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Review Article

Troublesome complete dentures: Challenges and remedies- A narrative review

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Abstract

Teeth are essential for aesthetics and functions like chewing, swallowing, and speaking. Tooth loss can compromise these functions and reduce quality of life. While fixed implant rehabilitation is an option, complete removable dentures remain the most common choice due to affordability. Traditional denture fabrication methods, in use for over a century, are reliable but prone to human error, inaccuracies, and lengthy processes. Troublesome dentures often result from clinical, technical, or biological factors, causing discomfort, functional issues, and aesthetic concerns. This article reviews common challenges with complete dentures and explores remedies to improve outcomes and patient satisfaction.

Keywords: Complete Denture, Remedies, Troublesome dentures

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1. Introduction

Complete edentulism is a significant global issue, particularly among the elderly, as it can severely impact the quality of life by causing difficulties in eating, speaking, and maintaining aesthetics.[1] The therapy for edentulous patients can be realized through the use of conventional removable complete dentures, implant-supported prostheses, and computer-aided design and computer-aided manufacturing (CAD/CAM), however, conventional complete dentures remain the most widely used treatment for patients with complete edentulism mainly because of their financial limitation.[2] However, the traditional fabrication process involves a series of complex clinical and laboratory steps, requiring significant time and financial investment.[3] Denture placement is often associated with multiple challenges due to various factors. Patients typically need time and practice to adapt to new dentures, both functionally and psychologically.[4] The initial days after denture insertion can be particularly challenging for patients as they adjust to the change. Minimizing challenges in complete denture treatment requires effective collaboration among the dentist, the patient, and the dental laboratory technician. Since each patient is unique, the issues encountered during treatment

can vary significantly, leading to diverse outcomes. Some of these issues may be minor and easily overlooked by the patient, while others might be more severe, potentially impacting the patient's ability to adapt to or tolerate the dentures. Troublesome complete dentures are a frequent challenge encountered by both dental professionals and patients. They often arise from a combination of clinical, technical, and biological factors, which can adversely impact patients' quality of life.[5] Issues such as discomfort, functional difficulties, and aesthetic dissatisfaction are common. Understanding the causes of issues and finding effective solutions is key to improving patient satisfaction and treatment success.[6]

This literature review article explores the common challenges and remedies associated with complete dentures, particularly focusing on the clinical, technical, and biological factors that affect patient satisfaction and denture functionality.

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2. Materials and Methods

The review synthesizes findings from various sources, including both recent and foundational studies, to provide a comprehensive understanding of the issues and solutions in complete denture therapy. The aim of the review is to highlight and summarize the documented problems related to complete dentures and their respective remedies, with a special focus on how these factors impact the patient experience.

The review draws from a wide range of sources, including clinical studies, surveys, and research articles, to offer a balanced perspective on the subject. The search strategy involved gathering relevant studies and literature from PubMed, Scopus, Web of Science, and grey literature using keywords such as Complete Denture, Remedies, Troublesome Dentures, Edentulous Patients, Denture-related Problems, Denture Satisfaction, and Dental Prosthetics, with articles published from 2001 to 2024 included to ensure both recent and significant earlier research were considered; the authors collaboratively conducted the literature search, reviewed the selected studies, and synthesized the findings into a comprehensive narrative.

While this article is not a systematic review, great care was taken in selecting a wide range of high-quality studies to include. Inclusion criteria focused on studies that addressed common challenges encountered by denture users, along with proposed remedies. However, the selection of articles was based on the relevance to the topic rather than a strict inclusion/exclusion process.

3. Common Problems with Complete Dentures and their Solutions

2.1 Mucosal irritation

Mucosal irritation typically arises due to two primary reasons: excessive compression beyond physiological limits and denture movement during function. Commonly affected areas include the frenal regions, muscular attachment sites, the hamular notch, mandibular retro-mylohyoid zone, and the buccal mucosa. Contributing factors may include inaccurate jaw relations, improper tooth arrangement (resulting in altered vertical dimension), instability from incorrect centric relation, premature contacts, or posterior teeth positioned buccally to the residual ridge. Overextended denture borders can also cause irritation, which can be resolved by reducing and reshaping the borders. Identifying pressure points using disclosing media on the denture's intaglio surface can guide precise adjustments.[7] Denture stomatitis, characterized by redness beneath the denture, is common and results from multifactorial causes, including ill-fitting dentures, poor hygiene, and systemic conditions. Effective management includes antifungal treatment, denture adjustments, and consistent oral hygiene practices.

4. Lack of Retention and Stability

Retention and stability are critical for successful complete dentures and are significantly influenced by the impression technique. A lack of proper knowledge or skill in impression-making often leads to retention and stability issues.[8]Patients frequently report loose or ill-fitting dentures, which may result from poor retention or stability. Persistent looseness suggests retention faults, while instability might be indicated if the dentures resist vertical dislodgement but shift during function. Solutions to improve prosthesis retention include using denture adhesives, relining or rebasing the denture, or opting for endosseous dental implants to provide enhanced stability and support.

5. Dislodgement of Dentures While Drinking

New denture wearers may initially experience denture dislodgement while drinking fluids. Patients should be reassured that this is a temporary adaptation phase as the lips, cheeks, and tongue adjust to manipulating the dentures.[8]

6. Food Accumulation Under Dentures

Food accumulation, particularly under mandibular dentures, can be minimized by encouraging patients to maintain proper tongue positioning. The tongue should rest against the lingual surfaces of the mandibular anterior denture teeth, with the lateral aspects supporting the posterior teeth. Improper tongue posture and unilateral chewing increase denture movement and food entrapment. Bilateral chewing is recommended to reduce this issue and enhance prosthesis stability.[9]

7. Masticatory Inefficiency

An approximate learning period of 6–8 weeks is required for the patient to develop new memory patterns for masticatory muscles to adapt to the new dentures. Many patients mistakenly attribute chewing difficulties solely to with artificial teeth can help manage their expectations denture faults.[10] Educating patients about the complexity of chewing.[11] Bilateral chewing should be encouraged to improve stability, starting with soft, non-sticky foods before transitioning to firmer textures.

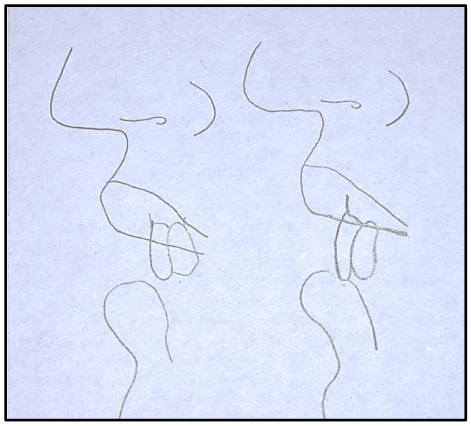

Figure 1: Faulty positioning of teeth can result in speech difficulties.

8. Speech Difficulties

While most patients adapt to speaking with dentures within a few weeks, some may experience prolonged issues. The tongue plays a critical role in phoneme formation, and the fit and form of the denture, particularly the lingual flange, and the positioning of the denture teeth can significantly impact speech clarity (**Figure 2**). Techniques like palatography can assess tongue-palate interactions.[12] Adjusting the positioning of maxillary anterior teeth or creating customized rugae patterns can improve speech outcomes.

9. Unattractive Appearance

Aesthetic dissatisfaction is often reported when patients perceive insufficient or excessive visibility of the denture teeth.[13] This issue can be mitigated by securing patient approval during the wax try-in phase before processing the denture. Overbite adjustments can increase tooth visibility but may compromise stability. Issues such as drooping lips or facial wrinkles should not be overcorrected by increasing the occlusal vertical dimension excessively, as this could hinder adaptation. Instead, the labial flange may be carefully recontoured and the arrangement of the maxillary central incisors be modified to support the upper lip and enhance aesthetics. Peripheral roll and labial flange modifications can address concerns of excessive fullness while maintaining retention.[13]

10. Debonding of Denture Teeth

Tooth debonding often occurs due to residual wax between the tooth surface and denture base acrylic, forming an insulating barrier during processing (**Figure 1**). Insufficient packing pressure)or over-trimming of teeth to fit heavy ridges can also lead to this issue. Ensuring clean, dry surfaces before acrylic packing and maintaining optimal processing conditions can prevent debonding.[13] These adjustments and patient education strategies can significantly reduce the challenges associated with complete dentures and improve patient satisfaction.[14]

Figure 2: Debonding of denture tooth.

11. Whistling

Patients may report whistling sounds while speaking upon wearing a new denture, often due to increased palatal vault depth or a compressed arch form.[8] Adjusting the palatal contour by lowering it typically resolves this issue. Additionally, failure to replicate the palatal rugae can contribute to this problem and should be addressed.[8]

12. Fractured Denture

Understanding the cause of a denture fracture is crucial in addressing the complaint.[11] Fractures can be categorized into accidental and stress-induced types. Contributing factors include porosity, weak adhesion of artificial teeth to the denture base, or anatomical features such as tori and undercuts (**Figure 3**). Reinforcing dentures with metal mesh or high-strength polymers, particularly impact-resistant materials, reduces the likelihood of fractures. For patients with heavy occlusions, incorporating metal palates not only strengthens the denture but also enhances thermal stimulation of the mucosa.[13]

Figure 3: Fractured denture.

13. Difficulty in Swallowing (Dysphagia)

The dentures if overextended in the posterior palatal seal or the retro-mylohyoid flange cause compression of the superior constrictor muscle, and induce pain during swallowing. An

increased vertical dimension of occlusion can also cause discomfort during swallowing. Resolving this issue involves correcting overextensions or reducing the vertical dimension.[8]

14. Drooling at the Corners of the Mouth

Excessive salivation or drooling at the corners of the mouth can occur due to a decreased vertical dimension of occlusion. Correcting the vertical dimension usually alleviates this problem. Additionally, if the vertical dimension is appropriate, thickening the flange in the modiolus region can help manage the complaint.[9]

13.1 Cheek biting

Cheek biting is frequently caused by trapping of the cheek between the posterior teeth due to inadequate horizontal overlap in posterior teeth. Correcting this involves adjusting the buccal surface of the offending mandibular tooth to provide more horizontal overlap and create a space for the buccal mucosa. Reduced vertical dimension can also contribute to this problem by causing the cheeks to collapse into the occlusal area.[10]

15. Loss or Alteration of Taste

Elderly patients often complain of a loss or change in taste, which is frequently associated with the natural atrophy of taste buds. Patients should be reassured that most taste buds are located on the tongue and remain unaffected by dentures. However, dentures covering the palate may reduce stimulation and temperature perception, contributing to this issue. Poor oral hygiene is another common cause. Patients should maintain oral cleanliness by brushing dentures with a nonabrasive cleanser and cleaning the tongue to enhance taste sensation.[15]

14.1 Xerostomia

Xerostomia, or dry mouth, is a common problem among elderly patients taking multiple medications. It adversely affects denture tolerance by making mastication and swallowing difficult. Encouraging patients to drink fluids while eating and consume at least eight glasses of water daily can help. Palatal reservoirs filled with artificial saliva may also improve comfort. If residual glandular function exists, prescribing sialogogues to stimulate saliva flow can be beneficial.[16]

14.2 Nausea and gagging

Patients with an exaggerated gag reflex may experience nausea and discomfort while wearing dentures. This may be caused by overextension of the posterior border of the maxillary denture or the distolingual flange of the mandibular denture. Shortening these extensions to the appropriate anatomical limits, such as the posterior palatal seal, can resolve the problem. Poor retention and unstable dentures are additional causes that should be corrected.[17]

14.3 Tingling and paresthesia

Excessive resorption of the mandibular residual ridge can expose the mental foramen, leading to tingling or paresthesia in the lower lip. Relieving the pressure in this area during denture fabrication can address this complaint. Similarly, compression on the nasopalatine nerve in the maxillary incisive papilla region may cause burning or numbness in the anterior maxilla. Relieving the denture base in this region will resolve the issue.[17]

16. TMJ and Muscle Pain in Denture Wearers

The temporomandibular joint (TMJ) and surrounding muscles are crucial for chewing, speaking, and jaw alignment, but wearing dentures, especially poor-fitting ones can disrupt this balance, leading to discomfort or pain. Ill-fitting dentures may create uneven pressure on the jaw, causing muscle strain and fatigue, while an incorrect bite or occlusion can misalign the TMJ, triggering pain or dysfunction. Additionally, the loss of natural teeth alters the jaw's support structure, which can increase strain on the joint and muscles. To alleviate these issues, it is important to ensure proper denture fit, correct occlusion, and adopt supportive measures such as jaw exercises, soft diets, and therapies like massage or heat application.[18]

15.1 Muscle loss in edentulous patient

Complete denture patients often experience a loss of muscle tone, diminished expressions, and altered facial aesthetics due to the absence of natural teeth, leading to sagging cheeks and a sunken appearance. Properly designed and fitted dentures can restore support, improve muscle tonicity, and enhance facial aesthetics, significantly improving overall quality of life. Additionally, a systematic review highlights that implant-supported or retained prostheses further enhance oral function in edentulous adults, even with implants in just one jaw. Implant therapy provides superior stability, functionality, and support compared to traditional dentures, making it a valuable option for restoring facial aesthetics and improving quality of life.[19]

17. Peri-implantitis on Implant-Supported Overdentures

Implant-supported dentures, while offering significant advantages over traditional dentures, can present challenges such as implant failure or rejection, loose or unstable dentures, gum irritation, discomfort, changes in bite and occlusion, and difficulty in cleaning. The risk of implant failure, peri-implantitis, and accelerated marginal bone loss is significantly increased by periodontitis. These issues can be addressed through regular follow-ups with a dentist to monitor implant success, periodic adjustments for proper fit, good oral hygiene practices, pain management strategies, bite realignment, and the use of specialized cleaning tools. Professional cleanings and adjustments, along with managing any underlying periodontal issues, can help maintain the

stability, function, and comfort of implant-supported dentures, ensuring improved long-term outcomes for the patient.[20]

16.1 Halitosis

Halitosis, or bad breath, is a common issue among denture wearers, often caused by poor oral hygiene, food particle accumulation, bacterial growth, dry mouth (xerostomia), and ill-fitting dentures; conventional treatments focus on reducing microbial activity through chemical or mechanical actions, while ongoing research explores new strategies such as photodynamic therapy, modifying poly(methyl methacrylate) (PMMA) with silver and graphene nanoparticles, and combining these methods, as well as using probiotics to restore oral bacterial balance. To manage halitosis, it is crucial to maintain good oral hygiene by cleaning both dentures and the mouth, using mouth rinses that reduce bacterial growth and stimulate saliva, and seeking professional cleanings and adjustments, while underlying issues like periodontal disease or infections should be addressed if halitosis persists.[21]

18. Discussion

Complete dentures are a vital solution for edentulous patients, especially in situations where financial limitations make advanced treatments like implant-supported prostheses inaccessible.[1,2] Despite their widespread use, the success of complete dentures relies on effectively managing the many challenges that arise during their design, fabrication, and use. These challenges are often complex, involving clinical, technical, and patient-related factors that require careful attention to detail.[5]

This discussion focuses on the key aspects outlined in the review, exploring the challenges and solutions involved in providing effective and satisfactory denture care. It highlights the importance of addressing clinical concerns, such as discomfort, retention issues, and mucosal irritation, which can significantly affect patients' quality of life. On the technical side, proper fabrication methods and the use of advanced materials and technology are crucial in overcoming issues like fractures, poor fit, and inadequate aesthetics.[2,3]

The adaptation process is a significant factor in the success of complete dentures. Patients often face initial difficulties with speech, chewing, and comfort, requiring time and guidance to adjust.[8,9] Educating patients about the adaptation period and setting realistic expectations is essential in helping them overcome these challenges.[6] Similarly, collaboration between dentists, dental technicians, and patients is highly needed to ensure that the dentures meet functional and aesthetic requirements.

The limitations of this review include a lack of long-term data, variability in patient populations, limited focus on new technologies like CAD/CAM, subjective patient experiences that can affect findings, and a narrower scope that primarily addresses clinical and technical challenges without fully considering the psychological impacts and patient satisfaction.

New technologies like CAD/CAM systems can make denture-making more accurate, durable, and efficient.[22] Although these advancements are not yet available everywhere, using them in dental care could greatly improve the quality of dentures. By solving clinical and technical problems and working closely with all involved—dentists, technicians, and patients—dental professionals can achieve better results and increase patient satisfaction with their dentures.[23,24]

19. Conclusion

Complete dentures provide a cost-effective solution for edentulous patients but often face challenges like retention issues, discomfort, and aesthetic concerns. These issues arise from clinical, technical, and biological factors, requiring collaboration between the dentist, patient, and dental laboratory technician for optimal outcomes. Addressing problems such as mucosal irritation, masticatory inefficiency, and aesthetic dissatisfaction demands precise techniques, advanced materials, and attention to patient-specific needs. Educating patients about adaptation, oral hygiene, and realistic expectations is vital. With a patient-focused approach and advancements in denture technology, dental professionals can enhance comfort, functionality, and quality of life for denture wearers.

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None.

21. Conflict of Interest

The authors declare no conflicts of interest.

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