



RESEARCH ARTICLE

FULL MOUTH REHABILITATION USING ALL ON 4 IMPLANT CONCEPT IN A PATIENT WITH
GENERALISED AGGRESSIVE PERIODONTITIS – A CASE REPORT
WITH 4 YEAR FOLLOW UP

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ABSTRACT

Aggressive periodontitis renders a great challenge to the conventional implant due to the risks of infection and ongoing marginal bone loss (MBL). The “All-on-Four” concept is based on the placement of four implants (two axial and two tilted implants) in the anterior part of fully edentulous jaws to support a provisional, fixed, and immediately loaded full-arch prosthesis. Little is available about this treatment modality in patient with aggressive periodontitis. The following case report describes a case of Full Mouth Rehabilitation using All on 4 Implant concept in a female patient with Generalised Aggressive Periodontitis followed up for 4 years.

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INTRODUCTION

Modern era in implant dentistry are intended to provide prosthetic restorations with the finest esthetic and functional outcomes. Several parameters have been suggested to achieve gold standard results: adequate bone height, width and sagittal projection, adequate soft tissue quantity and quality, preservation of buccal sulcus and adequate papillae and gingival contour (Guerrero, 2007). Solutions to inadequate ridge height include the use of short implants (Esposito, 2006), vertical ridge augmentation procedures (Sorní, 1999 and Maestre-Ferrín, 2009), or cantilever prostheses (Chaushu, 2010). Although having a comparable short-term survival rate, some authors state that the long-term performance of short implants is less understood, especially in the posterior maxilla

with lower bone density (Hashemi, 2010). Vertical augmentation procedures increase patient morbidity and the outcome is less predictable, mainly in the posterior mandible. Cantilever prostheses might incur higher rates of prosthetic complications such as abutment loosening, denture fracture and implant failure. Due to the less predictable long-term prognosis associated with the above mentioned procedures, the “All-on-Four” technique was proposed by Paulo Malo (Malo, 2006), for the rehabilitation in edentulous jaws. The “All-on-Four” concept is based on the placement of four implants (two axial and two tilted implants) in the anterior part of fully edentulous jaws to support a provisional, fixed, and immediately loaded full-arch prosthesis. Combining tilted and straight implants for supporting fixed prostheses can be considered a viable treatment modality (Vega, 2010), resulting in a more simple and less time consuming procedure, in significantly less morbidity, in decreased financial costs and a more comfortable postsurgical period for the patients

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(PeñarrochaDiago, 2013). Aggressive periodontitis (AgP) comprises a group of rare, often severe, rapidly progressive forms of periodontitis which is characterized by an early age of clinical manifestations including the presence of highly pathogenic bacteria, severe periodontal bone destruction. The refractory nature of this disease tends to deter the clinician from placing implants in these patients. The following article reports a case of All on 4 treatment in a patient with Generalised Aggressive Periodontitis.

Case Presentation

A 36-year-old, systemically healthy female patient reported to our clinic with the chief complaints of teeth malpositioning and mobility and gingival discomfort. Clinical examination revealed tooth displacement with pathological migrations, and poor periodontal tissue quality (fiery red, acutely inflamed marginal and attached gingiva). Periodontal examination disclosed deep periodontal pockets (mean 7 mm) with purulent exudate from most of the teeth (Figure 1). Severe alveolar destruction was evident in radiograph around all the teeth (Figure 2).



Figure 1. Clinical Picture showing purulent discharge



Figure 2. (Radiograph (OPG) showing severe bone destruction

Initial Therapy

Initial periodontal therapy consisted of thorough training in techniques of plaque control with scaling and root planning was carried out followed by administration of doxycycline 100 mg once a day for 21 days.

Surgical Therapy

After suggesting all possible treatment modalities to the patient, she finally agreed upon the treatment of full mouth rehabilitation using All on 4 implant and the informed consent for the same was obtained from the patient. After completing initial therapy, patient was scheduled for surgical therapy. On the Day, patient was anesthetized using Lignocaine with 2% Adrenaline with both block and infiltration technique and Multiple extractions were carried out in a minimally invasive way (Figure 3). The alveolar sockets were thoroughly debrided to remove any granulation tissue remnants by means of curettage, and were alternately rinsed with 10% povidone Iodine and 0.2% Chlorhexidine. The sharp alveolar crests and socket prominences were removed with rongeur, while an 8-mm bur was further used to flatten the alveolar ridge to obtain a favorable vertical distance for a better esthetic result. Excess soft tissues were trimmed after bone reduction. After this, the implants were inserted following the manufacturer's standard guidelines with standard drilling sequence. Under preparation was routinely applied to achieve maximal apical anchorage and to enhance the initial stability in cases with low bone density. Two anterior implants were axially oriented perpendicular to the occlusal plane and parallel to the midline of the arch, and typically placed in the lateral incisor region. Two posterior implants were distally tilted by 30-40 degrees relative to the occlusal plane, with the emergence of the implant platform typically at the second premolar regions (Figure 4). The region between two sockets was the first preference for an implant placement, and the implant platform was positioned at the bone level. All the implants reached a final insertion torque >35 Ncm to ensure sufficient primary stability for immediate function, and the maximum torque achieved was 45 Ncm. In the mandible, the mental foramina with anterior loops of mental neurovascular bundles were used to determine the positioning of the posterior tilted implants. The flaps were closed and sutured with 4-0 absorbable sutures (Vicryl Rapide, Ethicon, Johnson & Johnson, Livingston, UK).

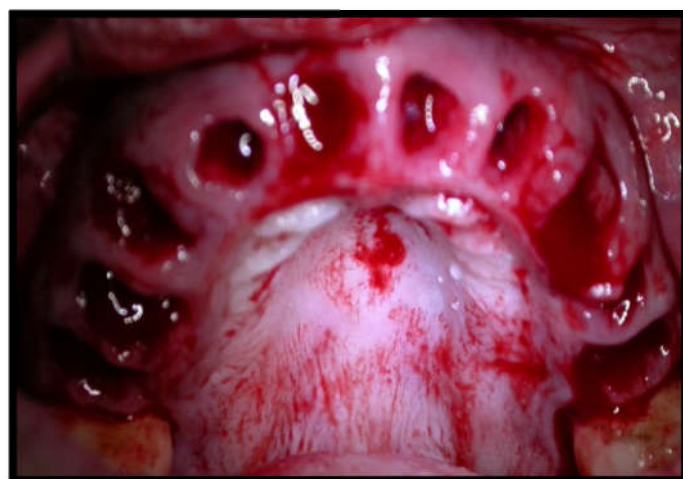


Figure 3. Multiple extractions

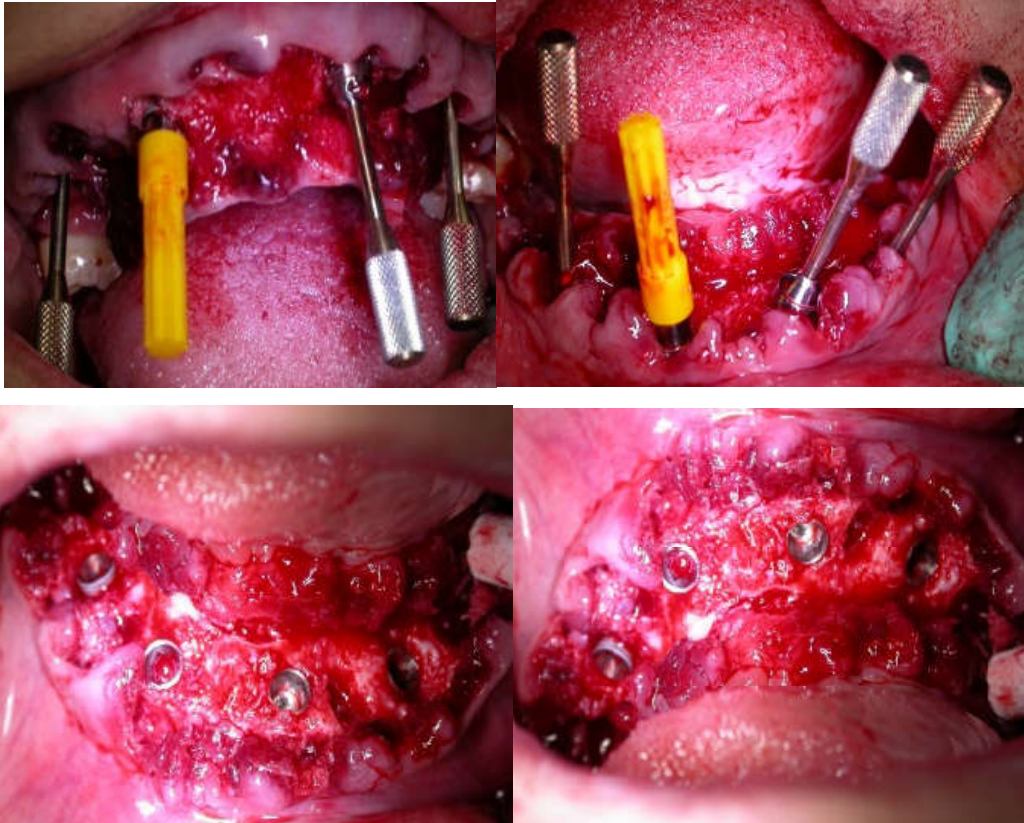


Figure 4. Implant Placement

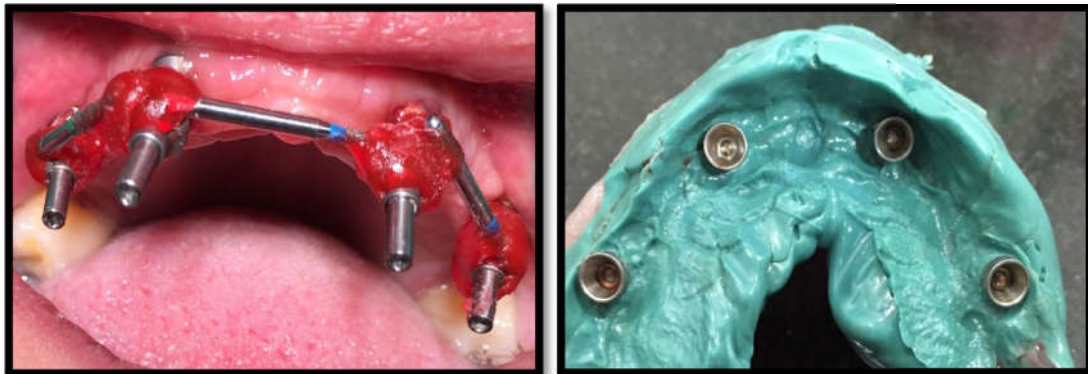


Figure 5. Connected Abutments

Figure 6. Pick up Impression



Figure 7. Metal framework



Figure 8. Definitive Prosthesis

Prosthetic Phase

After the surgery, open-tray multiunit impression transfer copings (Nobel Biocare, Gothenburg, Sweden) were fastened to the abutments with screws and connected with wire-bars and

low shrinkage autopolymerizing resin Figure 5. The pick-up technique was used to take impressions with silicone elastomeric material Figure 6. Vertical dimensions were recorded and bite registrations were taken after removing the impression transfer copings.

Definitive full-arch heat-cured acrylic resin prostheses (Heraeus Kulzer, Hanau, Germany) with metal frameworks were manufactured at the dental laboratory and delivered to the patients approximately 6 hours after surgery Figure 7. Definitive prostheses were comprised of 10-12 units depending on the emerging positions of the posterior implants, to guarantee a cantilever length of less than 8 mm. Figure 8. The centric and lateral contacts were assessed with 40µm articulating paper (Bausch Articulating Paper, Nashua, NH) and adjustments were made if Multiple recall visits were planned over a period of 4 years to evaluate the patient's ability to maintain oral hygiene and to assess the health of the implant supported prosthesis. After 48 months satisfactory outcome of the treatment was well evident with functional and esthetic dental unit Figure 9 and with good radiographic bony support.



Figure 9. 4 years Comparative clinical evaluation

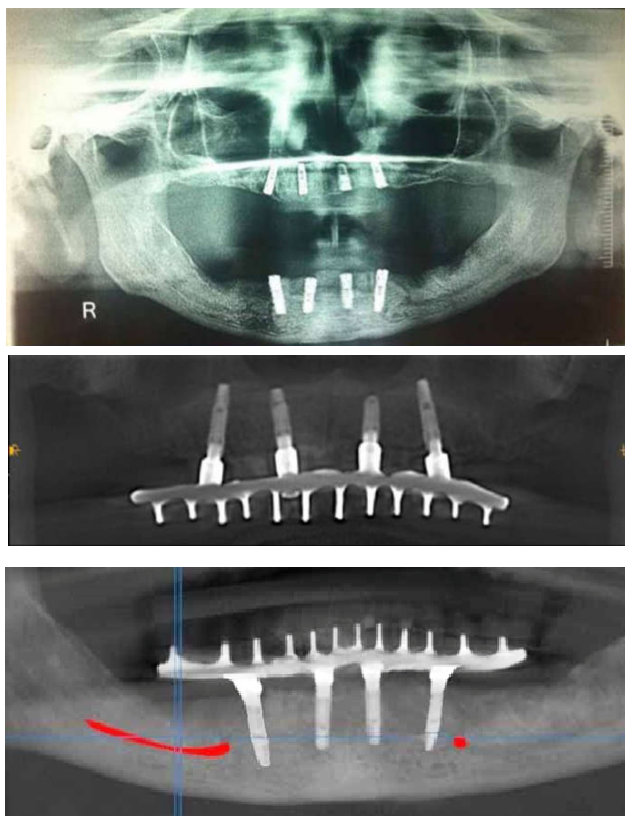


Figure 10. 4 years comparative radiographic evaluation

DISCUSSION

The All-on-4 treatment has been developed to maximize the use of available bone and preserve relevant anatomical structures without complicated bone-grafting procedures and allows immediate function. Published data on the All-on-4 concept reported CSRs between 92.2% and 100% in edentulous and immediate postextraction patients. (Patzelt *et al.*, 2014) However, there is still a controversy on the implementation of dental implants in GAP patients, because of the fear of infection and uncontrolled ongoing bone loss. However, some positive outcomes were obtained recently. (Wu and Chee, 2007; Huh *et al.*, 2010; Bidra and Shaqman, 2012) Wu *et al.* reported in 2007 a patient with GAP treated with 8 implants, and indicated that the survival rate of the implants was 100% with no MBL or inflammation found in the 18-month follow-up (Wu and Chee, 2007). Other similar case reports also showed a positive outcome in one patient with aggressive periodontitis (Yalcin *et al.*, 2001; Hoffmann *et al.*, 2007). Prospective studies by Mengel *et al.* Have shown that in partially edentulous patients treated for aggressive periodontitis, implant survival rates were 97.4% to 100% in the short-term and 83.3% to 96% in the long-term including implants placed in augmented bone. The CSRs of suprastructures in GAP patients were 95.9% to 100%. The compromise was the bone and attachment loss at the implants as well as the rate of peri-implantitis and mucositis were higher than in periodontally healthy subjects, and the implant survival rate was lower (Mengel *et al.*, 2005; Mengel *et al.*, 2007; Mengel *et al.*, 2007; Swierkot *et al.*, 2012). In our case report about All-on-4 treatment in patients with GAP, we have found no clinical signs of peri implant mucositis or bone loss after 4-year follow-up. These preliminary findings corresponded well with the results from other existing studies 10–16 of the All-on-4 treatment in the general population or of conventional implant treatment in patients with aggressive periodontitis. There is very scarce literature available about full-arch immediate implant placement and prosthetic rehabilitation in patients with advanced GAP, our case report suggests further exploration on this treatment modality with randomized controlled clinical trials with much large sample size.

Conclusion

Based on the findings of our case report, it can be concluded that full-arch immediate implant and immediate rehabilitation using All on 4 implants could be a predictable alternative with high satisfaction in patients with GAP in 2-4 year follow-ups.

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