

ORAL SURGERY CARE



Fall 2022

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Happy Fall!

As we settle into our world more or less past the COVID pandemic, I welcome you to spend some time catching up on summaries of some recent oral surgery and dental implant literature.

We are excited about our completion of the robust training protocol for our Yomi robotic assistance system for dental implant placement, and we are now using robotic assistance when indicated. Patient acceptance has been very good, as well. Robotic assistance allows optimum, predictable and precise use of the bone available for implant placement, and is a remarkable technology to improve care for our patients.



Oral Surgery Care

We truly appreciate being part of your team providing the best of care to your family of patients. Contact us whenever we can be of help.

Best Regards,

Dr. Brent Florine

Surface Roughness of Dental Implant and Osseointegration

Geraldo Roberto, Martins Matos et al.
J Maxillofac Oral Surg 2021 Mar;20(1):1-4

Dental implants are a usual treatment for the loss of teeth. The success of this therapy is due to the predictability, safety and longevity of the bone-implant interface. Dental implant surface characteristics like roughness, chemical constitution, and mechanical factors can contribute to the early osseointegration. The purpose of the present article was to perform a review of the literature on surface roughness of dental implant and osseointegration. This work is a narrative review of some aspects of surface roughness of dental implant and osseointegration.

Despite technological advancement in the biomaterials field, the ideal surface roughness for osseointegration still remains

unclear. In this study about surface nanoroughness of dental implant and osseointegration, the clinical relevance is yet unknown. *The investigators in this study believe that innovative findings on nanoroughness are valuable in the fields of dental implantology, maxillofacial or orthopedic implant surfaces and also on cardiovascular implants in permanent contact with patient's blood.*

Clinical Application Study of Immediate Implantation without Bone Grafting in Maxillary Molars

Lu Liu, Wen-Hui Yu, et al.
Br J Oral Maxillofac Surg 2022 Apr;60(3):332-336

The authors in this study wanted to evaluate the clinical effect and feasibility of immediate implant placement combined with flap surgery with no bone grafting and non-submerged healing in the maxillary molar area. Thirty-five patients with failed single teeth in the molar area were selected. After minimally invasive extraction of the tooth, the flaps were elevated, and an implant inserted immediately; thereafter a healing abutment was connected. The mucoperiosteal flaps were sutured around the abutment without tension, and a permanent repair was performed six months later. During the study period, the implant survival rate, cone-beam computed tomography (CBCT) data, torque value, and the results of a subjective satisfaction survey conducted

continued on back page



Dr. Brent Florine received his undergrad degree from the University of Minnesota College of Liberal Arts and attended the University of Minnesota School of Dentistry. He received postgraduate dental and oral and maxillofacial surgery training at Louisiana State University and Charity Hospital in New Orleans, and the University of Minnesota Hospitals and Clinics. He is certified as a Diplomate of the American Board of Oral and Maxillofacial Surgery and has practiced oral surgery in Eagan since 1987.

Clinical Application...continued

with a visual analogue scale (VAS), were evaluated to assess the procedure's therapeutic effect and feasibility.

All 35 teeth were successfully implanted immediately after flap surgery. The mean (SD) torque value was 42.79 (5.70) N-cm at the time of placement. During the six-month follow up and after one year of restoration, all 35 teeth showed no loosening, shedding of implants and restoration, or inflammation around the site. The mean (SD) value of the bony space around the implant immediately after the operation was 2.47 (0.56) mm. The bony spaces were filled with new bone after six months post-operatively. The mean (SD) VAS for satisfaction was 8.71. *The authors concluded that immediate implant placement combined with flap surgery without bone grafting and non-submerged healing is feasible for the maxillary molar area and produces a satisfactory clinical effect.*

Marginal Bone Resorption Around Dental Implants Placed in Alveolar Socket Preserved Sites: A 5 Years Follow-up Study

Mario Beretta, Carlo Maiorana, et al.
J Maxillofac Oral Surg 2021 Sep;20(3):381-388

The present study evaluated the clinical and radiological stability of hard and soft tissues following alveolar socket preservation (ASP) procedure with a follow-up of 5 year from implant insertion. The initial sample consisted of seven patients who underwent single tooth extraction and ASP procedure by means of demineralized bovine bone mineral particles covered with a porcine-derived non-cross-linked collagen matrix (CM). Each patient received a submerged single implant in the healed site. Mesial and distal peri-implant marginal bone resorption (MBR) rates were assessed radiographically at 1 year (T 1) and 5 years (T 2) after implant placement (baseline value).

No dropouts occurred up to 5 years. At T 1, the MBR was 0.08 mm at the mesial aspect and 0.1 mm at the distal aspect. This difference was not statistically significant. At T 2, the mesial MBR was 0.15 mm and the distal MBR was 0.11 mm, with a non-statistically significant difference. Therefore, no statistically significant differences were detected comparing mesial and distal MBR at any time point. With respect to the intra-group comparisons, no differences were observed comparing the different study periods within each variable. Indeed, the comparison between T 0, T 1 and T 2 was non-statistically significant at both mesial and distal aspects. *After 5 years, the volume of the soft tissues appeared clinically well maintained with a natural aspect around dental implants and adjacent teeth. ASP using demineralized bovine bone mineral*

in combination with CM proved to be an effective technique to maintain stable dimensional volumes of both hard and soft tissues.

Artificial Intelligence Applications in Restorative Dentistry

Marta Revilla-Leon, Miguel Gomez-Polo, et al.
J Prosthet Dent 2021 Apr 9, 2021

Artificial intelligence (AI) applications are increasing in restorative procedures. However, the current development and performance of AI in restorative dentistry applications has not yet been systematically documented and analyzed. The purpose of this review was to identify and evaluate the ability of AI models in restorative dentistry to diagnose dental caries and vertical tooth fracture, detect tooth preparation margins, and predict restoration failure.

An electronic systematic review was performed in the five leading medical databases. A manual search was also conducted. Studies with AI models were selected based on 4 criteria: diagnosis of dental caries, diagnosis of vertical tooth fracture, detection of the tooth preparation finishing line, and prediction of restoration failure. Two investigators independently evaluated the quality assessment of the studies by applying standardized models. A third investigator was consulted to resolve lack of consensus.

A total of 34 articles were included in the review: 29 studies included AI techniques for the diagnosis of dental caries or the elaboration of caries and post-sensitivity prediction models, 2 for the diagnosis of vertical tooth fracture, 1 for the tooth preparation finishing line location, and 2 for the prediction of the restoration failure. Among the studies reviewed, the AI models tested obtained a caries diagnosis accuracy ranging from 76% to 88.3%, sensitivity ranging from 73% to 90%, and specificity ranging from 61.5% to 93%. The caries prediction accuracy among the studies ranged from 83.6% to 97.1%. The studies reported an accuracy for the vertical tooth fracture diagnosis ranging from 88.3% to 95.7%. The article using AI models to locate the finishing line reported an accuracy ranging from 90.6% to 97.4%. *AI models have the potential to provide a powerful tool for assisting in the diagnosis of caries and vertical tooth fracture, detecting the tooth preparation margin, and predicting restoration failure. However, the dental applications of AI models are still in development. Further studies are required to assess the clinical performance of AI models in restorative dentistry.*

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