SUNTEXT REVIEWS

SunText Review of Medical & Clinical Research
ISSN: 2766-4813

Open Access
Research Article
Volume 7:5

Artificial Intelligence and Robotic Surgery in Trans crestal Sinus Floor Elevation with Simultaneous Implant Placement: A Near-Future Paradigm

Sevil FE[1,*] and Panahi O[2]

[1]*Hacettepe University, Department of Dentistry, Ankara, Turkey*
[2]*University of The People, Department of Healthcare Management, California, USA*

[*]**Corresponding author:** Sevil FE, Hachette University, Department of Dentistry, Ankara, Turkey

Received date: 10 July 2026; **Accepted date:** 29 July 2026; **Published date:** 07 August 2026

Citation: Sevil FE, Panahi O (2026) Artificial Intelligence and Robotic Surgery in Trans crestal Sinus Floor Elevation with Simultaneous Implant Placement: A Near-Future Paradigm. SunText Rev Med Clin Res 7(5): 268.

DOI: https://doi.org/10.51737/2766-4813.2026.168

Abstract

The integration of artificial intelligence (AI) into oral and maxillofacial surgery, dental implantology, and periodontology represents a paradigm shift in contemporary dental practice. This comprehensive review synthesizes current evidence on AI applications across these three interconnected specialties, drawing from systematic reviews, scoping reviews, and original research published between 2018 and 2026. In orthognathic surgery, AI demonstrates diagnostic sensitivity of 75-95.5% for surgical candidate identification and achieves sub-millimeter accuracy in soft tissue prediction. In implant dentistry, robotic-assisted systems and AI-enhanced navigation achieve mean coronal deviations of 0.45 mm and angular deviations of 0.80°, with autonomous systems demonstrating superior precision. In periodontology, deep learning models detect radiographic bone loss and classify periodontitis with accuracies reaching 98.6%, comparable to or exceeding experienced clinicians. Despite these advances, significant challenges persist, including methodological heterogeneity, lack of external validation, algorithmic bias, and ethical concerns regarding data privacy and clinical accountability. This review critically appraises the current evidence base, identifies knowledge gaps, and proposes future research priorities to facilitate safe and effective clinical translation of AI technologies in oral healthcare.

Keywords: Artificial intelligence; Machine learning; Orthognathic surgery; Dental implants; Periodontics; Robotics; Deep learning

Introduction

The convergence of artificial intelligence (AI) with clinical dentistry marks one of the most transformative developments in the history of oral healthcare. Across medical disciplines, AI technologies particularly machine learning (ML) and deep learning (DL) have demonstrated capabilities that rival or surpass human performance in image analysis, predictive modeling, and clinical decision support. Dentistry, with its heavy reliance on radiographic interpretation, treatment planning, and precise surgical execution, is uniquely positioned to benefit from these technological advances [1-24]. The scope of AI applications in dentistry has expanded dramatically over the past decade. From automated cephalometric analysis to robotic-assisted implant placement and AI-driven periodontal risk assessment, these technologies promise to enhance diagnostic accuracy, reduce procedural variability, optimize treatment outcomes, and potentially democratize access to specialized dental care. However, the rapid proliferation of AI research has outpaced the establishment of standardized validation protocols, clinical guidelines, and ethical frameworks necessary for responsible implementation [25-45]. This review focuses on three interconnected domains where AI has demonstrated particular promise: orthognathic and maxillofacial surgery, dental implantology, and periodontology. These specialties share common characteristics that make them amenable to AI augmentation: (1) heavy dependence on three-dimensional imaging and spatial reasoning, (2) complex treatment planning requiring integration of multiple data modalities, (3) significant inter-operator variability, and (4) measurable outcomes that can serve as training targets for supervised learning algorithms [46-56].

Objectives

The primary objectives of this review are to

- Synthesize current evidence on AI applications in maxillofacial surgery, implant dentistry, and periodontology
- Critically appraise the methodological quality and clinical validity of existing studies
- Identify knowledge gaps and barriers to clinical translation
- Propose standardized reporting frameworks and future research priorities
- Provide evidence-based recommendations for clinicians considering AI adoption

Fundamentals of Artificial Intelligence in Dentistry

Core AI Architectures

Contemporary AI applications in dentistry primarily utilize three architectural paradigms:
Convolutional Neural Networks (CNNs) represent the dominant architecture for image analysis tasks. CNNs learn hierarchical feature representations through successive convolutional and pooling layers, enabling automated detection of pathological features in radiographs, photographs, and three-dimensional scans. Architectures such as ResNet, U-Net, and VGG have been extensively applied to dental imaging tasks [57-77]. Artificial Neural Networks (ANNs) and Deep Neural Networks (DNNs) extend the CNN paradigm to incorporate additional data modalities, including clinical parameters, demographic information, and genetic markers. These architectures excel at nonlinear pattern recognition and outcome prediction tasks [78-90]. Generative Adversarial Networks (GANs) and related generative models have emerged as powerful tools for image synthesis, data augmentation, and surgical simulation, enabling realistic prediction of post-treatment outcomes.

Training Paradigms and Data Requirements

The performance of AI models is fundamentally constrained by the quality, quantity, and representativeness of training data. Supervised learning wherein models learn to map inputs to labeled outputs remains the predominant paradigm in dental AI research. This approach requires large, expertly annotated datasets, which present significant acquisition and annotation challenges. Transfer learning, wherein models pretrained on large generic datasets (e.g., ImageNet) are fine-tuned for specific dental tasks, has partially mitigated data requirements. However, domain shifts between natural images and dental radiographs limit the generalizability of this approach [91-103].

Artificial Intelligence in Maxillofacial and Orthognathic Surgery

Orthognathic surgery presents unique challenges that make it an ideal application domain for AI: complex three-dimensional anatomy, aesthetic and functional outcome considerations, significant surgical variability, and substantial prognostic uncertainty. Recent systematic reviews have comprehensively mapped AI applications across the surgical continuum [104-121].

Diagnostic Applications

Accurate identification of surgical candidates represents the initial decision point in orthognathic care. Traditional diagnostic approaches rely on cephalometric analysis with established normative values, but exhibit significant inter-rater variability and fail to capture three-dimensional facial aesthetics. Multiple studies have evaluated AI-based diagnostic classification. Shin and colleagues developed a CNN model using lateral and posteroanterior cephalograms that achieved 95.4% accuracy (sensitivity: 84.4%, specificity: 99.3%) in distinguishing surgical from non-surgical orthodontic cases. Choi et al. reported a two-layer ANN achieving 96% accuracy for surgery versus non-surgery classification and 91% overall success across multiple treatment decisions. A scoping review by Motamedian and colleagues synthesized evidence from 29 studies, reporting diagnostic sensitivities ranging from 75% to 95.5% for surgical need determination. Notably, AI models demonstrated particular strength in identifying borderline cases that may benefit from surgical intervention precisely the scenarios where human judgment exhibits greatest variability [122-132].

Surgical Planning and Simulation

AI applications in surgical planning span automated landmark detection, osteotomy design, and soft tissue prediction the latter representing perhaps the most clinically consequential application.
Automated Landmark Detection: Traditional cephalometric tracing requires manual identification of 20-30 anatomical landmarks, a time-consuming process with well-documented inter-operator variability. AI-based systems have demonstrated comparable or superior accuracy with dramatically reduced processing time. Reported mean errors for AI landmark detection range from 3.99 to 4.73 mm, representing clinically acceptable precision for most applications.
Soft Tissue Prediction: Accurate prediction of postoperative soft tissue changes remains a longstanding challenge in orthognathic planning. Traditional biomechanical models (e.g., mass tensor modeling) exhibit limited accuracy, particularly in the lower face and perioral regions. Deep learning approaches have demonstrated superior performance. Ter Horst and colleagues

compared a DL autoencoder neural network to conventional mass tensor modeling for predicting soft tissue changes following bilateral sagittal split osteotomy. The DL model achieved mean absolute errors of 1.0 mm (lower face) and 1.4 mm (chin) compared to 1.5 mm and 2.0 mm for conventional modeling, with 64.3% of DL predictions falling within 1 mm of ground truth versus 21.4% for conventional methods [133-145].

Broader evidence from Motamedian's scoping review indicates soft tissue prediction success rates ranging from 64.3% to 100% across AI models, with variability attributable to differences in surgical complexity, prediction targets, and validation methodologies.

Outcome Evaluation and Complication Assessment

AI extends beyond preoperative planning to quantitative outcome assessment. Studies have applied AI to evaluate postsurgical asymmetry, facial attractiveness changes, and aesthetic improvements, providing objective metrics that complement subjective clinical assessment. Complication prediction represents an emerging application with significant clinical implications. Published models have achieved 98.7% accuracy for predicting postsurgical systemic infection and demonstrated mean errors of 7.4 mL for blood loss estimation. While requiring external validation across diverse populations, these findings suggest AI may enable personalized risk stratification and informed consent.

Critical Appraisal and Evidence Gaps

A systematic review of AI in oral and maxillofacial cosmetic surgery (14 studies, n=11,031 initial records) applied the PROBAST-AI risk-of-bias tool and identified significant methodological limitations. Most studies were retrospective, single-center, and utilized small or homogeneous datasets. External validation the critical test of generalizability was largely absent. The authors concluded that although AI demonstrates strong potential, current evidence is constrained by methodological weaknesses and limited validation [146-159].

Specific deficiencies include: (1) lack of prospective multicenter studies, (2) absence of standardized outcome metrics, (3) insufficient attention to model interpretability and clinical explainability, and (4) failure to report adherence to AI-specific reporting standards (e.g., TRIPOD-AI, CONSORT-AI).

Artificial Intelligence in Implant Dentistry

Dental implantology has emerged as a leading application domain for AI, driven by the critical importance of precise three-dimensional positioning and the availability of high-resolution imaging data. AI applications span preoperative planning, intraoperative navigation, robotic-assisted placement, and long-term outcome prediction [160-173].

Preoperative Planning and Diagnostic Support

Traditional implant planning requires manual segmentation of osseous anatomy, identification of critical neurovascular structures, and determination of optimal implant position a process requiring significant expertise and time. AI-based automation offers substantial efficiency and accuracy gains.

Automated Segmentation: Convolutional neural networks demonstrate high accuracy in segmenting alveolar bone from cone-beam computed tomography (CBCT) data. One study reported 96.4% accuracy for AI-based bone segmentation, compared to 85% concordance for human experts, with planning time reduced from 45 minutes to approximately 8 minutes. AI systems also detect subtle bone defects, including buccal plate deficiencies, with 94% specificity.

Implant Position Optimization: AI algorithms integrate bone density mapping, anatomical constraint identification, and prosthetic requirements to propose optimal implant trajectories. Reported alignment with optimal trajectories reaches 95%. A systematic review by Vázquez-Sebrango and colleagues (120 studies) found that 89.2% of AI applications in implant dentistry utilized deep learning algorithms, predominantly processing image data (72.0% two-dimensional, 28.0% three-dimensional) [174-185].

Intraoperative Navigation and Robotics

Perhaps the most clinically visible AI application in implant dentistry is robotic-assisted and AI-enhanced navigation systems. These technologies address limitations of static surgical guides (rigidity, inability to adjust for intraoperative changes) and traditional dynamic navigation (manual calibration, susceptibility to movement).

Robotic-Assisted Systems: A comprehensive scoping review of AI-enhanced robotics for dental implant placement identified 27 eligible studies. Pooled analysis demonstrated:

- Mean coronal deviation: 0.45 mm (95% CI not reported due to high heterogeneity)
- Mean apical deviation: 0.50 mm
- Mean angular deviation: 0.80°

Subgroup analyses indicated that fully autonomous robotic systems achieved the lowest deviation values. Mandibular implant placement demonstrated greater accuracy compared to maxillary and zygomatic sites. When compared to dynamic navigation systems, robotic approaches showed comparable linear deviations but superior angular precision.

AI-Enhanced Dynamic Navigation: Beyond full robotics, AI integration into dynamic navigation systems enables real-time adaptive guidance. AI-powered systems adjust drill paths instantaneously in response to patient movement or tissue deformation, achieving angular errors as low as 1.2° compared to

3.8° in traditional dynamic navigation. Tip errors as low as 0.4 mm have been reported, even in challenging scenarios involving metallic restorations that distort imaging.

The Yomi system (Neocis), FDA-cleared in 2017, represents the first commercially available robotic dental implant system. It provides haptic guidance physical resistance that constrains drill position and orientation without requiring surgical guides. Subsequent developments have achieved fully autonomous implant placement, marking a major advance toward automated implant surgery.

Impact on Surgical Efficiency: Limited evidence suggests AI-enhanced navigation may improve procedural efficiency, particularly in multi-implant cases. Reported time savings include 20-40 minutes reduction in chair time, enabling higher patient throughput. However, these findings require confirmation in larger, controlled trials [186-190].

Outcome Prediction and Long-term Follow-up

AI extends beyond the surgical episode to prognostic assessment. Predictive models analyze imaging, biomechanical, and patient-specific data to forecast implant survival and complications. One study reported 92% accuracy for 5-year implant survival prediction, outperforming traditional bone density assessments. Another analysis of 312 implants identified stress patterns associated with marginal bone loss with 88% sensitivity, enabling targeted follow-up and preventive intervention.

Critical Appraisal and Limitations

Despite impressive accuracy metrics, the evidence base for AI in implant dentistry has significant limitations. The scoping review by participants reported statistical heterogeneity exceeding 97% (I^2) across outcomes, indicating substantial variation that complicates meta-analytic synthesis. This heterogeneity reflects variability in:

- Surgical protocols and implant systems
- Outcome measurement methodologies
- Validation approaches (in vitro vs. in vivo, phantom vs. cadaver vs. live surgery)
- Anatomic sites and case complexity

Moreover, most evidence derives from in vitro and single-center studies. Long-term clinical data with patient-centered outcomes remain sparse. The systematic review by Vázquez-Sebrango found that 11 of 120 included studies had high risk of bias according to PROBAST assessment.

Artificial Intelligence in Periodontology

Periodontal disease affects approximately 50% of adults globally, representing a major public health burden. Traditional diagnostic approaches periodontal probing, radiographic assessment, and clinical examination are time-consuming, exhibit significant inter-examiner variability, and detect disease only after substantial tissue destruction has occurred. AI offers potential solutions across the diagnostic and therapeutic continuum

Radiographic Bone Loss Detection

Radiographic bone loss (RBL) assessment represents the most extensively studied AI application in periodontology. Deep learning models, particularly CNNs, demonstrate high accuracy in detecting, quantifying, and classifying alveolar bone loss from periapical and panoramic radiographs. A systematic review of deep learning applications in periodontal diagnosis synthesized evidence from multiple studies. Reported diagnostic accuracies ranged from 73.0% for alveolar bone loss detection to 98.6% for periodontitis staging using clinical data. For binary classification of mild (<15%) versus severe (≥15%) bone loss, one study reported average accuracy of 0.87±0.01[191-195]. Lee and colleagues found higher diagnostic accuracy for premolars (81.0%) compared to molars (76.7%), while Chang and collaborators reported that classification performance was highest for canines and premolars and lower for incisors and molars. These tooth-specific variations highlight the importance of anatomic considerations in model development and validation.

Disease Classification and Staging

Beyond simple bone loss detection, AI models have been developed for complete periodontal classification according to established staging and grading systems (e.g., AAP/EFP 2017 classification). These models integrate radiographic findings with clinical attachment loss, probing depth, bleeding on probing, and patient risk factors. Krois and colleagues demonstrated the feasibility of cross-center model generalization, while also highlighting challenges: performance degrades when models are applied to populations or imaging protocols different from training data. This limitation underscores the need for diverse, multi-institutional training datasets.

Risk Assessment and Treatment Planning

AI-enabled risk assessment represents a paradigm shift from reactive to proactive periodontal care. By integrating clinical, radiographic, demographic, behavioral (e.g., smoking), and systemic health data, ML models can identify patients at elevated risk for disease progression before significant tissue destruction occurs. Treatment outcome prediction remains an active research area. AI models have demonstrated potential in forecasting responses to non-surgical periodontal therapy, potentially enabling personalized treatment selection. However, accurate prediction of individual treatment outcomes particularly in complex cases with multiple risk factors or systemic conditions remains challenging [196-204].

Integration with Clinical Workflow

The practical implementation of AI in periodontal practice raises important workflow considerations. Automated periodontal charting real-time, chairside AI analysis of probing depths, bleeding, and recession represents an underexplored but promising application. Such systems could standardize data collection, reduce documentation burden, and enable longitudinal disease monitoring.

Critical Appraisal

As with other domains, periodontal AI research exhibits significant methodological heterogeneity. A systematic review identified several limitations: (1) predominance of cross-sectional rather than longitudinal study designs, (2) lack of standardized data collection and preprocessing protocols, (3) insufficient attention to model interpretability ("black box" problem), and (4) limited external validation across diverse populations.

Challenges, Limitations, and Ethical Considerations

Methodological Challenges

The current evidence base for AI in dentistry suffers from several interconnected methodological limitations that complicate clinical translation and evidence synthesis.

Lack of External Validation: Most published studies report performance on convenience samples from the same institution where models were developed. External validation testing on independent datasets from different populations, imaging equipment, and clinical protocols is rarely performed. When attempted, performance typically degrades, revealing limited generalizability [205].

Risk of Bias: Systematic reviews have consistently identified high risk of bias across dental AI studies. Common issues include inadequate sample size justification, lack of blinding between AI predictions and reference standards, selective outcome reporting, and failure to account for data leakage between training and test sets.

Heterogeneity: Marked heterogeneity in study design, outcome definitions, and reporting standards precludes meaningful meta-analysis for most applications. I^2 statistics exceeding 95% are common, reflecting true variation rather than sampling error.

Algorithmic Bias: Models trained on homogeneous populations may perform poorly and potentially cause harm when applied to underrepresented groups. This concern is particularly acute for AI applications in dentistry, given global variations in anatomy, disease presentation, and treatment norms.

Clinical Integration Barriers

Several practical barriers impede clinical adoption:

Interpretability and Trust: Deep learning models operate as "black boxes," producing predictions without explanatory mechanisms. This opacity creates barriers to clinician trust, regulatory approval, and medicolegal accountability. Explainable AI (XAI) approaches that provide visual explanations (e.g., saliency maps, attention mechanisms) represent an active research priority.

Regulatory Hurdles: AI-based medical devices require regulatory clearance (FDA, CE mark, etc.) before clinical deployment, a process demanding rigorous evidence of safety and efficacy. The rapid pace of AI development creates challenges for traditional regulatory frameworks designed for static technologies.

Cost and Accessibility: High implementation costs including hardware, software licensing, training, and maintenance may exacerbate existing disparities in access to advanced dental care. AI adoption is concentrated in wealthy regions and large institutional practices, potentially widening the oral health gap.

Workflow Integration: Effective AI implementation requires seamless integration with existing electronic health records, imaging systems, and clinical workflows. Poorly designed interfaces may increase rather than decrease clinical burden.

Ethical and Legal Considerations

Data Privacy: AI model training requires large datasets of patient information, including identifiable images and clinical data. Ensuring de-identification, secure storage, and appropriate consent presents ongoing challenges.

Medicolegal Accountability: When AI systems contribute to clinical decisions, liability for adverse outcomes becomes ambiguous. Is the clinician who relied on AI advice responsible? The AI developer? The institution? Current legal frameworks provide limited guidance.

Informed Consent: Patients should understand AI's role in their care, including its capabilities, limitations, and alternatives. What constitutes adequate disclosure for AI-assisted diagnosis or robotic surgery?

Professional Autonomy: The increasing role of AI in clinical decision-making raises questions about the erosion of professional judgment and the potential deskilling of clinicians who over-rely on automated systems.

Future Directions and Research Priorities

Methodological Recommendations

To advance the evidence base, future research should adhere to established reporting standards:

- TRIPOD-AI (Transparent Reporting of a multivariable prediction model for Individual Prognosis Or Diagnosis AI extension) for prediction model studies

- CONSORT-AI for randomized trials of AI interventions
- SPIRIT-AI for AI trial protocols
- PROBAST-AI for risk of bias assessment

Multicenter prospective validation studies with diverse populations are urgently needed. Researchers should prioritize external validation before claiming clinical utility.

Technical Priorities

Explainable AI: Development of inherently interpretable models or post-hoc explanation methods that provide clinically meaningful insights into model decision-making.

Multimodal Integration: Models that integrate radiographic, clinical, genomic, and patient-reported data for comprehensive assessment rather than isolated tasks.

Longitudinal Learning: AI systems capable of learning from sequential patient data to monitor disease progression and treatment response over time.

Federated Learning: Training paradigms that enable model development across institutions without centralized data sharing, addressing privacy concerns while enabling diverse training data.

Clinical Translation Priorities

Prospective Clinical Trials: Randomized controlled trials comparing AI-assisted care to standard care across relevant outcomes (accuracy, efficiency, patient-reported outcomes, cost-effectiveness).

Implementation Science: Research on effective strategies for integrating AI into clinical workflows, including user interface design, training requirements, and change management.

Health Economics: Rigorous cost-effectiveness analyses to guide resource allocation and reimbursement policy.

Surveillance Systems: Post-market monitoring of AI system performance in real-world clinical settings, including detection of performance degradation or emergent biases.

Conclusion

Artificial intelligence has demonstrated remarkable capabilities across maxillofacial surgery, implant dentistry, and periodontology. In orthognathic surgery, AI achieves diagnostic accuracy exceeding 95% and sub-millimeter soft tissue prediction. In implantology, robotic systems and AI-enhanced navigation achieve placement deviations below 0.5 mm and 0.8°, exceeding typical freehand accuracy. In periodontology, deep learning models detect bone loss and classify disease with accuracy rivaling experienced clinicians. However, the current evidence base is constrained by significant methodological limitations: predominance of retrospective single-center studies, lack of external validation, substantial heterogeneity, and high risk of bias. Claims of AI superiority over human clinicians are rarely supported by rigorous comparative trials. The path forward requires methodological rigor, clinical validation, and regulatory oversight commensurate with the potential risks of AI deployment. Clinicians should approach AI adoption with informed skepticism, seeking evidence of external validation, prospective evaluation, and demonstrated clinical benefit for their specific patient populations. When responsibly implemented, AI holds genuine promise to enhance diagnostic accuracy, reduce procedural variability, optimize outcomes, and expand access to specialized dental care. The convergence of clinical expertise and artificial intelligence not replacement of one by the other represents the optimal trajectory for advancing oral healthcare.

References

1. Panahi O. The Role of Artificial Intelligence in Shaping Future Health Planning. Int J Health Policy Plann. 2025; 4: 01-05.
2. Panahi O, Falkner S. Telemedicine, AI, and the Future of Public Health. Western J Med Sci Res. 2025; 2: 10.
3. Panahi O, Azarfardin A. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. J Dentistry Oral Health. 2025; 2.
4. Panahi O. AI in Health Policy: Navigating Implementation and Ethical Considerations. Int J Health Policy Plann. 2025; 4: 01-05.
5. Panahi O, Eslamlou SF, Jabbarzadeh M. Digital dentistry and artificial intelligence.
6. Panahi O. Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. European J Innovative Studies Sustainability. 2025; 1: 1-5.
7. Panahi O. Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. Austin J Dent. 2024; 11: 1185.
8. Panahi O, Zeinalddin M. The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. Austin J Dent. 2024; 11: 1186.
9. Omid P, Mohammad Z. The Remote Monitoring Toothbrush for Early Cavity Detection using Artificial Intelligence (AI). IJDSIR. 2024; 7: 173-178.
10. Omid P. Modern Sinus Lift Techniques: Aided by AI. Glob J Oto. 2024; 26: 556198.
11. Panahi O. The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. S J Publc Health. 2024; 1 :1-3.
12. Panahi P. Multipath Local Error Management Technique Over Ad Hoc Networks. In 2008 International Conference on Automated Solutions for Cross Media Content and Multi-Channel Distribution. 2008; 187-194.
13. Panahi O, Eslamlou SF, Jabbarzadeh M. Medicina dentaria digital e inteligencia artificial. ISBN: 978-620-8-73910-2.
14. Panahi U. AD HOC Networks: Applications, Challenges, Future Directions, Scholars' Press. 2025
15. Panahi U. Redes Ad Hoc: Aplicações, Desafios, Direcções Futuras, Verlag Unser Wissen. ISBN: 978-620-8-72963-9.
16. Panahi O, Eslamlou SF, Jabbarzadeh M. Digital dentistry and artificial intelligence.

17. Koyuncu B, Gokce A, Panahi P. The use of the Unity game engine in the reconstruction of an archeological site. In 19th Symposium on Mediterranean Archaeology. 2015; 95-103.
18. Koyuncu B, Meral E, Panahi P. Real time geolocation tracking by using GPS+GPRS and Arduino based SIM908. IFRSA International J Electronics Circuits Systems (IIJECS). 2015; 4: 148-150.
19. Panahi O. Smart Materials and Sensors: Integrating Technology into Dental Restorations for Real-Time Monitoring. J Dent Oral Health. 2025; 2.
20. Panahi O, Zeinalddin M. The remote monitoring toothbrush for early cavity detection using artificial intelli-gence (AI). IJDSIR. 2024; 7: 173-178.
21. Artificial Intelligence in Dentistry, Unser wissen Publishinghttps, O Panahi, F Esmaili, S Kargarnezhad - blackwells. 2024.
22. Panahi O. Deep Learning in Diagnostics. J Medical Discoveries. 2025; 2.
23. Panahi O. The Future of Healthcare: AI, Public Health and the Digital Revolution. Medi Clin Case Rep J. 2025; 3: 763-766.
24. Omid P. Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges. Adv Dent Oral Health. 2024; 17: 555966.
25. Omid P. Relevance between gingival hyperplasia and leukemia. Int J Acad Res. 2011; 3: 493-494.
26. Panahi O. Teledentistry: Expanding Access to Oral Healthcare. J Dental Sci Res Rep. 2024; 6: 2-3.
27. Panahi O, Ezzati A. AI in Dental-Medicine: Current Applications & Future Directions. Open Access J Clin Images. 2025; 2: 1-5.
28. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. Ann Community Med Prim Health Care. 2025; 3: 1027.
29. Inteligencia artificial en odontología, NUESTRO CONOC, DO Panahi, DF Esmaili, DS Kargarnezhad. 2024.
30. Panahi O, Esmaili DF, Kargarnezhad DS. Artificial Intelligence in Dentistry - 2024 - Unser wissen Publishing. 2024.
31. O Panahi. Dental pulp stem cells
32. Panahi O, Arab MS,Tamson KM. Gingival enlargement and its relationship with leukemia. Int J Academic Res. 2011.
33. Panahi O, Dadkhah DS. Artificial Intelligence in Modern Dentistry - 2025 – ISBN.
34. Panahi O, Dadkhah DS. AI in modern dentistry. 2025.
35. Panahi O, SF Eslamlou SF, Jabbarzadeh M. Digital Dentistry and Artificial Intelligence. 2025.
36. Panahi O, Esmaili DF, Kargarnezhad DS. Artificial intelligence in dentistry. 2024.
37. Panahi O, Dadkhah DS. AI in modern dentistry. 2025.
38. Panahi O, Eslamlou SF, Jabbarzadeh M. Digital dentistry and artificial intelligence. 2025.
39. Panahi P, Eslamlou SF, Jabbarzadeh M. Numerical dentistry and artificial intelligence. 2025
40. Panahi O, Eslamlou DSF. The Periodontium: Structure, Function, and Clinical Management. 2025.
41. Panahi O, Dadkhah DS. Artificial intelligence in modern dentistry.
42. Panahi O. Dental pulp stem cells. Our Knowledge Publishing. 2021.
43. Panahi O, Dadkhah DS. A IA na medicina dentária moderna. 2025.
44. Panahi O. Cellule staminali della polpa dentaria. 2021.
45. Thamson K, Panahi O. Challenges and Opportunities for Implementing AI in Clinical Trials. J Bio Adv Sci Research. 2025; 1: 1-08.
46. Thamson K, Panahi O. Ethical Considerations and Future Directions of AI in Dental Health care. J Bio Adv Sci Res. 2025.
47. Thamson K, Panahi O. Bridging the gap: AI, data science, and evidence-based dentistry. J Bio Adv Sci Res. 2025.
48. Thamson K, Panahi O. Bridging the gap: AI as a collaborative tool between clinicians and researchers. J Bio Adv Sci Res. 2025.
49. Panahi O, Dadkhah S. Transforming Dental Care: A Comprehensive Review of AI Technologies. J Stoma Dent Res. 2025. 3: 1-5.
50. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. Ann Community Med Prim Health Care. 2025; 3: 1028.
51. Gholizadeh M, Panahi O. Research system in health management information systems Sciencia Scripts Publishing. 2021.
52. Panahi O, Esmaili F, Kargarnezhad S. Artificial intelligence in dentistry Edition Notre Savoir Publishing. 2024.
53. Zarei S, Panahi O, Bahader N. Antibacterial activity of aqueous extract of eucalyptus camaldulensis against Vibrio harveyi (PTCC1755) and Vibrio alginolyticus (MK641453. 1). Saarbucken: LAP, 2019.
54. Panahi O. Robotics in Implant Dentistry: Current Status and Future Prospects. Scientific Archives Dental Sci. 2025; 7:55-60.
55. Samira, Zarei P, Panahi O. Eucalyptus camaldulensis extract for the prevention of vibriosis scholar’s press. 2019
56. Omid P. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes. JOJ Pub Health. 2024; 9: 555754.
57. Omid P, Gholizadeh M. Research system in health management information systems.Scripts Publishing. 2021.
58. Panahi O. Smart Implants: Integrating Sensors and Data Analytics for Enhanced Patient Care. Dental. 2025; 7: 22.
59. Panahi O. Forging a Healthier Future Through Responsible AI in Families and Communities. Archives Community Family Medicine. 2025; 8: 21-30.
60. Omid P. Nano Technology, Fatmanur - Regenerative Medicine and, Tissue Bio-Engineering. 2023.
61. Panahi DO, Esmaili DF, Kargarnezhad DS. An inteligencia artificial em medicina dentaria. Edition notre savoir Publishing Publishing. 2024.
62. Panahi O, Eslamlou SF. Periodontium: Structure, Function and Clinical Management.
63. Panahi O. Health in the Age of AI: A Family and Community Focus. Archiv Community Family Medicine. 2025; 8: 11-20.
64. Panahi O, Shahbazpour Z. Healthcare Reimagined: AI and the Future of Clinical Practice. Am J Biomed Sci Res. 2025; 27.
65. Panahi O, Dadkhah S. AI in modern dentistry. 2025.
66. Panahi O. Robotic Surgery Powered by AI: Precision and Automation in the Operating Room. SunText Rev Med Clin Res. 2025; 6: 225.
67. Panahi O. Smart Materials and Sensors: Integrating Technology into Dental Restorations for Real-Time Monitoring. J Dentistry Oral Health. 2025; 2.

68. Koyuncu B, Ugur, B, Panahi P. Determinaçao de localizaçao em ambientes interiores utilizando RFID. Int J Mobile and Adhoc Network (IJMAN). 2013; 3:7-11.
69. Panahi U. Ad Hoc Networks: Applications, Challenges, Future Directions. Ediçoes Nosso Conhecimento. 2025.
70. Panahi P, Dehghan, M. Multipath Video Transmission Over Ad Hoc Networks Using Layer Coding and Video Caches. In ICEE2008, 16th Iranian Conference on Electrical Engineering. 2008; 50-55.
71. Panahi DU. HOC A Networks: Applications. Challenges, Future Directions. Scholars Press. 2025.
72. Panahi O, Esmaili F, Kargarnezhad S. Artificial Intelligence in Dentistry. Scholars Press Publishing. 2024.
73. Omid P. Relevance between gingival hyperplasia and leukemia. Int J Acad Res. 2011; 3: 493-449.
74. Panahi O. Secure IoT for Healthcare. European Journal of Innovative Studiesand Sustainability. 2025; 1: 1-5.
75. Panahi O. Deep Learning in Diagnostics. J Med Discoveries. 2025; 2.
76. Omid P. Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges. Adv Dent Oral Health. 2024; 17: 555966.
77. Panahi O. Teledentistry: Expanding Access to Oral Healthcare. J Dental Science Research Rev Reports. 2024.
78. Omid P. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes. JOJ Pub Health. 2024; 9: 555754.
79. Thamson K, Panahi O. Bridging the Gap: AI as a Collaborative Tool Between Clinicians and Researchers. J Bio Adv Sci Research. 2025; 1: 1-08.
80. Panahi O. Algorithmic Medicine. J Medical Discoveries. 2025; 2.
81. Panahi O. The Future of Healthcare: AI, Public Health and the Digital Revolution. MediClin Case Rep J. 2025; 3: 763-766.
82. Thamson K, Panahi O. Challenges and Opportunities for Implementing AI in Clinical Trials. J Bio Adv Sci Res. 2025; 1: 1-08.
83. Thamson K, Panahi O. Ethical Considerations and Future Directions of AI in Dental Health care. J Bio Adv Sci Research. 2025; 1: 1-07.
84. Thamson K, Panahi O. Bridging the Gap: AI, Data Science, and Evidence-Based Dentistry. J Bio Adv Sci Research. 2025; 1: 1-13.
85. Research system in health management information systems, M Gholizadeh, O Panahi - 2021 - Sciencia Scripts Publishing.
86. O Panahi, F Esmaili, S Kargarnezhad . Artificial intelligence in dentistry. Edition Notre savoir Publishing. 2024.
87. Panahi O, DO Panahi, Esmaili DF. DS Kargarnezhad - Artificial intelligence in Dentistry Sciencia scripts Publishing. 2024.
88. Panahi O, Panahi U..AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology. J Adv Artif Intel Mach Learn. 2025.
89. Panahi O, Eslamlou SF. Periodontium: Structure, – Function and Clinical Management.
90. Panahi O, Ezzati. AI in dental-medicine: Current applications & future directions. Open Access J Clinical Images. 2025; 2: 1-5.
91. Panahi O, Dadkhah S. Mitigating aflatoxin contamination in grains: The importance of postharvest management practices. Adv Biotech Microbiology. 2025; 18.
92. Panahi O. Empowering Dental Public Health: Leveragin g Artificial Intelligence for Improved Oral Healthcare Access a d Outcomes. JOJ Pub Health. 2024.
93. Omid P, Fatmanur KC. Nano Technology. Regenerative Medicine and, Tissue Bio-Engineering. 2023.
94. The American Academy of Oral Medicine. Dental Management of the Oral Complications of Cancer Treatment. AAOM Professional Resource. 2017.
95. Panahi O. The Algorithmic Healer: AI's Impact on Public Health Delivery. Medi Clin Case Rep J. 2025; 3: 759-762.
96. Panahi O. AI: A New Frontier in Oral and Maxillofacial Surgery. Acta Scientific Dental Sciences. 2024; 8: 40-42.
97. Panahi O, Falkner S. Telemedicine, AI, and the Future of Public Health. Western J Med Sci Res. 2025; 2: 102.
98. Panahi O, Esmaili DF, Kargarnezhad DS. Artificial intelligence in dentistry. Sciencia scripts Publishing. 2024
99. Esmaielzadeh DS, Panahi DO, Cay DFK. Application of Clay's in Drug Delivery in Dental Medicine Scholars' Press. 2020.
100. DO Panahi. NanoTechnology, Regenerative Medicine and Tissue Bio-Engineering. Scholars' Press. 2019.
101. Panahi DO, DS Dadkhah. AI in modern dentistry. 2025.
102. Panahi DO, Esmaili DF, Kargarnezhad DS. Artificial intelligence in dentistry Mento Publishing. 2024.
103. Panahi O, Esmaili DF, Kargarnezhad DS. Artificial intelligence in dentistry. SapienzA Publishing. 2024.
104. Panahi DO, Dadkhah DS. AI in modern dentistry. 2025.
105. Panahi O, Eslamlou SF. Artificial Intelligence in Oral Surgery: Enhancing Diagnostics, Treatment, and Patient Care. J Clin Den Oral Care. 2025; 3: 01-05.
106. Omid P, Soren F. The Digital Double: Data Privacy, Security, and Consent in AI Implants. Digit J Eng Sci Technol. 2025; 2:105.
107. Panahi DO, Eslamlou DSF. The Periodontium: Structure, Function, and Clinical Management. 2025.
108. Panahi DO, Dadkhah DS. Artificial intelligence in modern dentistry. 2025.
109. Panahi O. The Role of Artificial Intelligence in Shaping Future Health Planning. Int J Health Policy Plann. 2025; 4: 01-05.
110. Panahi O, Amirloo A. AI-enabled IT systems for improved dental practice management. On J Dent Oral Health. 2025.
111. Panahi DO, Dadkhah DS. AI in modern dentistry. 2025.
112. Panahi DO, Dadkhah DS. Artificial intelligence in modern dentistry. 2025.
113. Panahi O, Eslamlou SF, Jabbarzadeh M. Digital dental medicine and artificial intelligence. 2025.
114. Panahi O. Dental pulp stem cells. 2021.
115. Panahi O. AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. J Case Rep Clin Images. 2025; 8: 1161.
116. Panahi O. Navigating the AI Landscape in Healthcare and Public Health. Mathews J Nurs. 2025; 7:56.
117. Panahi O. Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. European J Innovative Studies Sustainability. 2025; 1:1-5.
118. Panahi O, Azarfardin A. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. J Dentistry Oral Health.2025.

119. Panahi O. The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. S J Publc Hlth. 2024; 1 :1-3.
120. Panahi O. AI in Health Policy: Navigating Implementation and Ethical Considerations. Int J Health Policy Plann. 2025; 4: 01-05.
121. Panahi O. Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. Austin J Dent. 2024; 11: 1185.
122. Panahi O, Zeinalddin M. The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. Austin J Dent. 2024; 11: 1186.
123. Omid P. Modern Sinus Lift Techniques: Aided by AI. Glob J Oto. 2024; 26: 556198.
124. Panahi O, Zeinalddin M. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). IJDSIR. 2024.
125. Panahi O. Stem cells from dental pulp. Verlag Unser Wissen. 2021.
126. Panahi O, Eslamlou SF, Jabbarzadeh M. Digital dentistry and artificial intelligence. 2025.
127. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. Ann Community Med Prim Health Care. 2025; 3: 1027.
128. Panahi O, Zeinalddin M. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). IJDSIR. 2024.
129. Panahi O. Dental pulp stem cells. Verlag Unser Wissen. 2021.
130. Panahi O. Eslamlou SF, Jabbarzadeh M. Digital dentistry and artificial intelligence. 2025.
131. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. Ann Community Med Prim Health Care. 2025; 3: 1027.
132. Panahi P, Bayılmış C, Cavusoglu U, Kacar S. Performance evaluation of lightweight encryption algorithms for IoT-based applications. Arabian J Science Engineering. 2021; 46: 4015-4037.
133. Panahi O, Panahi U. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology. J Adv ArtifIntell Mach Learn. 2025; 1: 1-4.
134. Panahi U. AD HOC Networks: Applications, Challenges, Future Directions. Scholars' Press. 2025
135. Panahi P, Dehghan M. Multipath Video Transmission Over Ad Hoc Networks Using Layer Coding and Video Caches. In ICEE2008, 16th Iranian Conference on Electrical Engineering. 2008; 50-55.
136. Panahi O, Gholizadeh M. Research system in healthcare management information systems, - Sciencia Scripts Publishing. 2025.
137. Panahi O, Panahi U. AI-Powered IoT: Trans forming Diagnostics and Treatment Planning in oral implantology. J adv artificial intelligence machine learning. 2025.
138. Panahi O, Ezzati A, Zeynali M. Will AI Replace Your Dentist? The Future of Dental Practice. On J Dent Oral Health. 2025; 8: 2025.
139. Panahi O. An Intelligence - Periodontology. Mod Res Dent.
140. Panahi DO, DS Dadkhah DS. Zahnmedizin. AI in the modern 48.
141. Panahi U. Ad Hoc Networks: Applications, Challenges, Future Directions Nosso Conhecimento Editions. 2025.
142. Panahi U. AD HOC networks: Applications. Challenges, Future Paths. Our knowledge. 2025.
143. Koyuncu B, Panahi, P. Kalman filtering of link quality indicator values for position detection by using WSNS. Int J Computing, Communications Instrumentation Engineering. 2014; 1.
144. Koyuncu B, Gokce A, Panahi P. Introduction to the integrative game engine used in the reconstruction of an archaeological site. In SOMA 2015.
145. Panahi O, Eslamlou SF. Periodontium: Structure, function, and clinical management. ISBN: 978-620-8-74559-2.
146. Panahi O, Dadkhah S. AI in Modern Dentistry. ISBN:978-620-8-74877-7.
147. Panahi O. Dental pulp stem cells. ISBN: 978-620-4-05358-5.
148. Panahi O, Esmaili F, Kargarnezhad S. Artificial Intelligence in Dentistry. Sciencia scripts Publishing. 2024.
149. Panahi O, Melody FR. A Novel Scheme About Extraction Orthodontic and Orthotherapy. Int J Academic Res. 2011; 3.
150. Panahi O. The evolving partnership: surgeons and robots in the maxillofacial operating room of the future. J Dent Sci Oral Care. 2025; 1: 1-7.
151. Panahi O, Dadkhah S. Artificial Intelligence in Modern Dentistry. 2025.
152. Panahi O. The Future of Medicine: Converging Technologies and Human Health. Journal of Bio-Med Clinical Research. RPC Publishers. 2025; 2.
153. Panahi O, Raouf MF, Patrik K. The Evaluation Between Pregnancy and Periodontal Therapy. Int J Acad Res. 2011; 3: 1057-1058.
154. Panahi O, Nunag GM, Nourinezhad Siyahtan A. Molecular Pathology: P-115: Correlation of Helicobacter Pylori and Prevalent Infections in Oral Cavity. Cell Journal (Yakhteh). 2011; 91-92.
155. Panahi O. The Age of Longevity: Medical Advances and The Extension of Human Life. J Bio-Med Clinical Research. RPC Publishers. 2025; 2.
156. Panahi O, Eslamlou SF. Periodontium: Structure, function, and clinical management.
157. Panahi O, Farrokh S. Building Healthier Communities: The Intersection of AI, IT, and Community Medicine. Int J Nurs Health Care. 2025; 1:1-4.
158. Panahi O, Dental pulp stem cells. 2025.
159. Panahi O. Nanomedicine: Tiny Technologies, Big Impact on Health. J Bio-Med Clinical Research. RPC Publishers. 2025; 2.
160. Panahi O, Amirloo A. AI-Enabled IT Systems for Improved Dental Practice Management. On J Dent Oral Health. 2025; 8.
161. Panahi O. Comparison between unripe Makopa fruit extract on bleeding and clotting time. International J Paediatric Dentistry. 2013; 23: 205.
162. Panahi O, Eslamlou SF. Periodontium: Structure, Function, and Clinical Management.
163. Panahi O, Eslamlou SF. Artificial Intelligence in Oral Surgery: Enhancing Diagnostics, Treatment, and Patient Care. J Clin Den Oral Care. 2025; 3: 01-05.
164. Panahi O, Eslamlou SF, Jabbarzadeh M. Odontologia digital e inteligência artificial.
165. Omid P, Soren F. The Digital Double: Data Privacy, Security, and Consent in AI Implants. Digit J Eng Sci Technol. 2025; 2: 105.
166. Panahi O, Eslamlou SF, Jabbarzadeh M. Digital dentistry and artificial intelligence. 2025.

167. Panahi O. Dental pulp stem cells. 2025.
168. Panahi O. AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. J Case Rep Clin Images. 2025; 8:1161.
169. Panahi O. Navigating the AI Landscape in Healthcare and Public Health. Mathews J Nurs.2025; 7:5.
170. Panahi O, Jabbarzadeh M. The Expanding Role of Artificial Intelligence in Modern Dentistry. On J Dent Oral Health. 2025; 8: 2025.
171. Panahi O. Wearable Sensors and Personalized Sustainability: Monitoring Health and Environmental Exposures in Real-Time. European J Innovative Studies Sustainability. 2025; 1: 1-19.
172. Ostovar L, Vatan KK, Panahi O. Clinical Outcome of Thrombolytic Therapy, Scholars Press Academic Publishing. 2020.
173. Omid P, Sevil Farrokh E. Bioengineering Innovations in Dental Implantology. Curr Trends Biomedical Eng Biosci. 2025; 23: 556111.
174. Omid Panahi. Artificial Intelligence: A New Frontier in Periodontology. Mod Res Dent. 2024.
175. Panahi O, Melody FR, Kennet P, Tamson MK. Drug induced (calcium channel blockers) gingival hyperplasia. JMBS 2011 :10-12.
176. Panahi O, Amirloo A. AI-Enabled IT Systems for Improved Dental Practice Management. On J Dent & Oral Health. 2025; 8.
177. Omid P, Reza S. How Artificial Intelligence and Biotechnology are Transforming Dentistry. Adv Biotech Micro. 2024; 18: 555981.
178. Panahi O, Zeinaldin M.AI-Assisted Detection of Oral Cancer: A Comparative Analysis. Austin J Pathol Lab Med. 2024; 10: 1037.
179. Panahi O, Farrokh S. USAG-1-Based Therapies: A Paradigm Shift in Dental Medicine. Int J Nurs Health Care. 2024; 1: 1-4.
180. Panahi O, Farrokh S. Can AI Heal Us? The Promise of AI-Driven Tissue Engineering. Int J Nurs Health Care. 2024; 1:1-4.
181. Gholizadeh M, Panahi O. Investigating System in Health Management Information Systems, Scholars Press Academic Publishing. 2021.
182. Omid Panahi. AI Ushering in a New Era of Digital Dental-Medicine. Acta Scientific Medical Sciences. 2024; 8: 131-134.
183. Panahi O, Farrokh S. The use of machine learning for personalized dental-medicine treatment. Global J Medical Biomedical Case Reports. 2025
184. Gholizadeh M, Panahi O. Research system for health management information systems. Nuestro conoc, Mento Publishing. 2021.
185. Gholizadeh M, Panahi O, Examination system in health management information systems, Unser wissen Publishing. 2021.
186. Panahi O, Zeinaldin M. Digital Dentistry: Revolutionizing Dental Care. J Dent App. 2024; 10 :1121.
187. Omid P, Eslamlou SF. Beyond the Scalpel: AI, Alternative Medicine, and the Future of Personalized Dental Care. J Complement Med Alt Healthcare. 2024; 13: 555860.
188. Panahi O. Dental Implants & the Rise of AI. On J Dent Oral Health. 2024; 8.
189. Gholizadeh M, Panahi O. Investigating the system in health management information systems, Sapienza Publishing. 2021.
190. Panahi O. Smart Robotics for Personalized Dental Implant Solutions. Dental. 2025; 7: 21.
191. Panahi O, Eslamlou SF, Jabbarzadeh M, Digital dentistry and artificial intelligence.
192. Panahi O. AI in Surgical Robotics: Case Studies. Austin J Clin Case Rep. 2024; 11: 1342.
193. Panahi O, Safaralizadeh R. AI and Dental Tissue Engineering: A Potential Powerhouse for Regeneration. Mod Res Dent. 2024; 8
194. Gholizadeh M, Panahi O. Systems Research in Health Management Information Systems. Onze kennis Publishing. 2021.
195. Gholizadeh M, Panahi O. Research System in Health Management Information Systems. Nosso conhecimento Publishing. 2021.
196. Gholizadeh M, Panahi O. Research system in health management information systems, NAZSA WIEDZA Publishing. 2021.
197. Panahi O, Panahi U. Application of Machine Learning and Computer Vision in Oral Surgery and Implant Outcome Prediction. SunText Rev Dental Sci. 2026; 7: 192.
198. Panahi O, Panahi U. Computer-Aided Implant Planning and Placement Using AI and Machine Learning: A General Framework for Surgical Guidance. SunText Rev Med Clin Res. 2026; 7: 266.
199. Omid P, Uras P. Self-Learning AI Implant with Dynamic Fibrointegration and Real-Time Ligament Tension Adjustment: The World's First Closed-Loop Smart Implant That Moves Like a Natural Tooth. J Surg Pract Case Rep. 2026; 2: 1-5.
200. Omid P, Uras P. AI-Designed, Fibrointegrated, Circumferential Root Ring Implant: The First Surgery That Recreates the Natural Periodontal Ligament Without Any Human Intraoperative Decision. J Surg Pract Case Rep. 2026; 2: 1-5.
201. Farhadi S, Panahi U. A Federated Learning-Based Intrusion Detection Framework for Zero-Day Attacks in Smart Healthcare Networks Integrating IoMT Devices. J Med Care Health Review. 2026; 3.
202. Farhadi S, Panahi U. Blockchain-Anchored Adaptive Authentication for Real-Time Medical Data Streams in AI-Driven Smart Grid-IoMT Converged Networks. J Medicine Care and Health Review. 2026; 3.
203. Omid P, Uras P. The AIoT-Based Remote Care Network: Integrating Smart Implants and Edge Computing for Post-Operative Monitoring in Otolaryngology. Glob J Otolaryngol. 2026; 29: 556252.
204. Omid P, Uras P. AI-Driven Optimization of Cochlear Implant Fitting: Machine Learning Models for Personalized Hearing Rehabilitation. Glob J Otolaryngol. 2026; 29: 556253.