Short Communication
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The impact of tooth loss and the role of implantology in the elderly population

Abstract

Tooth loss can lead to changes in the mouth and various health complications in older adults. In addition to affecting oral health, the loss of teeth can impact speech, chewing, and overall quality of life. Dental implants have been proposed as one possible solution for missing teeth. This article aims to discuss the potential negative effects of tooth loss in the elderly population and emphasize the important role of implantology in addressing these challenges. The field of implantology extends beyond just replacing a single tooth and involves ongoing research to meet the unique needs of older adults. Ultimately, the goal of implantology is to ensure both oral and overall health, as well as the long-term success of dental implants.

Keywords: dental implants, implantology, oral health, tooth loss

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Abbreviations: CBCT, cone beam computed tomography; CAD/CAM, computer-aided design/ computer-aided manufacturing

Introduction

Recent research in implantology explores the intersection of ageing and dental implant treatments. As individuals age, the prevalence of tooth loss and the subsequent need for dental implants increases.[1] Implantology studies currently focus on understanding the specific challenges and considerations associated with dental implant placement in older adults1. This includes examining the effects of age-related factors such as bone density, healing capacity, and overall health on the success and longevity of dental implants.[2] Additionally, researchers investigate innovative implant designs, biomaterials, and surgical techniques tailored to older adults.[3] These advancements aim to improve outcomes, minimize complications, reduce time of treatment, and enhance oral health and quality of life for aging populations. The expertise of implantology contributes to the development of evidence-based practices for patients seeking dental implant treatments for missing teeth. Thus, it is important to understand the significance of implantology in relation to the impact it has on both oral and overall health following tooth loss.

Here are the following key consequences of tooth loss. Missing teeth can affect speaking, causing difficulties in pronunciation and clarity of speech.[4] This can lead to a loss of confidence in social interactions and professional settings.[4] In addition, ineffective mastication due to the absence of teeth can make it challenging to chew and bite properly.[4] This can lead to difficulty in eating foods, affecting nutrition and digestion.[5] Alterations in the oral cavity also can arises. Movement of existing teeth can occur when a tooth is lost, the adjacent teeth can start to shift or drift into the empty space.[6] This can cause misalignment, changes in the bite and temporomandibular disorder.[6] When teeth are lost, it increases the occlusal load on the remaining tooth.[7] This can lead to further tooth loss by affecting the periodontium, the supporting structure of the remaining teeth.[7] Lastly, the missing teeth can cause changes in facial appearance, such as dropping the mouth corners due to the decreased vertical dimension.[8]

Tooth loss can also be associated with an increased risk of various systemic health conditions, including cardiovascular diseases, diabetes, and respiratory infections.[9,10] Difficulty chewing can lead to increased consumption of fats and carbohydrates, a greater risk of obesity, cardiovascular diseases and endocrine-metabolic disorders.[11] There is evidence of high rates of tooth loss in diabetic patients, due to periodontal disease.[12] On the other hand, controlling periodontal inflammation benefits glycemic control and the systemic health of these patients.[12] Tooth loss is also related to cognitive changes,[13] decreased daily function, physical activities, and quality of life.[4,14] It is worth mentioning that missing teeth can increase the risk of gastrointestinal cancer.[15] The impacts of tooth loss are possibly justified by the lack of preventive practices and oral health promotion, or dental care programs for patients with dentoalveolar trauma.

It is fundamental to address tooth loss promptly to prevent these negative consequences. Dental treatments such as dental implants, removable prosthodontics such as bridges and dentures can replace missing teeth and restore oral function and aesthetics.[16] Regular dental check-ups and proper oral hygiene practices are essential for maintaining healthy teeth, periodontium and preventing tooth loss. Furthermore, research in implantology also delves into the psychosocial aspects of dental implant procedures in older adults.[17] Studies explore the impact of tooth loss and subsequent implant placement on self-esteem, social interactions, and overall well-being.[17] Understanding the psychological and emotional aspects of dental implant treatments in the aging population helps guide clinicians in providing holistic care and addressing the unique concerns of older patients. Moreover, interdisciplinary collaborations between dentists, periodontists, prosthodontists, and oral surgeons can contribute to the advancement of knowledge in this field. Collectively, their efforts aim to optimize treatment outcomes, develop age-appropriate clinical protocols, and enhance the overall experience of patients requesting dental implants.

By bridging the field of implantology and researchers can create a comprehensive understanding of the complexities involved in providing dental implant treatments to older adults. This knowledge

serves as a foundation for evidence-based practices and empowers clinicians to deliver effective and tailored care to meet the unique oral health needs of the aging population. Through ongoing research and advancements, the field of implantology continues to evolve, improving the well-being and oral health outcomes for older individuals seeking dental implant interventions. In addition to the interdisciplinary collaborations and holistic approach, recent research in implantology has also explored the potential role of technology in improving dental implant outcomes for older adults. This includes the use of advanced technologies such as CBCT for precise implant planning and placement,[18] the use of computer-guided implant surgery,[19] as well as CAD/CAM to customize implant restorations.[20]

Furthermore, there is a growing interest in investigating the long-term success and survival rates of dental implants in older adults. The current implantology is directed towards improving the oral health and quality of life of older adults through evidence-based approaches. By addressing the unique needs and challenges of aging individuals, researchers strive to enhance the success, longevity, and satisfaction of dental implant treatments in the geriatric population. Recent studies in implantology focuses on the impact of systemic health conditions commonly associated with aging on dental implant outcomes.[21,22] Conditions such as diabetes, estrogen deficiency, and cardiovascular diseases can affect the success and longevity of implants.[21,23] These studies investigate the influence of these comorbidities on implant osseointegration, and post-operative complications, aiming to develop guidelines and strategies to optimize implant treatment in older individuals with systemic alterations.

Moreover, there is a growing interest in exploring alternative approaches to traditional implant treatments for older adults, such as short dental implants, all-on-four concept and zygomatic implants.[1,24,25] These innovative techniques offer options for individuals with compromised bone quality or quantity, providing viable solutions for those who may not be suitable candidates for conventional implant procedures.[24,25] Additionally, recent research in implantology focuses on the development of preventive measures and maintenance protocols specifically tailored for older adults with dental implants. This includes comprehensive oral hygiene strategies, regular follow-up visits, and early detection and management of peri-implant diseases such as peri-implant mucositis and peri-implantitis.[26] It is important to highlight that peri-implant diseases also may impact negatively on systemic conditions, however, further investigations are still necessary.[27] By addressing these aspects, new studies in implantology field aim to improve the long-term success and preservation of the peri-implant health in the aging population.

In summary, the role of the current implantology encompasses a wide range of investigations, including quality of life aspects, technological advancements, systemic health considerations, alternative treatment options, and mainly preventive measures. Therefore, this study emphasizes the significance of replacing lost teeth while also ensuring the oral health and overall well-being. Moreover, adopting a comprehensive and humanistic approach is vital for future research in implantology. There is a lack of research investigating the impact of peri-implantitis on systemic conditions, and no consensus has been reached regarding the treatment of peri-implantitis so far. It is crucial to not only replace missing teeth but also monitor the patients' health after the implants are placed. A risk factor for peri-implantitis is characterized by a history of periodontitis.[27] Since periodontitis is one of the main causes of tooth loss, it is important to implement personalized strategies to manage the biofilm around the peri-implant area. New researchers need to work towards improving the efficacy, longevity, and overall health following dental implant procedures, aiming to prevent both tooth and implant loss.

Conclusion

Implantology plays a critical role in the replacement of missing teeth, ensuring the long-term success of dental implants and improving the overall quality of life for older adults. In addition to preventing negative effects on oral and overall health, research in the field of implantology is indispensable for the elderly population.

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Conflicts of interest

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