



All-on-Four Implant Rehabilitation in Medically Compromised Patients: Clinical Considerations and Outcomes

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Abstract

All-on-Four implant-supported rehabilitation has become a predictable solution for full-arch edentulism, including in medically compromised patients. This review evaluates clinical considerations, treatment planning, surgical protocols, and outcomes of All-on-Four therapy in patients with systemic conditions such as diabetes, osteoporosis, and cardiovascular disease. Current literature demonstrates high implant survival rates

when systemic diseases are well controlled and proper case selection is performed. Immediate loading protocols improve patient satisfaction and function, although complications may occur in poorly controlled systemic conditions. Careful planning, interdisciplinary collaboration, and strict maintenance protocols are essential for long-term success. All-on-Four treatment can significantly improve oral function and quality of life in medically compromised patients when appropriate precautions are followed.



I. Introduction

The All-on-Four concept has revolutionized implant dentistry by allowing full-arch rehabilitation using only four implants to support a fixed prosthesis. This technique is especially beneficial for edentulous patients with limited bone volume and those seeking immediate functional restoration.

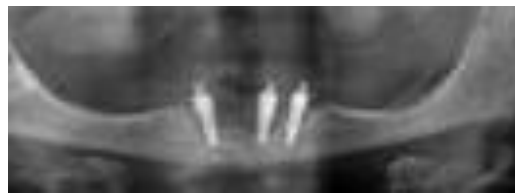
Medically compromised patients often present challenges for implant therapy due to systemic conditions that may affect healing, osseointegration, and bone metabolism. However, improvements in implant design and surgical protocols have made treatment feasible for many of these individuals.



II. Background

Systemic diseases such as diabetes mellitus, osteoporosis, and cardiovascular disorders can influence implant success. Poor glycemic control may impair wound healing, while osteoporosis may reduce bone density and primary implant stability.

Despite these concerns, studies show that patients with controlled systemic conditions can successfully undergo implant therapy. The All-on-Four technique reduces the need for extensive grafting and minimizes surgical time, making it suitable for medically compromised individuals.



III. Materials and Methods

A narrative literature review was conducted using peer-reviewed articles from PubMed and dental journals published between 2005 and 2025. Keywords included: “All-on-Four,” “medically compromised patients,” “implant survival,” and “systemic disease and dental implants.”

Articles focusing on implant survival, prosthetic outcomes, and complications in medically compromised patients treated with All-on-Four were analyzed. Case reports, clinical trials, and review articles were included.

IV. Discussion

All-on-Four implant therapy demonstrates high success rates in patients with controlled systemic conditions. Diabetic patients with adequate

glycemic control show implant survival rates comparable to healthy individuals. Osteoporotic patients can also benefit from implant therapy when bone quality is evaluated carefully.



Immediate loading protocols improve mastication, speech, and esthetics, enhancing patient satisfaction. However, uncontrolled systemic diseases increase risks of infection, delayed healing, and implant failure.



Interdisciplinary collaboration with physicians is essential. Maintenance visits, oral hygiene instruction, and regular follow-up improve long-term outcomes.

V. Conclusion

All-on-Four implant rehabilitation is a predictable and effective treatment for medically compromised patients when systemic conditions are well managed. Careful planning, proper surgical protocols, and maintenance programs are essential to ensure long-term success and improved quality of life.

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