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Using the flapless computer-guided surgery for rehabilitation of edentulous maxilla according to the "All-on-four" concept

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Statement of the Problem: Rehabilitation of edentulous maxilla with severe bone resorption in the posterior area represents a clinical challenge especially in the placement of implants. The "All-on-4" concept removed the need for complex surgical interventions such as sinus elevation and bone grafting. This study aimed to evaluate the clinical and radiographic outcomes of the "All-on-4" concept in fully edentulous maxilla by using R2GATE software planning for flapless computer-guided surgery and immediate loading.

Methodology & Theoretical Orientation: A prospective study was conducted between April 2019 and April 2021. Ten fully edentulous maxilla adult patients aged between 35 and 60 years. All patients were treated in the oral and maxillofacial department at Damascus University. The flapless computer-guided surgical procedure according to the "All-on-4" concept was performed under local anesthesia. All implants were immediately loaded with screw-retained provisional acrylic resin prosthesis on the same day of surgery, and the final prosthesis was delivered 4 months after surgery. All the clinical and radiographic outcomes were evaluated for all patients at 4 and 12 months post-operatively.

Findings: The overall implant survival rate was 95%. The mean marginal bone level was 0.35 and 0.66 mm after 4 and 12 months of follow up respectively. Mechanical complications were most common (Fixed provisional prosthesis fracture and abutment, prosthesis screw loosening).

Conclusion & Significance: The "All-on-4" concept for rehabilitation of edentulous maxilla with the placement of immediate fixed prosthesis by using flapless computer-guided surgery could be an effective and predictable treatment with a high survival rate. This technique offers less discomfort and mechanical complications after surgery.

Recent Publication

1. Paulo MA, Migual DE, Armando LO, Ana FE, Mariana NU. The All-on-4 concept for full-arch rehabilitation of the edentulous maxillae: A longitudinal study with 5-13 years of follow up. Clin Implant Dent Relat Res 2019; 29: 538-549.
2. Armando LO, Miguel DE, Diogo SA. The workflow of new dynamic navigation system for the insertion of dental implants in the rehabilitation of edentulous jaws: report of two cases. J Clin Med. 2020; 9: 421.
3. Reda R, Zanza A, Mazzone A, Cicconetti A, Testarelli L, Di Nardo D. An Update of the Possible Applications of Magnetic Resonance Imaging (MRI) in Dentistry: A Literature Review. J. Imaging 2021; 7: 75.

Biography

Hasan Nazha has his expertise in linking material, mechanical, and biomedical engineering in dental applications to improve the health and wellbeing of humanity. His passion made him obtain two patents registered in the SPO; the first one titled "Temporary cosmetic teeth painting veneers", and the second one titled "Design of the safe abutment of one-piece zirconia implants". He also has IELTS academic (6.5), more than 20 original articles, and I ranked the first out of the postgraduate students nationwide and was honored by the Minister of Higher Education (in Syria), and recently qualified for the finals in the Challenge and Innovation Forum (CIF) Qatar 2021.

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