



# All-on-Four Dental Implants: An Effective Solution for Full-Arch Rehabilitation

DrA. Yudmila Arbelo Yeras

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## ABSTRACT

The All-on-Four dental implant concept has become a widely accepted and innovative treatment option for the rehabilitation of fully edentulous patients. This technique allows for the immediate placement and loading of a full-arch fixed prosthesis supported by only four strategically positioned implants. Its minimally invasive approach, reduced treatment time, and ability to avoid complex grafting procedures make it a favorable option for many patients. This article provides an overview of the All-on-Four technique, including indications, surgical procedures, prosthetic workflow, advantages, and limitations.

## I. INTRODUCTION

Edentulism significantly affects patients' oral function, aesthetics, and overall quality of life. Traditional rehabilitation options, such as complete removable dentures, often present challenges like poor stability, reduced masticatory efficiency, and patient dissatisfaction. The All-on-Four dental implant concept was introduced to address these challenges by offering a fixed, full-arch prosthetic solution supported by just four dental implants.

## II. METHODS

The All-on-Four treatment approach involves a carefully planned sequence of surgical and prosthetic procedures, which are generally performed as follows:

### Patient Evaluation

- A comprehensive clinical and radiographic assessment is conducted, including:
- Panoramic radiographs
- Cone Beam Computed Tomography (CBCT) scans
- Diagnostic impressions or digital intraoral scans
- Evaluation of bone quality and volume
- Patients are selected based on bone availability in the anterior maxilla or mandible and their general medical condition.

### Surgical Procedure

- Local anesthesia with or without conscious sedation is administered.

-A crestal incision is made, followed by full-thickness flap reflection to expose the alveolar ridge.

-Two anterior implants are placed vertically in the premaxillary or interforaminal region where bone volume is typically better preserved.



-Two posterior implants are tilted distally at approximately 30–45 degrees to maximize implant-to-bone contact and avoid anatomical structures like the maxillary sinus or the inferior alveolar nerve.



-Primary implant stability is verified using insertion torque values or resonance frequency analysis.

### Immediate Loading Protocol

-If primary stability (usually  $\geq 35$  Ncm torque) is achieved, a screw-retained provisional fixed prosthesis is delivered within 24 to 48 hours after surgery. This allows patients to regain function and aesthetics immediately.

### Prosthetic Workflow

- The provisional prosthesis remains in place for 4 to 6 months during osseointegration.
- After healing, definitive impressions are taken using open-tray or digital techniques.
- A final prosthesis is fabricated, often using materials such as metal-acrylic hybrids or



monolithic zirconia for improved durability and aesthetics.



### Follow-up and Maintenance

Patients are scheduled for regular post-operative checks at 1 week, 1 month, 3 months, and then every 6 months. Long-term success depends on proper oral hygiene maintenance and professional monitoring.

### III. RESULTS

-Not applicable for this descriptive article (No clinical study performed).

### IV. DISCUSSION

-The All-on-Four technique offers several advantages, such as reduced treatment time, lower costs, and avoidance of complex bone grafting procedures. It also allows for immediate function and improved patient satisfaction. However, careful patient selection, thorough treatment planning, and surgical precision are essential to avoid complications such as implant failure, prosthetic screw loosening, or peri-implantitis.

-While the technique has shown high survival rates in the literature, long-term maintenance and periodic follow-ups are crucial for sustaining implant and prosthesis success.

### V. CONCLUSION

The All-on-Four implant concept provides a practical, minimally invasive, and cost-effective treatment option for fully edentulous patients seeking fixed full-arch rehabilitation. With proper case selection and execution, this approach can dramatically improve oral function, aesthetics, and quality of life.

### REFERENCES

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