Results: For the internal test set, the mean squared error (MSE) of the symmetry plane prediction was 0.22. Across both internal and external test sets, the average angle error was 0.65°± 0.38°.

Conclusions: This study proposes a novel deep learning algorithm for the intelligent construction of 3D maxillofacial symmetry reference planes. The proposed method significantly enhances diagnostic efficiency and accuracy, reduces reliance on expert annotations, and improves overall clinical workflow.

Key Words: Deep Learning, maxillofacial feature, Maxillofacial Planar Reflective Symmetry Network (MPRS-Net).

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CA6445

Evaluation Of The Learning Curve For Intraoral Scanning In Vivo

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Aim or purpose: The integration of intraoral scanners (IOS) has improved digital impression accuracy and efficiency, but mastering these devices requires practice. Understanding the learning curve is essential for optimizing training programs for new users. This study evaluates how scanning time and total frames captured improve as students gain experience, comparing their performance to that of an experienced clinician.

Materials and methods: Twenty, fifth-year dental students with no prior IOS experience performed 20 full-mouth scans (maxillary, mandibular, and bite) on volunteer patients using the Heron IOS (3DISC). Scanning time (minutes) and total frames were recorded for the 1st, 10th, and 20th scans. An experienced clinician completed a full scan in 4 minutes (1.5 minutes per jaw, 30 seconds for bite) with an average of 3700 frames per jaw. Data were analyzed using ANOVA and t-tests.

Results: Scanning time decreased significantly from 17.2 ± 2.4 min (1st scan) to 9.1 ± 1.3 min (20th scan, $p < 0.05$), but remained slower than the expert ($p < 0.01$). Total frames captured reduced from 8150 ± 420 to 4750 ± 280 ($p < 0.05$), indicating improved technique.

Conclusions: Students exhibited significant improvements in efficiency but despite notable progress, their performance remained below expert levels, emphasizing the need for structured training. Intraoral scanning efficiency improves with practice, but training is necessary to enhance proficiency and bridge the gap between novices and experienced clinicians.

Key Words: digital dentistry, intraoral scanner, 3d models.

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CA6416

Impact Of Surgeon Experience On Mr-Guided Dental Implant Training

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Aim or purpose: A novel mixed reality (MR)-guided dental implant training system was developed and evaluated for its learning effect of this method in novices.

Materials and methods: We designed and developed a MR based training method that provides real-time supervision, real-time teaching, and real-time guidance. Thirty novices who had passed a baseline test and had no prior experience with implant surgery were randomly divided into two groups: the MR Group (n=15) was trained using the MR training method, while the traditional group (n=15) was received training using conventional methods. Each group involved the following steps: (I) pretest; (II) immediate post-test; (III) implantology training and (IV) retention test. Implant deviations, including platform points, middle points, apex points and axial angles, were measured. Subsequently, learning curves were analyzed, and the usability of the system was evaluated using the System Usability Scale (SUS).

Results: After training with the two methods, the deviation of the MR group was significantly lower than that of the traditional group. Learning curve results showed better learning time and effect for the MR group ($Y = -95.62X + 1499$) compared to the traditional group ($Y = -77.36X + 1367$). The MR group also had significantly higher SUS scores (80.83 ± 4.880) than the traditional group (69.50 ± 5.362) ($P<0.0001$).

Conclusions: This MR-guided dental implant training method can significantly enhance the learning effect of novices, which offering a novel perspective and strategy for developing personalized and efficient implant placement teaching methods.

Key Words: Mixed Reality, Guided Implant Surgery, Dental Training, Accuracy;.

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Stem Biomimetic CAD/CAM Glass Fibre Resin For Post-Cores

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Aim or purpose: To introduce a thermoset technique for the fabrication of stem biomimetic milled CAD/CAM glass fibre-