AGD2026 e-Poster Program Overview

Table of Contents

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1. Introduction & Overview

The AGD Scientific Session e-Poster program provides an opportunity for students, residents, and recent graduates to present focused research in clinical, scientific, or literature-based dentistry.

e-Poster presentations are approximately 15 minutes in length and highlight innovative research, clinical case studies, or systemic literature reviews. These sessions are designed to foster collaboration, showcase emerging scholarship, and provide participants with valuable presentation experience.

Important Notes:

- e-Poster presentations may have been previously published (not required).
- No honorarium or travel/hotel expense reimbursement is provided.
- Selected presenters receive complimentary AGD2026 registration, including the President's Reception and social event.
- Presentations are judged by an expert panel, and financial rewards are awarded to a number of top presenters in each of the three categories.

2. e-Poster Categories

- **Scientific/Clinical Research** – Includes introduction, materials and methods, results with statistical analysis, discussion, and conclusion.
- **Clinical Innovation Case Studies** – Includes introduction, case reports (materials and methods, results), discussion, and conclusion.
- **Systemic Literature Review** – Includes introduction, methods (inclusion/exclusion criteria), results, discussion, and conclusion.

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3. Eligibility & Submission Guidelines

- Open to undergraduate, graduate, doctoral, post-doctoral students, residents, and recent graduates (within five years).
- **All** confirmed contributors must include accurate and complete credentials. Faculty members, mentors, or leaders will not be recognized as eligible contributors, but must be listed with reference to their roles
- Each e-Poster must be educational in nature and free of any commercial promotion.
- A maximum of two presenters per e-Poster.
- Submission does not guarantee acceptance.

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4. Poster Guidelines

e-Poster Technical Requirements:

- File format: PDF only
- Slide count: One main poster/slide only for printing and public display purposes (supplemental slides: up to 3-4 individual slides can be used during the live presentation portion to facilitate readability when projected onto a screen. The content on the individual slides must be taken directly from the main poster.)
- Layout: 16:9 widescreen, 1920x1080 px recommended
- File size limit: 10–25 MB
- Deadline: **March 27, 2026**

Poster Design & Content Rules:

- Font size minimums: Headings ≥ 28–32 pt, Body Text ≥ 18–20 pt
- Fonts: Arial, Calibri, Helvetica (no decorative fonts)
- Colors: High contrast, readable on screen

- Logos: Institutional logo + AGD Scientific Session logo (optional)
- Structure: Introduction, materials and methods, results, conclusion, discussion (and references/acknowledges, if space allows). *See e-Poster categories for specific guidelines*.
- Word limit: 500–800 words max
- High-resolution images/tables required
- Ethics: No patient identifiers; disclose funding/conflicts of interest
- Dimensions of Printed Posters: 48x36 inches in landscape

Submission Rules:

- File naming: "LastName_PosterTitle.pdf"
- Upload portal: Cadmium (AGD platform)
- No edits after final submission deadline

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5. Review & Selection Process

- The AGD Scientific Meeting Council (SMC) reviews all completed submissions.
- Criteria: clarity, creativity, and significance to general dentistry.
- Top 4 out of each of the 3 categories (12 in total) selected for in-person judging.
- Honorable Mentions: displayed on-screen during Scientific Session and online after the meeting.

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6. Awards & Recognition

- **Award Ceremony:** Thursday, June 25, 2026
- **Awards by Category:**
    - First Place: $700
    - Second Place: $550
- Sponsored by Dentist's Advantage
- Certificates awarded onsite at the Award Ceremony
- Recognition includes:
    - Onsite hard copy poster display (presenters)
    - Website features
    - Potential for AGD podcast recognition
    - Highlight in *This Week at AGD*

7. Presentation Session Logistics

- **Date:** Wednesday, June 24, 2026
- **Time:** 8:00–11:00 a.m. (Judging Session); 1:00–4:00 p.m. (Attendee Session)
- Presenters must arrive by **7:30 a.m**. The location of the Presenter Room, Judging Session, and Attendee Session will be provided at a later date.
- e-Posters pre-loaded in session order on meeting laptop by AGD
- SMC members will serve as judges utilizing tailored scorecards

8. Onsite Display & Honorable Mentions

- **Poster Drop-Off:** Wednesday, June 24 (all day) in Participation Headquarters
- **Onsite Display:** June 25–27, 2026
- Honorable Mentions displayed digitally on monitor at display + on AGD website

9. Timeline & Key Dates

- Dec 10, 2025: Abstracts Open
- Mar 27, 2026: Abstracts Close
- Apr 3–20, 2026: SMC Grading Period
- Early May: Notifications Sent
- May 11, 2026: e-Posters & Supplemental Slides Due
- Jun 24, 2026: Judging & Presentations
- Jun 25, 2026: Poster Award Ceremony
- Jun 25–27, 2026: Poster Displays

10. Resources & Contact Information

- AGD2025 e-Poster Highlights: Link
- Previous Scientific Session e-Poster Winner Examples: Attached
- Contact: Terra Cooney, Program Administrator, Scientific Session, at terra.cooney@agd.org.

Monolithic restorations colored with MiYo ceramic.

Amr Abouzeid [1], Van Ramos[2]

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Introduction:

One of the main goals for clinicians is to deliver natural-looking restorations which have optimal mechanical properties. Bilayered restorations offer great esthetic results, however, mechanical complications are reported such as chipping. The MiYO color enhancement system can improve the esthetic outcome of monolithic restorative material without negatively influencing the physical properties.

Purpose:

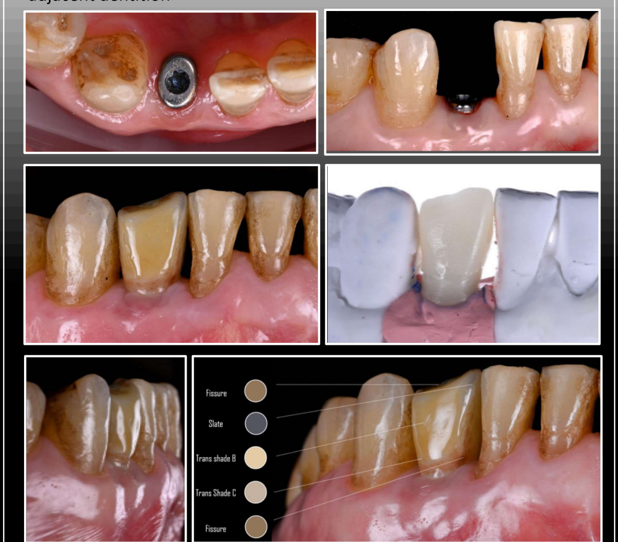
Objective is to show the application of monolithic restorations colored with liquid ceramic in different clinical scenarios.

Case1:

42-year-old patient presented with defective restorations FPD#9-11, single crown #8, and implant provisional #7. MiYO was used for the esthetic enhancement of the 3Y monolithic restorations

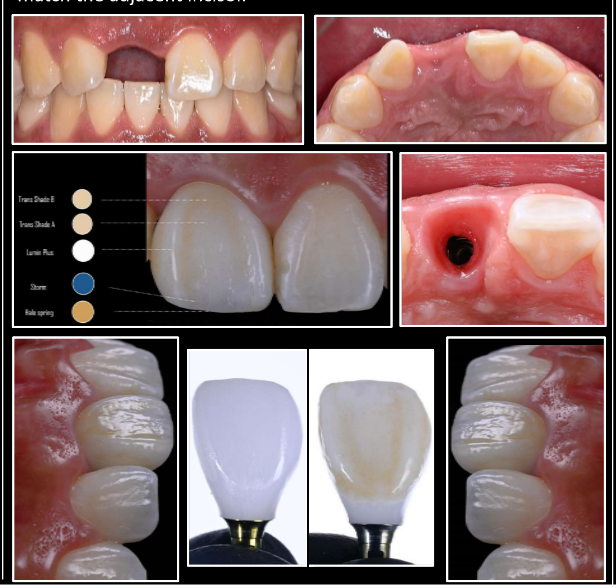
Case 2:

74-year-old patient with an unrestored implant on #26. Definitive restorations include custom Ti-abutment and 3Y zirconia monolithic crown for screwmentable restoration. MiYO esthetic system was used to match adjacent dentition



Case 3:

21-year-old patient presented with unrestored implant #8. The restorations include a Ti- base and a 3Y zirconia crown. The coloring and surface texture were enhanced by using the MiYO system to match the adjacent incisor.



Case 4:

59-year-old patient was diagnosed with terminal dentition and the restorative treatment was implant supported fixed complete denture using 4Y Monolithic zirconia cemented on a titanium bar. MiYO esthetic system was used to create natural-looking teeth and gingival color.

CONCLUSION:

The esthetic outcome of monolithic restorations can be improved with a liquid ceramic system such as MiYO. Advantages include “what you see is what you get” experience, and the technique is easily mastered by clinicians and lab technicians.

References:

Please Scan the QR code for the list of references.

Artificial Intelligence in Interproximal Caries Detection: A review

A. Nazari; A. Poznyak; Farahnaz Fahimipour, DMD, MS, PhD; Omar Mohamed, BDS, MS, FRCDC

School of Dentistry, University of Alabama at Birmingham, AL

Objective

To examines the potential of artificial intelligence (AI) to improve diagnostic accuracy, reduce variability, and address public health disparities.

Introduction

Dental caries remains a significant global health concern, contributing to substantial economic costs and affecting diverse populations, particularly children and adults. Despite advancements in preventive care and restorative techniques, detecting interproximal caries remains challenging due to their hidden nature and limited visual-tactile accessibility. Bitewing radiographs serve as the gold standard for interproximal caries detection due to their cost-effectiveness and accessibility; however, they are often limited in sensitivity and specificity, particularly for early-stage lesions. Diagnostic outcomes rely heavily on clinical expertise, with experienced practitioners achieving greater accuracy and fewer false positives compared to novices. Techniques such as near-infrared transillumination and laser fluorescence have been explored for early detection, yet their application remains limited.

Artificial intelligence presents a promising adjunct to enhance diagnostic consistency, reduce human variability, and alleviate clinical workload. By leveraging deep learning models such as convolutional neural networks, U-Net, YOLO, and ResNet, AI can improve diagnostic accuracy, facilitate early caries detection, and enable timely interventions. These advancements have the potential to transform traditional diagnostic approaches, ultimately reducing treatment costs associated with advanced caries.

Materials and Methods

An electronic search of English-language literature was conducted following PRISMA guidelines, including studies published between 2020 and January 2025. The PIRD framework guided the clinical question: "Can AI reliably detect interproximal caries on bitewing radiographs?" Eligible studies included experimental research evaluating AI-based diagnostic tools against expert analysis, using metrics such as sensitivity, specificity, precision, and F1-scores. A comprehensive PubMed (MEDLINE) search utilized MeSH terms and free-text keywords. Data extraction focused on study characteristics, AI methodologies, and diagnostic performance. Twenty-five studies met the criteria, analyzing models such as YOLOv5, U-Net, and ResNet-50.

Results

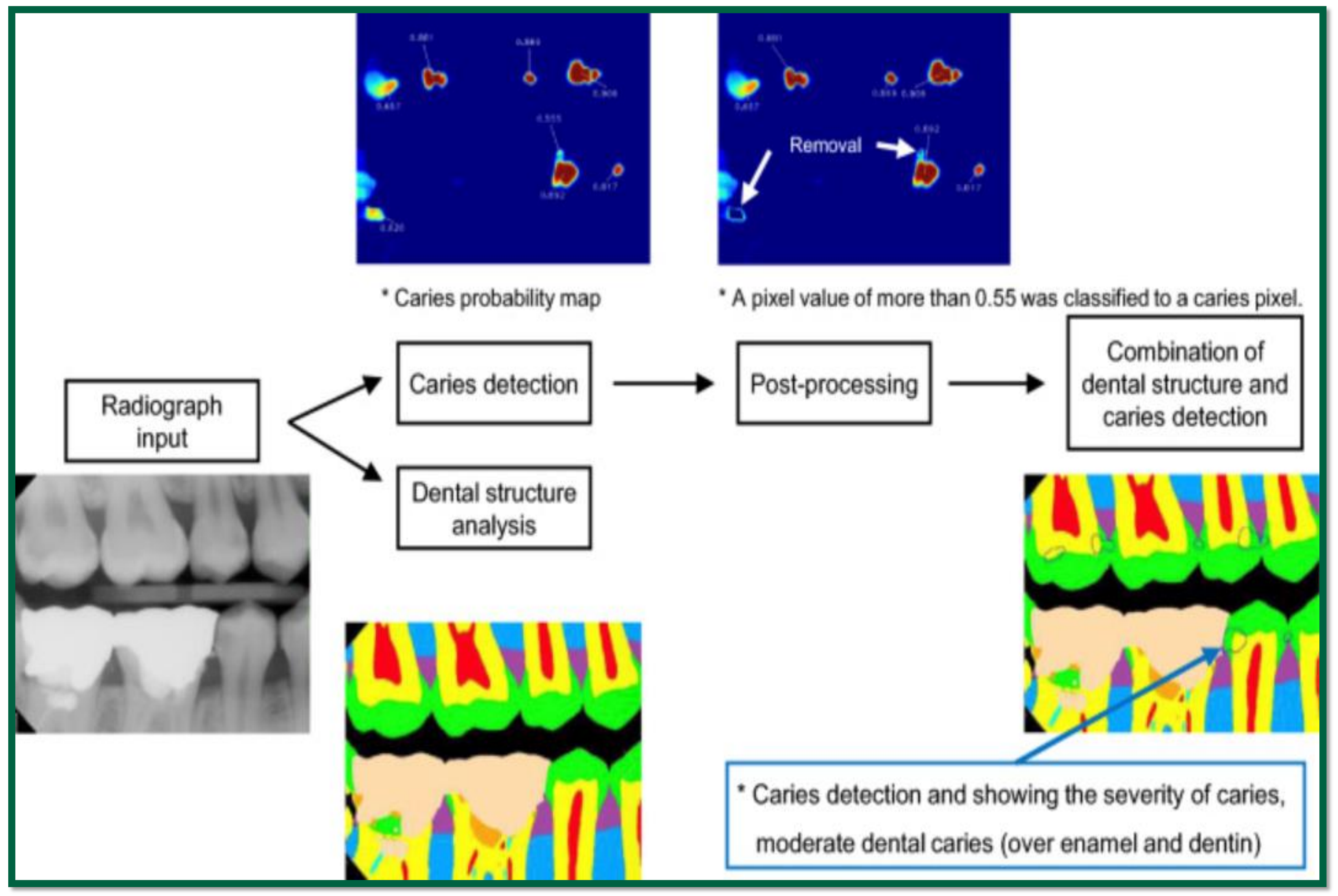


Figure 1. *This figure illustrates the U-Net model's process for detecting early dental caries in bitewing radiographs. The model segments dental structures and caries, generating a probability map where pixels with a value above 0.55 are classified as caries. Post-processing removes false positives, refining detection. The final output integrates caries severity with dental anatomy, improving diagnostic accuracy and early intervention*

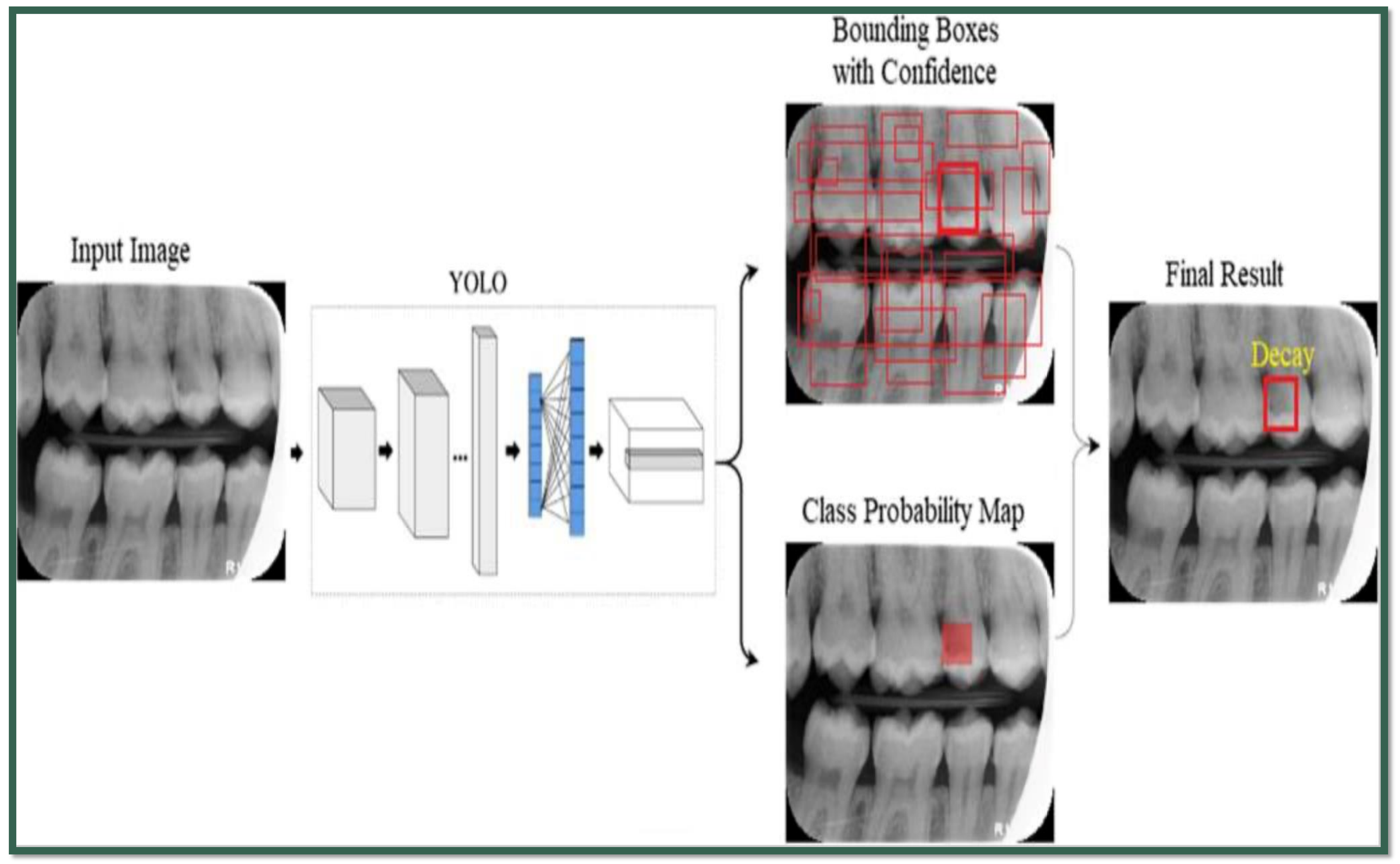


Figure 2. *This figure demonstrates the YOLO-based Caries Analysis and Assessment (CAA) system for detecting dental caries in bitewing radiographs. The model processes an input radiograph through convolutional layers, generating a class probability map and bounding boxes with confidence scores. These bounding boxes highlight potential carious lesions, with the final result identifying the precise decay location. This method ensures real-time, accurate caries detection by localizing lesions efficiently within the radiographic image.*

Author *(year)*	Study type	Type of AI used	Key findings
Dhanak et al. *(2024)*	Experimental	EfficientDet-Lite1	**Sensitivity:** 75% **Precision:** 84.6% **F1 Score:** 79.5%
Panyarak et al. *(2022)*	Experimental	ResNet-18, ResNet-50, ResNet-101, ResNet-152	**Sensitivity:** 79.51% **Specificity:** 60.71% **Accuracy:** 71.11%
Bayrakdar et al. *(2022)*	Experimental	VGG-16	**Sensitivity:** 84% **Precision:** 84% **F1 Score:** 84%
Bayraktar et al. *(2022)*	Experimental	YOLO CNN	**Accuracy:** 94.59% **Sensitivity:** 72.26% **Specificity:** 98.19%
Perez de Frutos et al. *(2024)*	Experimental	YOLOv5	**Precision:** 64.7% **F1 Score:** 54.8%
Estai et al. *(2022)*	Experimental	Faster R-CNN, Inception-ResNet-v2	**Precision:** 86% **Specificity:** 86% **Accuracy:** 87% **F1 Score:** 87%
Karakuş et al. *(2024)*	Experimental	YOLOv8	**Precision:** 97.7% **Sensitivity:** 93.2% **F1 Score:** 95.4%
Cantu et al. *(2020)*	Experimental	U-Net	**Accuracy:** 80% **Sensitivity:** 75% **Specificity:** 83%
Chaves et al. *(2024)*	Experimental	Mask R-CNN	**F-1 Score:** 68.9%-71.9%
Mao et al. *(2021)*	Experimental	AlexNet	**Accuracy:** 90.30%
Lee et al. *(2021)*	Experimental	U-Net	**Precision:** 63.29% **Recall:** 65.02% **F1-score:** 64.14%

Table 1. *A review summarizing recent studies evaluating artificial intelligence (AI) applications in interproximal caries detection on bitewing radiographs.*

AI Model	Advantages	Disadvantages
YOLO (Object Detection CNN)	High accuracy and specificity for interproximal caries detection; fast real-time processing.	May struggle with smaller or early-stage lesions; requires large datasets for training.
U-Net (Semantic Segmentation CNN)	Effective segmentation of advanced lesions; precise localization of carious areas.	May not generalize well across different imaging modalities; performance dependent on dataset quality.
Mask R-CNN (Instance Segmentation CNN)	Combines object detection with segmentation; accurately outlines multiple lesions.	Computationally expensive; slower than simpler segmentation models like U-Net.
Faster R-CNN (Object Detection CNN)	Balanced diagnostic performance; strong accuracy and specificity for proximal caries.	Requires extensive labeled data; computationally expensive.
ResNet (Classification CNN)	Robust feature extraction; stable performance across different imaging datasets.	High computational requirements; less efficient for segmentation tasks.
Inception-ResNet (Hybrid Classification CNN)	Handles diverse clinical datasets well; strong feature extraction for complex tasks.	Complex architecture may increase processing time; interpretability challenges.
EfficientDet-Lite (Lightweight Object Detection CNN)	Optimized for real-time, resource-limited applications; portable and efficient.	Lower accuracy compared to more advanced models; may need refinement for clinical use.
VGG-16 (Classification CNN)	Good baseline model for classification; well-studied and reliable.	Less efficient compared to modern architectures; higher computational cost.
AlexNet (Classification CNN)	High diagnostic accuracy; strong performance in caries and restoration detection.	High computational requirements; less specialized for segmentation tasks.

Table 2. *Comparison of advantages and disadvantages of different AI Models for Caries Detection.*

Discussion

This review examined 25 studies that used different AI models to detect dental caries, showing significant improvements in diagnostic accuracy. The YOLO models performed well, with one achieving 94.59% accuracy and 98.19% specificity in detecting interproximal caries from 1,000 bitewing radiographs. Faster R-CNN and Inception-ResNet-v2 provided balanced diagnostic performance, with 87% accuracy, 86% precision, and 86% specificity on 2,468 bitewings. The U-Net model, applied to 3,686 bitewings, effectively segmented complex lesions with 80% accuracy and 83% specificity, while Mask R-CNN showed an F1-score of 68.9% to 71.9%, reinforcing its segmentation capabilities. Among classification models, AlexNet attained 90.30% accuracy, demonstrating strong diagnostic potential, while ResNet-based models exhibited 71.11% accuracy across different architectures. Overall, object detection models excelled in high-accuracy detection and segmentation models providing precise lesion localization.

These findings highlight AI's potential to improve diagnostic precision, streamline workflows, and increase access to consistent dental care, particularly in underserved areas. By integrating AI into dental diagnostics, we could reduce variations between clinicians and enhance early detection. This could have a significant impact on public health by standardizing diagnostic quality and expanding access to care, ultimately benefiting patients in regions with limited resources.

Conclusion

AI has the potential to revolutionize dental diagnostics by improving early detection and reducing inter-clinician variability. Its integration into public health systems can help address healthcare disparities by standardizing diagnostic accuracy and increasing access to care in underserved areas. Portable diagnostic tools, such as EfficientDet-Lite1, offer opportunities for enhancing preventive strategies and reducing treatment costs. However, challenges remain, including the need for diverse datasets, addressing ethical concerns related to transparency, and ensuring AI serves as a complement to, rather than a replacement for, clinical expertise. Future research should focus on the real-world implementation of AI, expanding datasets, and evaluating long-term outcomes to fully realize its potential in advancing oral healthcare delivery.

References

Fracture Resistance of Zirconia Surveyed Crowns

IOWA
College of Dentistry and Dental Clinics

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INTRODUCTION

The ideal design of the rest seat for surveyed crowns plays an important role in the treatment with removable prosthesis because it directs the forces along the long axis of the abutment tooth, maintains the planned clasp-tooth relationship, prevents extrusion of the abutment teeth and prevents the denture base from moving cervically and impinging the gingival tissue.[1]

Clinicians have a variety of types for rest seat designs to choose from for survey crowns depending on the design of the removable partial denture. The most common types are mesial/distal occlusal, extended, interproximal and continuous.[2-6]

Unfortunately, very limited research has evaluated the fracture resistance of surveyed crowns with different rest seat designs. Therefore, the aim of this study was to evaluate the fracture resistance of surveyed crowns without a rest seat or with a disto-occlusal rest seat, an extended disto-occlusal rest seat, an interproximal rest seat or a continuous rest seat.

- The first hypothesis was that crowns with no rest seat will present similar fracture load to all surveyed crowns with different rest seats.
- The second null hypothesis was that there will be no difference for fracture resistance among the surveyed crowns with different rest seat designs.

METHODS

Five mandibular first molar typodont teeth (1560 Dentoform, Columbia Dentoform, Lancaster, PA, USA) were prepared for full coverage restorations to accommodate a:

(1) surveyed crown with no occlusal rest
(2) surveyed crown with disto-occlusal rest seat
(3) surveyed crown with disto-occlusal extended rest seat
(4) surveyed crown with interproximal rest seat
(5) surveyed crown with continuous rest seat (Figure 1).

Tooth preparations were scanned with a chairside intraoral scanner (Primescan), and restorations and dies were digitally designed in a digital laboratory software (InLab CAD Software). The surveyed crowns were prepared with specific dimensions of 1 mm circumferential rounded shoulder finish line with 10 degrees of taper, 1.5 mm occlusal reduction and the rest seat dimensions as described on Table 1.

A total of seventy surveyed crowns were milled from zirconia blocks (IPS .max ZirCAD) using a chairside milling unit (MCXL); 14 crowns were manufactured for each type of surveyed crowns. Subsequently, the restorations were sintered and polished following manufacturer's recommendations.

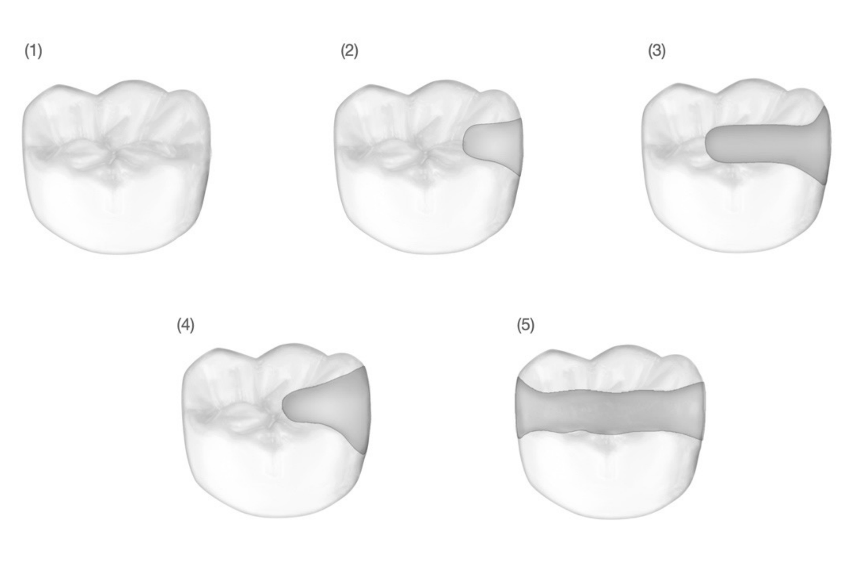

Figure 1. Types of mandibular first molar surveyed crowns. (1) Surveyed crown with no occlusal rest; (2) surveyed crown with disto-occlusal rest seat; (3) surveyed crown with extended disto-occlusal rest seat; (4) surveyed crown with interproximal rest seat; and (5) surveyed crown with continuous rest seat.

Rest seat design	Specifications
Surveyed molar crowns with disto-occlusal rest seat	Rest seat designed within ½ distance from distal marginal ridge to the center of the tooth, 1/3 distance between buccal and lingual cusp tips and apical depth 1 mm.
Surveyed molar crowns with disto-occlusal extended rest sat	Rest seat designed extending to the center of the tooth, 1/3 distance between buccal and lingual cusp tips and apical depth 1 mm
Surveyed molar crowns with interproximal rest seat	Rest seat designed within ½ distance from distal marginal ridge to the center of the tooth, 1/3 distance between buccal and lingual cusp tip extending to the buccal and lingual line angles and apical depth 1 mm
Surveyed molar crowns with continuous rest seat	Rest seat designed to include both marginal ridges making both identical and 1/3 distance between buccal and lingual cusp tips

Table 1. Rest seat design specifications.

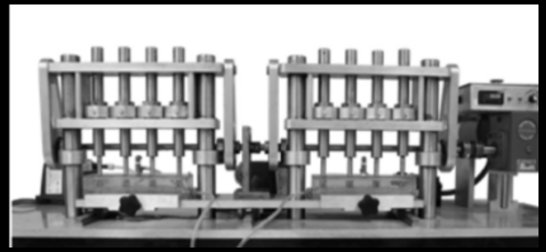

Figure 2. Cyclic loading.

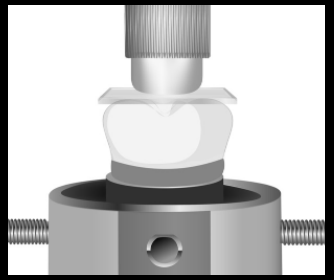

Figure 3. Fracture Testing.

Type of Restoration	Number of survived crowns	Load for fracture in Newtons
Surveyed molar crowns with no rest seat	14	4238.93 (383)[a]
Surveyed molar crowns with disto-occlusal rest seat	14	3257.42 (581)[b]
Surveyed molar crowns with disto-occlusal extended rest sat	14	3283.44 (722)[b]
Surveyed molar crowns with interproximal rest seat	14	2723.94 (265)[c]
Surveyed molar crowns with continuous rest seat	14	3601.10 (757)[b]

Values in parenthesis are standard deviations. The same lowercase letter indicates no significant difference.

Table 2. Fracture resistance for chairside CAD/CAM zirconia surveyed crowns with different rest seats.

The dies, were printed following the shape of the typodont teeth in a stereolithographic 3D printer (Form3) using light polymerized resin (Grey Resin, FormLabs).

Cyclic loading was performed with the specimens immersed in room temperature water. The specimens were subjected to a total 200,000 load cycles at 1 Hz with a force of 20 N in a custom fatiguing device. Samples were secured with a steel jig in vertical position and loaded against a stainless-steel ball (diameter of 8 mm) which was centered over the occlusal pit (contacting 4 cusps of the mandibular first molar) (Figure 2). The crowns were then loaded in a fixture in a using a universal testing machine (Instron) with the same 8mm stainless-steel ball centered over the occlusal pit. A 1mm rubber sheet was placed between the ball and the crowns to distribute the occlusal loading (Figure 3). Fracture force was recorded.

RESULTS

The fracture resistance of surveyed crowns without and with different rest seat designs are presented in Table 1. Surveyed crowns without any rest seat presented the highest fracture resistance (4238.93 N) among all restorations followed by surveyed crowns with disto-occlusal extended rest seat (3601.10 N), surveyed crown with continuous rest seat (3283.44 N), and surveyed crown with disto-occlusal rest seat (3257.42 N). Surveyed crowns with interproximal rest seat displayed the lowest fracture resistance with 2723.94 N.

CONCLUSIONS

Chairside CAD/CAM zirconia surveyed crowns displayed lower fracture resistance whenever a rest seat is present. Based on this study, the type of rest seat may influence the fracture resistance of the chairside CAD/CAM zirconia surveyed crowns. Surveyed crowns with interproximal rest seat presented the lowest fracture resistance of all the rest seat designs evaluated.

REFERENCES

1. Stern MA, Brudvik JS, Frank RP. Clinical evaluation of removable partial denture rest seat adaptation. J Prosthet Dent. 1985 May;53(5):658-62. doi: 10.1016/0022-3913(85)90015-0. PMID: 3889306.
2. Loney W. Robert. Removable Partial Denture Manual. Dalhousie University Faculty of Dentistry. Dalhousie, Canada. 2011
3. Davenport JC, Basker RM, Heath JR, Ralph JP, Glantz PO, Hammond P. Tooth preparation. Br Dent J. 2001 Mar 24;190(6):288-94. doi: 10.1038/sj.bdj.4800954a. PMID: 11325154.
4. Wiebelt FJ, Shillingburg HT Jr. Abutment preparation modifications for removable partial denture rest seats. Quintessence Dent Technol. 1985 Jul-Aug;9(7):449-51. PMID: 3898234.
5. Carr, A.B., Brown, D.T. (2011) McCracken's Removable Partial Prosthodontics.l2th ed. St. Louis, Missouri: Mosby, Inc., Elsevier Inc.
6. Phoenix, R.D., Cagna, D.R., Defreest, C.F. (2008) Stewart's Clinical Removable Partial Prosthodontics. 4th ed. Quintessence Publishing Co, Inc.