



## CASE PRESENTATION

### Implants in the upper jaw using the All on Six technique. Clinical case

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#### ABSTRACT

**Introduction:** patients with substantial bone loss, such as those with periodontitis, are usually prescribed an ALL-on-6 implant for better masticatory distribution, in search of a more stable and solid implant.

**Objective:** to present the case of a geriatric patient with periodontitis and dissatisfaction with the appearance of his teeth, for which he was rehabilitated with an implant-supported overdenture using the ALL-on-6 technique.

**Case presentation:** a 60-year-old male patient attended a dental consultation at the Faculty of Dentistry of the University of Ibarra, concerned about the appearance of his teeth. Clinical examination revealed medium-sized, hydrated lips, permeable salivary glands, a coated tongue, an ovoid-shaped residual alveolar ridge, 25 remaining teeth, defective restorations considered potential sources of infection, multiple pending extractions, and deficient pulp treatments. Minimally invasive extractions were performed, a non-restrictive surgical guide was placed, a surgical drilling protocol was followed, and implants were placed using the All-on-6 technique.

**Conclusion:** underlying periodontal disease was one of the main factors to consider when placing implants and rehabilitating the patient prosthetically. Therefore, the All-on-6 technique was performed, taking into account the indications for which it was designed, as well as the patient's bone condition.

**Keywords:** Dental Implants; Implant Esthetics; Implant Position; Surgical Procedures.

## INTRODUCTION

An overdenture supported by four or six dental implants, without any palatal support, is known as the ALL-on-4 or ALL-on-6 technique. This is a favorable prosthetic option due to its improved functional stress distribution, reduced crestal bone loss, and increased implant survival. Both techniques were developed in the 1990s as an alternative to conventional dental implant techniques. They are used in upper and lower jaw rehabilitation when severe bone resorption has not yet been detected.<sup>(1)</sup>

Patients with substantial bone loss are usually prescribed an ALL-on-6 implant for better masticatory distribution, in search of a more stable and solid implant. Depending on the patient's dental condition, various configurations of prostheses or bridges retained on six implants are available. If the patient's bone condition allows, bone filling or sinus lift may not be necessary.<sup>(2)</sup>

The ALL-on-6 procedure is performed on healthy bone and consists of implanting six titanium anchors evenly distributed in the jaw (lower or upper as needed), so that the masticatory force is well balanced throughout the prosthesis. An arch made of false gum tissue is then secured to the implants with six titanium screws, on which 10 to 12 zirconium, ceramic, or porcelain teeth are mounted. Once the bridge is secured in this way, it can be maintained for 10 to 30 years, provided good dental hygiene is maintained. The patient's teeth will then be naturally and aesthetically aligned, and they will be able to chew easily.<sup>(3)</sup>

Periodontal disease is considered an infectious process of the gums and adjacent tissues caused by microorganisms that invade the supra- and subgingival spaces. Chronic inflammation in the periodontium may result in localized or generalized bone resorption. Periodontitis is a multifactorial disease that requires a correct diagnosis. This requires various complementary tests and examinations, such as probing depth, attachment loss, tooth mobility, bleeding, inflammation, and radiographic parameters such as bone resorption.<sup>(4)</sup>

Tooth loss associated with dental mobility typical of periodontitis negatively influences function, mastication, phonetics and aesthetics as well as the conformation of the alveolar ridge, which is subject to a continuous resorption process, and compromises the volume and resistance of the residual bone.<sup>(5)</sup>

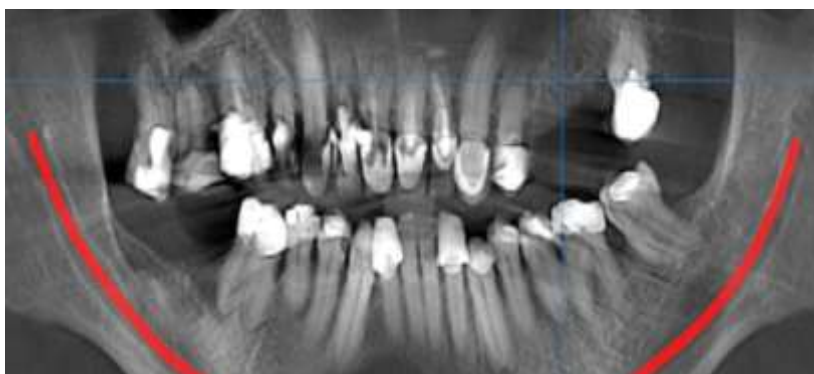
Taking into account the above, the present investigation was developed, which aimed to present the case of a geriatric patient with periodontitis and dissatisfaction with the appearance of his teeth, for which he was rehabilitated with an implant-supported overdenture using the ALL-on-6 technique.

## CLINICAL CASE REPORT

A 60-year-old male patient attends a dental consultation at the Faculty of Dentistry of the University of Ibarra during the month of March 2024 concerned about the appearance of his teeth. Upon examination clinical examination shows medium-sized, hydrated lips, permeable salivary glands, coated tongue, ovoid-shaped residual alveolar ridge, 25 remaining teeth, defective restorations considered possible sources of infection, multiple pending extractions and deficient pulp treatments. A disclosing substance was applied, obtaining a plaque index of 100 % (O'Leary 1972).

The gingiva was also reddish in color, with a relentless, firm consistency, and a smooth, shiny surface. It bled on probing, as well as had periodontal pockets. Clinical attachment level (CALI) loss  $\geq 4,6$  mm was observed in 24 sites (19,5 %), and probing depth  $\geq 4,2$  mm was observed in 97 sites (79 %).

A panoramic radiograph was indicated, where localized vertical bone loss, endodontic restoration material, dental caries and defective fillings are observed in Figure 1, for a definitive diagnosis of stage III periodontitis.



**Fig. 1** Panoramic X-ray.

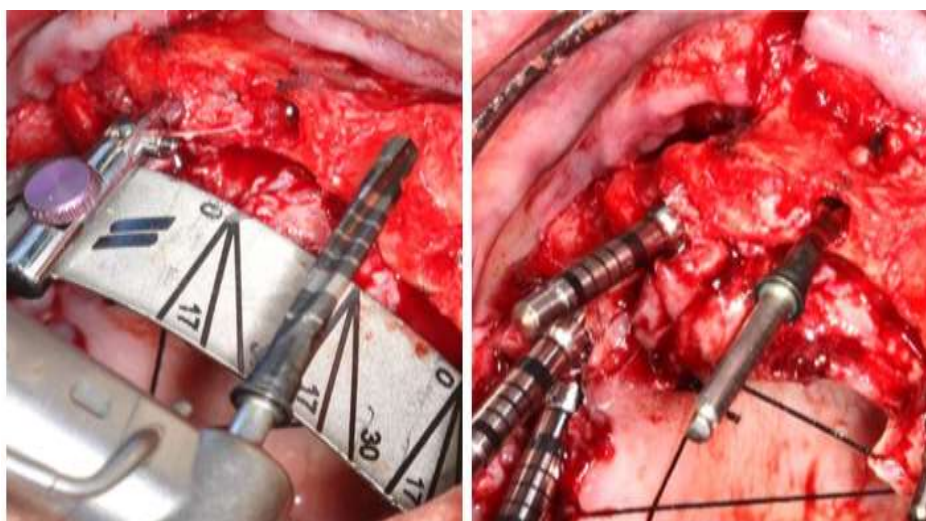
#### **Treatment plan:**

- Motivation: Educational session on the origin, treatment, and maintenance of a patient diagnosed with periodontitis, frequency and technique of tooth brushing, use of interdental brushes, proper use of mouthwash, dental floss, and an anti-caries diet.
- Oral Physiotherapy: identification of plaque-retaining structures in the oral cavity, demonstration session on the correct use of a toothbrush (Modified Bass Technique), dental floss, and dosage.
- Scaling and root planing using manual and ultrasonic therapy
- Prophylaxis and Polishing.
- Chemical Therapy for Plaque Control: 0,12 % Chlorhexidine Digluconate Mouthwash/ Oral Route/ 15 ml for 60 seconds, 30 minutes after brushing, for 15 days.

#### **Surgical Phase:**

- Conscious or parenteral sedation
- An infiltration anesthesia technique was performed in the area to be treated with 2 % lidocaine with 1:1000000 epinephrine.
- An intracrevicular and liberatrice incision was made with number 15 scalpel blades distal to teeth 1,6 and 2,8
- Full-thickness flap from the dental organ
- Desperiosteization of the mucosa towards the apical
- Minimally invasive extraction of dental structures.
- Curettage and cleaning of the alveolus with sterile saline solution in all cases.
- Placement of non-restrictive surgical guide
- The surgical drilling protocol was performed according to SIN® brand specifications and 3,5 x 11,5 mm EPIKUT implants were placed (Figure 2)
- Initial milling cutter rotation: 1,200 rpm
- Bur rotation from 2,7 mm to 3,3 mm: 800 rpm
- Verification of position and parallelism

- Insertion rotation: 40 rpm.
- Maximum torque: 35 N.cm
- Insertion on the palatal surface of the alveolus, avoiding damage to the vestibular bone crest
- The implant platform was placed at a depth of 3 mm
- Sterile saline irrigation.
- Immediate postoperative radiographic control (Figure 3)



**Fig. 2** Milling sequence.



**Fig. 3** Immediate postoperative radiographic control.

#### Postoperative care

- Conscious or parenteral sedation
- Amoxicillin plus Clavulanic Acid 1g every 12 hours for seven days
- Apply ice packs for 24 hours at 10-minute intervals. Do not brush the area for two weeks after surgery.
- Rinse with Ecident (Chlorhexidine Digluconate 0,1 %) for one minute, three times a day for 15 days.
- Do not make physical efforts, do not lift weights or make postural changes.
- Do not sunbathe.
- Soft diet.
- Removal of stitches 15 days after surgery.

- Post-surgical checks are performed.
- Postoperative control 15 days after surgery (Figure 4)



**Fig. 4** Postoperative control and prosthesis placement.

## DISCUSSION

The success rate of implants has increased over the years, thanks to the efficiency of rehabilitation, which is subject to several factors such as: bone conditions, angulation, position, direction and placement of the implants, as well as factors related to occlusion.<sup>(6)</sup>

Dental implant rehabilitation has emerged as one of the leading forms of treatment for replacing teeth, whether due to poor condition or edentulousness. The concern for aesthetics in this case reinforces the idea that oral aesthetic problems can affect self-esteem, since a smile is important in society for generating attraction, charm, and sympathy.<sup>(7)</sup>

A study carried out in 2020 in Cuba shows that a high number of the population perceives their dental aesthetic problems and feels concerned.<sup>(8)</sup> A primary condition for osseointegration is the quantity and quality of the adjacent alveolar bone, which is why the All-on-6 technique seeks to angle the implants for a better distribution of the loads and in this way avoid the advance of periodontal disease. On the other hand, some harmful situations are traumatic extractions,<sup>(9)</sup> which is why in the present case minimally invasive extractions of the dental structures were performed.

In order to minimize bone resorption, implants are installed immediately and tooth extractions are performed in a single visit. This reduces bone wall defects and success rates are similar to those of healed implants. Other advantages include a reduction in the number of surgical procedures and greater patient acceptance. No differences have been found in relation to osseointegration between patients with locally periodontal disease and those who are periodontally healthy, provided that proper pre- and postoperative care is taken. A combination of vertical and inclined implants offers the advantage of minimizing auxiliary bone augmentation procedures.<sup>(5)</sup>

In Colombia, there have also been publications on geriatric patients with severe bone resorption and their treatment with implantology. After analyzing the diagnostic tools and scientific evidence, a dental implant was placed simultaneously with the maxillary sinus lift using the lateral window technique. Four months later, the second surgical phase was performed, and the patient was finally restored with a zirconium crown.<sup>(10)</sup> However, the All-on-6 technique was not used, which is inconsistent with the present study.

Other case presentations have addressed implant-supported rehabilitation with the All-on-4 and All-on-6 techniques, such as the case of a Brazilian woman with radiographic evidence of maxillary resorption.<sup>5</sup> In Austria they conducted a retrospective study in which they recorded risk factors related to the patient and the implant, which included diabetes and smoking. Treatment parameters were also evaluated, which included surgical procedures and types of gaps. In a total of 1132 patients with a mean age between 50,6 and 16,5 years.<sup>(11)</sup>

Likewise, a study carried out in Japan in 2020 evaluated the future prospects of dental implants. The authors highlighted the survival rate of dental implants, which exceeds 90 %, without forgetting human factors such as the surgical skills of the stomatologist.<sup>(12)</sup>

Similarly, a thesis defended at the Universidad Iberoamericana in Santo Domingo included a questionnaire administered to dentists attending postgraduate workshops on oral surgery, periodontics, and oral rehabilitation. The researchers concluded that 72 % of the participants had a high level of knowledge about the contraindications and indications for dental implants, and that when comparing confidence and knowledge, participants with a high level of knowledge also had a high level of confidence.<sup>(13)</sup> Hence the importance of adequate preparation on the part of the physician, both in the diagnosis of periodontitis and in correct surgical planning and the selection of the most appropriate technique.

The present case showed no complications related to the surgical procedure, demonstrating complete satisfaction with the aesthetics and rehabilitation procedure. The need for periodic checkups is crucial to ensure the longevity of the treatment. The benefits of implant-supported prostheses are widely recognized in the scientific literature. When performing oral prosthetic rehabilitation, the patient's expectations must be met in order to satisfy those that are possible.<sup>(14)</sup>

## CONCLUSIONS

In the case report presented, underlying periodontal disease was one of the main factors to consider when placing implants and prosthetically rehabilitating the patient. Dental caries and unfinished pulpal root canal treatments were sources of infection that could have more serious consequences for the patient. Therefore, the All-on-6 technique was performed, taking into account the indications for which it is designed, as well as the patient's bone condition. This procedure demonstrated an improvement in dental aesthetics, thus addressing the patient's concern and reason for seeking consultation, thereby improving their quality of life.

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