19,7%



TMQHPI Scores

CONCLUSION The Mg-containing toothpaste formulation effectively reduced dental plaque. Moreover, its efficacy can be reliably combined clinical evaluation, digital-image-analysis, and 3D-scanning, supporting the use of digital plaque monitoring as a suitable tools in pediatric dental patients.