

IMPLANT-SUPPORTED OVERDENTURES IN EDENTULOUS PATIENTS: CLINICAL OUTCOMES, ATTACHMENT SYSTEMS AND PATIENT SATISFACTION – A NARRATIVE REVIEW

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ABSTRACT

Implant-supported overdentures have become a widely accepted treatment option for edentulous patients, providing improved retention, stability, masticatory efficiency, and quality of life compared with conventional complete dentures. The purpose of this review is to summarize current evidence regarding implant-supported overdentures, focusing on attachment systems, implant survival, patient satisfaction, and prosthetic complications. A literature review was conducted using articles published in international peer-reviewed journals. The analyzed studies demonstrated high implant survival rates and significant improvements in oral function and patient-reported outcomes. Among attachment systems, Locator attachments and bar-retained overdentures remain the most frequently used options, each presenting specific advantages and limitations. Although maintenance requirements vary according to the attachment system employed, implant-supported overdentures continue to represent a predictable and cost-effective treatment modality for the rehabilitation of edentulous patients. Long-term clinical success depends on appropriate patient selection, treatment planning, and regular maintenance protocols.

Keywords: implant-supported overdenture, edentulism, Locator attachment, implant survival, patient satisfaction

INTRODUCTION

Edentulism remains a significant oral health challenge worldwide, particularly among elderly individuals. Complete tooth loss negatively affects mastication, speech, facial esthetics, and psychosocial well-being. Conventional complete dentures have traditionally been used for the rehabilitation of edentulous patients; however, many individuals experience poor retention and stability, especially in the mandibular arch.

The introduction of osseointegrated dental implants revolutionized prosthetic rehabilitation and enabled the development of implant-supported overdentures. These prostheses combine the advantages of removable prosthodontics with the improved support and retention provided by dental implants.

The mandibular two-implant overdenture has been recognized as the minimum standard of care for edentulous mandibles by several international consensus statements. Implant-supported overdentures improve chewing ability, speech, comfort, and patient satisfaction while preserving residual alveolar bone.

Various attachment systems have been proposed for overdenture retention, including ball attachments, Locator attachments, bar systems, and magnetic attachments. The choice of attachment influences prosthetic performance, maintenance requirements, and long-term clinical outcomes.

The aim of this review is to evaluate the current literature regarding implant-supported

overdentures and summarize evidence concerning clinical outcomes, attachment systems, implant survival, patient satisfaction, and complications.

MATERIAL AND METHODS

A narrative review of the literature was conducted using scientific publications related to implant-supported overdentures. Relevant studies published in peer-reviewed journals were identified through electronic database searches, including PubMed, Scopus, and Google Scholar.

Keywords used for the search included:

- * Implant-supported overdenture
- * Implant-retained overdenture
- * Edentulous patient
- * Locator attachment
- * Bar attachment
- * Implant survival
- * Patient satisfaction

Articles published in English and focusing on clinical outcomes, attachment systems, implant survival, maintenance requirements, and quality of life were considered eligible.

Review articles, systematic reviews, randomized clinical trials, cohort studies, and longitudinal studies were included.

RESULTS AND DISCUSSIONS

Clinical Outcomes of Implant-Supported Overdentures

The reviewed studies consistently demonstrated that implant-supported overdentures significantly improve prosthetic retention and stability compared with conventional complete dentures.

Patients reported enhanced masticatory

efficiency, increased comfort during function, and greater confidence in social interactions. Several investigations revealed improved nutritional status due to the ability to consume a wider variety of foods.

Furthermore, implant-supported overdentures contribute to the preservation of residual alveolar bone by reducing pressure on supporting tissues and improving load distribution.

Implant Survival Rates

Most studies reported implant survival rates exceeding 95% after five years of function.

Mandibular overdentures supported by two implants exhibited particularly favorable outcomes. Long-term investigations showed survival rates ranging from 95% to 99%, depending on patient-related and prosthetic factors.

Maxillary overdentures generally demonstrated slightly lower survival rates due to poorer bone quality and more complex biomechanical conditions. Nevertheless, clinical success remains highly predictable when adequate treatment planning is performed.

Attachment Systems

Several attachment systems are currently available for implant-supported overdentures.

Ball Attachments

Ball attachments are among the oldest retention systems and are characterized by simplicity and relatively low cost. They are easy to fabricate and maintain but may provide lower retention compared with newer attachment designs.

Locator Attachments

Locator attachments have gained considerable popularity due to their low profile, self-aligning mechanism, and ease of replacement. They provide satisfactory retention and are particularly useful when interarch space is limited.

Bar Attachments

Bar-retained overdentures offer excellent retention and stability by splinting implants together. However, they require greater laboratory complexity and may increase hygiene difficulties.

Magnetic Attachments

Magnetic systems facilitate prosthesis insertion and removal, particularly in elderly or physically compromised patients. However, they generally provide lower retention compared with mechanical attachment systems

Patient Satisfaction and Quality of Life

Patient satisfaction is one of the most frequently reported benefits of implant-supported overdentures.

Compared with conventional complete dentures, implant-supported overdentures significantly improve:

- * Retention and stability
- * Comfort during mastication
- * Speech performance
- * Self-confidence
- * Social interaction
- * Overall oral health-related quality of life

Several studies demonstrated substantial improvements in Oral Health Impact Profile (OHIP) scores following implant overdenture treatment.

Prosthetic Complications and Maintenance

Although implant-supported overdentures exhibit high success rates, maintenance requirements remain common.

The most frequently reported complications include:

- * Wear of attachment components
- * Replacement of Locator inserts
- * Denture base fractures
- * Loss of retention
- * Relining procedures
- * Prosthetic tooth wear

Biological complications may include peri-implant mucositis and peri-implantitis, emphasizing the importance of regular maintenance visits and oral hygiene instruction.

DISCUSSION

The literature consistently supports the use of implant-supported overdentures as a predictable treatment option for edentulous patients. The improvement in retention and stability translates directly into enhanced patient satisfaction and oral function.

The mandibular two-implant overdenture remains the most extensively studied treatment modality and continues to be recommended as a cost-effective standard of care. While additional implants may improve support and stability, the benefits must be balanced against increased treatment costs.

Selection of the attachment system plays a crucial role in treatment success. Locator attachments provide favorable retention and simplified maintenance, whereas bar-retained overdentures offer superior stability at the expense of increased complexity.

Long-term clinical outcomes depend not only on implant survival but also on

maintenance protocols, patient compliance, and proper prosthetic design. Regular follow-up appointments are essential to detect biological and mechanical complications at an early stage.

Future research should focus on long-term comparisons of attachment systems, digital workflows, and patient-centered outcomes.

CONCLUSIONS

1. Implant-supported overdentures represent a reliable treatment option for edentulous patients.
2. Significant improvements in retention,

stability, mastication, and quality of life have been consistently reported.

3. Implant survival rates are generally high, frequently exceeding 95% over long-term follow-up periods.

4. Locator and bar attachment systems remain the most commonly utilized retention mechanisms.

5. Regular maintenance and patient compliance are essential for long-term clinical success.

6. Implant-supported overdentures should be considered an effective and predictable solution for the rehabilitation of edentulous arches.

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