Short communication

“All-on-four” concept and immediate loading for simultaneous rehabilitation of the atrophic maxilla and mandible with conventional and zygomatic implants

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Abstract

We report the simultaneous rehabilitation of an edentulous patient with a hybrid (zygomatic and conventional implants) all-on-four implant-supported prosthesis for the maxilla and a standard (conventional implants) all-on-four implant-supported prosthesis for the mandible. The transfer impression was made with a multifunctional guide and the upper and lower prostheses were placed 24 h postoperatively. Clinical and radiographic examinations showed no infection or bony resorption 2 years later. Simultaneous maxillary and mandibular rehabilitation with all-on-four immediate loading is a viable, fast and effective option for edentulous patients.

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Keywords: Atrophic maxilla; Dental implants; Tilted implants; Zygomatic implants; Immediate load

Introduction

Zygomatic fixtures are successful in rehabilitation of edentulous jaws in two stages with success rates of up to 97%. Immediate loading of zygomatic fixtures also gives high values of osseointegration with 98–100% efficacy.

The conventional protocol with implant-supported prostheses establishes insertion of multiple parallel implants in the anterior maxilla and mandible. Some studies have shown that the large amount of force applied to the distal extension of the prostheses is absorbed by the distal implant and the total load absorbed by this implant is not related to the number of fixtures. The insertion of four implants was enough biomechanically, so the all-on-four concept was introduced to permit the insertion of four implants in adequate positions and correct inclination for the distribution of forces.

A 55-year-old white woman presented, complaining of the appearance of her teeth. She also reported difficulty in chewing and wanted to replace her conventional complete denture with an implant-supported prosthesis. She had a complete maxillary denture and a removable partial mandibular prosthesis. The maxillary alveolar ridge was severely atrophied, while the inferior teeth were mobile and had advanced periodontal disease. Panoramic radiography showed complete edentulism and atrophy of the maxillary ridge with bilateral pneumatisation of the sinuses (Fig. 1).

After the prosthetic reverse planning in the region of teeth 15, 12, 25, 22, 41, 44, 31 and 34, implants with regular platform (Zygoma Implants RP Machined®/Nobel Speed®—Nobel Biocare, Göteborg, Sweden) 40 mm, 4 mm × 10 mm, 40 mm, 4 mm × 13 mm, 4 mm × 13 mm,
The prosthesis was inserted the day after the implants had been fixed, including occlusal adjustment to avoid overloading (Fig. 2). Clinical and radiographic examinations were made 2 years after the implants had been inserted. The prosthesis was removed to assess mobility, pain, swelling, and the integrity of the implants and abutments. Plaque control, gingival sounding, occlusal contacts, and mobility were routinely evaluated. No alterations were noted that suggested infection, prosthetic instability, or mobility of the implants (Fig. 3).

Discussion

Several studies have confirmed the effectiveness and longevity of immediate loading for complete edentulous mandible. Immediate loading of the edentulous mandible with implants after extraction is also successful with implants surviving in 94%.

However, this treatment has not been widely evaluated in the maxilla. The limited quality and quantity of bone tissue because of resorption is a challenge for many authors. In addition, the maxillary bone is more trabecular and less dense than bony tissue in the interforaminal region. The success rate for immediately loaded implants in the maxilla in 12 months is 92.8%. Further studies are needed to assess the long-term success of this treatment.

References

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