

Intraoral Camera – Is a Picture Worth a Thousand Words?

Jacob Dubrosky DMD, Bina Katechia DDS MSc, Rosa Pelaez-Shelton DDS MDS, Prachi Patel (dental student)
School of Dental Medicine, Pediatric Dentistry, UConn Health



INTRODUCTION

The pediatric dental population provides a unique challenge to dentists regarding behavior management and treatment. At times clinical and radiographic assessment can be limited due to patient anxiety, a lack of full cooperation or limited understanding as a result of special health care needs. To provide holistic dental care for these patients, it is important to assess the effectiveness of available clinical tools (such as intraoral photographs) in aiding patient diagnosis and treatment planning.

PURPOSE

The purpose of this study was to determine if the use of intraoral photographs of the dentition provide additional patient information compared to conventional intraoral examination alone. This study focused on assessing the visibility of plaque, tooth structure/caries and restoration margins of molar teeth (particularly permanent first and second molars). The observed findings aimed to provide an additional tool for treatment planning and assessment of the pediatric dental population. An increased relevance may exist for younger patients unable to tolerate traditional clinical or radiographic analysis, nervous or anxious patients, and patients with special health care needs.

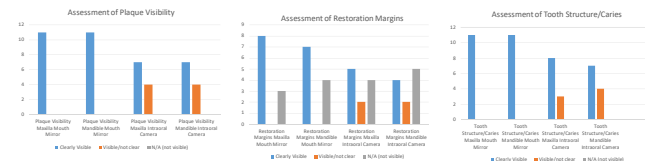
METHODS

- After obtaining informed consent from patient parents (as well as minor assent where appropriate), an intraoral examination was completed using a mouth mirror to assess the visibility of plaque, tooth structure/caries and restoration margins of permanent first and second molars
- Following examination, intraoral photographs of all posterior molars were obtained using a MouthWatch Intraoral camera
- Assessment of plaque, tooth structure/caries and restoration margins was made using a modified three point Likert Scale with the following categories: clearly visible, visible or not clear, not visible.
- Patient inclusion criteria included a Frankl score of 3-4 and a patient age of 5-16 years old
- All obtained photographs were taken at the University of Connecticut Dental Clinics during or immediately following regularly scheduled patient appointments

RESULTS

- 11 patients to date participated in the present research study
 - 7 males, 4 females
 - Patient age ranged from 5 years old to 14 years old
- Significant findings
 - Mouth Mirror
 - 100% clear visibility of maxillary and mandibular plaque
 - 100% clear visibility of maxillary and mandibular tooth structure/caries
 - 73% clear visibility (maxillary) and 64% clear visibility (mandibular) of restoration margins
 - Intraoral Camera
 - 64% clear visibility of maxillary and mandibular plaque
 - 73% clear visibility (maxillary) and 64% clear visibility (mandibular) of tooth structure/caries
 - 46% clear visibility (maxillary) and 36% clear visibility (mandibular) of restoration margins
- Both assessment using a mouth mirror and intraoral photographs showed least clear visibility of restoration margins compared to plaque and tooth structure/caries detection
- Assessment using a mouth mirror demonstrated significant improvement in clear visibility of all measured variables (plaque, restoration margins and tooth structure/caries)

GRAPHS AND TABLE



	Plaque Visibility Maxilla Mouth Mirror	Plaque Visibility Mandible Mouth Mirror	Plaque Visibility Maxilla Intraoral Camera	Plaque Visibility Mandible Intraoral Camera
Clearly Visible	11 (100%)	11 (100%)	7 (64%)	7 (64%)
Visible/not clear	0 (0%)	0 (0%)	4 (36%)	4 (36%)
N/A (not visible)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Table 1: Percentages of Plaque Visibility Evident Utilizing Mouth Mirror Versus Intraoral Camera

	Restoration Margins Maxilla Mouth Mirror	Restoration Margins Mandible Mouth Mirror	Restoration Margins Maxilla Intraoral Camera	Restoration Margins Mandible Intraoral Camera
Clearly Visible	8 (73%)	7 (64%)	5 (46%)	4 (36%)
Visible/not clear	0 (0%)	0 (0%)	2 (18%)	2 (18%)
N/A (not visible)	3 (27%)	4 (36%)	4 (36%)	5 (46%)

Table 2: Percentages of Restoration Margins Evident Utilizing Mouth Mirror Versus Intraoral Camera

	Tooth Structure/Caries Maxilla Mouth Mirror	Tooth Structure/Caries Mandible Mouth Mirror	Tooth Structure/Caries Maxilla Intraoral Camera	Tooth Structure/Caries Mandible Intraoral Camera
Clearly Visible	11 (100%)	11 (100%)	8 (73%)	7 (64%)
Visible/not clear	0 (0%)	0 (0%)	3 (27%)	4 (36%)
N/A (not visible)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Table 3: Percentages of Tooth Structure/Caries Visualized Utilizing Mouth Mirror Versus Intraoral Camera

INTRAORAL PHOTOGRAPHS



DISCUSSION/LIMITATIONS

- Examination utilizing a mouth mirror observed to have more significant visualization of plaque, restorations and tooth structure/caries versus use of intraoral photographs
- Difficulties acquiring patients for the study
- Significant parental refusal due to time constraints, lack of desire, and concerns regarding patient behavior for photographs
- Lack of remaining time in patient appointment
- Blurriness of some intraoral photographs due to patient movement or difficulties with saliva control
- Parents expressed increased understanding of proposed dental treatment following review of intraoral photographs
- Patients receiving treatment in the operating room could benefit from intraoral photographs (as tolerated) to aid in treatment planning discussions with parents

CONCLUSIONS

- Intraoral photographs demonstrated no significant advantage to conventional intraoral examination with regard to plaque, caries or restoration visibility
- Intraoral photographs served as an excellent visual tool for patient and parent education
 - Areas to focus on when brushing, location of carious surfaces, exfoliation process of primary teeth
- Acceptance of intraoral photographs for cooperative patients may be limited due to time restrictions or lack of parental/patient desire
- Further studies required to assess acceptance of intraoral photographs in patients with limited cooperation (Frankl 2) or those with special health care needs

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