

Treatment of Orally Handicapped Edentulous Older Adults Using Dental Implants



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KEYWORDS

- Edentulism • Tooth loss • Dental implants • Mini-dental implants • Osseointegration
- Prosthodontics • Overdentures

KEY POINTS

- The oral handicap of complete edentulism is the terminal outcome of a multifactorial process involving biological factors and patient-related factors. It will continue to represent a very large global health care burden for the foreseeable future.
- The fully edentulous orally handicapped older adult population has been neglected because removable acrylic dentures have been the classic therapy for complete edentulism. These soft tissue-supported prostheses do not treat alveolar bone loss or prevent disuse atrophy or pressure-mediated resorption, which are all germane to edentulism. Therefore, they are only rehabilitative, not therapeutic.
- Not replacing missing teeth with stable dentures could prevent adequate food intake.
- To address the oral handicap of complete edentulism, osseointegrated endosseous implants could be used as a therapeutic adjunct and could reduce the problem of long-term bone resorption to less than 0.1 mm per year.
- Implant-borne prostheses substantially improve the overall health and quality of life of orally handicapped fully edentulous older adults.

INTRODUCTION

The older adult population (defined as those aged 65 years and older) is the fastest growing age group in American society. The US Bureau of the Census reported that in 2010 there were more than 40 million older Americans representing nearly 13% of the population. The Census Bureau projects that more than 20% of American adults

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will be aged 65 years or older by the year 2040. The increase in the elderly population has affected the oldest groups the most. For instance, from the beginning of the twentieth century to the present, there has been an 800% increase in the size of the 65-year-old to 74-year-old age group, but the number of Americans aged 85 years and older has increased by 2500% over the same period.¹⁻³

The aging population is bringing with it an increase in the number of teeth lost. As a result, the population in need of treatment of complete edentulism is larger than ever.⁴

Oral handicap of complete edentulism can be defined as the physical state of the jaws following removal of all erupted teeth and the condition of the supporting structures available for reconstructive or replacement therapies. It is the terminal outcome of a multifactorial process involving biological factors and patient-related factors. It represents a huge global health care burden and will continue to do so for the foreseeable future.

The fully edentulous orally handicapped older adult population has been neglected because removable acrylic dentures have been the classic therapy for complete edentulism. These soft tissue-supported prostheses do not treat alveolar bone loss or prevent disuse atrophy or pressure-mediated resorption, which are all germane to edentulism. Therefore, they are only rehabilitative, not therapeutic.^{5,6}

To address the oral handicap of complete edentulism, osseointegrated endosseous implants should be used as a therapeutic adjunct. Implants can reduce the problem of long-term bone resorption to less than 0.1 mm per year while providing adequate masticatory function.⁷

However, most denture wearers are not aware that the pressure of their removable dentures on the jaw results in the loss of the jaw bone, thus reducing the stability of their dentures. It can be frustrating to eat certain foods or to try to speak with confidence with the fear that the denture will begin to float in the mouth. Not replacing missing teeth with stable dentures prevents adequate food intake, resulting in a lack of proper nutrients and vitamins and leading to weight loss and serious medical conditions such as heart disease and poor cognitive function.⁷⁻⁹ A low number of teeth increases the risk of higher prevalence and incidence of dementia.¹⁰

To address the disease of edentulism, endosseous implants are being used as a therapeutic adjunct and can reduce the problem of long-term bone resorption to less than 0.1 mm per year. Dental implants offer many advantages in the oral rehabilitation of older patients.¹¹ The use of dental implants for support and/or retention of fixed or removable prostheses has been shown to be an important opportunity to enhance prosthodontic treatment outcomes and quality of life for patients with complete edentulism.¹²

This article reviews and discusses the current techniques to rehabilitate fully edentulous older adult patients by means of dental implants.

OSSEOINTEGRATION

Osseointegration of the implants to the bone is one the most crucial factors that influences the long-term predictability of the implant placement procedure. Osseointegration, defined as a direct structural and functional connection between ordered, living bone and the surface of a load-carrying implant, is critical for implant stability, and is considered a prerequisite for implant loading and long-term clinical success of endosseous dental implants.¹³ Osseointegration involves an initial interlocking between alveolar bone and the implant body, and, later, biological fixation through continuous bone apposition and remodeling toward the implant. It is a complex process in which

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