PAPER – OPEN ACCESS

Removable Partial Denture Treatment in Geriatric Patients with Dementia

Author : Susi R Puspita Dewi, et al
DOI : 10.32734/tm.v2i1.2702
Electronic ISSN : 1234-1234
Print ISSN : 1234-5678

Volume 2 Issue 3 – 2025 TALENTA Conference Series: Tropical Medicine (TM)

TM Conference Series 02 (2025)
TALENTA Conference Series
Available online at https://talentaconfseries.usu.ac.id

Removable Partial Denture Treatment in Geriatric Patients with Dementia

Susi R Puspita Dewi [1,*], Pitu Wulandari[2], F.Nuning Kusumangati[3], and Ellin Hertiana[4]

[1]*Department of Prosthodontics, Faculty of Dentistry, Prof. DR Moestopo University (B), Jakarta, Indonesia*
[2]*Department of Periodontics, Faculty of Dentistry, Universitas Sumatera Utara, Medan, Indonesia*
[3]*Department of Prosthodontics, Faculty of Dentistry, Prof. DR Moestopo University (B), Jakarya, Indonesia*
[4]*Department of Prosthodontics, Faculty of Dentistry, Prof. DR Moestopo University (B), Jakarta, Indonesia*

Susi_puspita@yahoo.com

Abstract

Preface: Dementia is a disease that leads to a loss of cognitive function, impairment and interferes with a person's ability to carry out such daily living activities. The most common symptom of dementia is 'senility,' caused by degenerative brain disorders like Alzheimer's disease (AD), and due to the advanced stages of Parkinson's disease. This condition of dementia is generally associated with the aging process. Case Presentation: An 88-year-old female geriatric patient who has dementia, came with her son, complaining that she wanted to replace new dentures because her old dentures were no longer usable because they were damaged and loose. The patient has communication and behavioral control problems. These aspects increase difficulties in daily living activities and denture care. Treatment goal: restore the function of his oral cavity and improve his general health by creating a new removable partial denture. Denture care, in this case, is provided holistically; the results of denture treatment are achieved through visits in stages. Conclusion: This case explains that dementia patients can receive appropriate denture care through collaboration with the accompanying family and the caregiver who cares for the patient. Management of patient behavior can be done using non-pharmacological methods. After the installation of dentures, the patient's nutritional status and quality of life are highly dependent on home care and periodic visits to the dentist. This denture treatment maintains healthy oral function and improves the patient's quality of life.

Keywords: Dementia; Removable partial denture; geriatric

1. Introduction

Dementia is a disease that leads to a loss of cognitive function, impairment and interferes with a person's ability to carry out such daily living activities.1 The most common symptom of dementia is 'senility,' which is caused by degenerative brain disorders, such as Alzheimer's disease (AD) or vascular dementia. This disease can also be caused by the advanced stages of Parkinson's disease. This dementia condition is generally associated with the aging process.2

In Indonesia, 'senile' is often used to describe dementia. 'Senility' is usually only synonymous with memory impairment, whereas dementia alone is not limited to memory impairment. Decreased cognitive function/thinking function can occur in dementia, which can cause disturbances in making plans and decisions, language disturbances, disturbances in processing visual signals captured by the eyes, behavioral disturbances, and even emotional regulation disorders. This condition causes loss of intelligence, memory, and cognitive function.3,4

Selection and peer-review under responsibility of Seminar Periodental Update 5 2024
p-ISSN: 1234-5678, e-ISSN: 1234-1234, DOI: 10.32734/tm.v2i1.2702

Dementia caused by Parkinson's disease usually shows some symptoms like depression and anxiety for more than a third of people. Other symptoms of dementia are sensory disorders, sleep, and emotional problems. The main motor symptoms are collectively called Parkinsonian syndrome. Parkinson's disease's cause is generally "unknown" but it is believed to involve some environmental and genetic factors. A person whose family members are affected is more likely to get Parkinson's disease. Parkinson's disease is a long-term degenerative disorder of the central nervous system that primarily affects the motor system. These symptoms generally appear slowly over time. This is caused by the progressive degeneration of nerve cells in the brain, which results in a decrease in dopamine levels that help in transmitting messages between cells.5,6

Most older Parkinson's patients who lose most of their teeth tend to choose denture treatment to help with their masticatory function. The drugs used to treat parkinsonism can lead to xerostomia, which causes an increased risk of caries and fungal infections, potentially leading to tooth loss.6 From the beginning, the most apparent symptoms of this disease are shaking, stiffness, slow movements, and difficulty walking and thinking. The use of removable dentures in Parkinson's patients sometimes tends to come off or be swallowed, while the complete dentures fall out more often than partially. The Dentures can even break due to sudden movements that occur. If the patient requires denture treatment, wearing dentures becomes more problematic if the disease worsens. Tremors caused by Parkinson's disease can challenge for the dentist.7,8

In 2015, 47.5 million people in the world had dementia problems, and 7.7 million new cases grew yearly.9 Communication skills of patients with this condition are poor, and dental care management of patients with dementia is very limited. Therefore, it's a lot more difficult for patients with dementia to have regular dental care and special treats dental care including denture treatment care. A further difficulty is that some patients are troubled by little changes in their oral environment, such as receiving new dentures and struggling with adaptation.10

difficulty in receiving dentures usually shown from dementia patients and considering that 60% of dementia patients who receive home care services suffer from this condition, many may also require denture care.11 As a practitioner performing dental care must know the potential challenges in treating this group of patients. According to RISKESDAS a Basic Health Research from Indonesia, in 2018, 41% of those over 80 years population wore dentures. In this elderly population, the possibility of experiencing difficulty in fitting dentures is greater.12

In this case report, we will discuss the case of an 88-year-old female patient who complained of loose dentures, the patient had dementia and impaired hearing function. In this paper, we will explain the difficulties faced by dentists in treating geriatric patients with dementia, hearing loss, and difficulty caring for dentures, as well as ways in which these conditions can be overcome.methods).

2. Case Report

An 88-year-old female patient came to the dental clinic with her son for denture treatment because her old dentures had become loose and were no longer comfortable to wear. Anamnesis with the patient's son, who was with the patient, revealed that the patient had hearing loss and dementia. The patient's child said that the patient could not eat solid food because the old denture could not be used to chew food, so the patient's food intake was less, and his weight lost approximately 3 kg in 2 months. The child worries about his health and hopes that his oral function, especially his teeth, will improve by replacing his old removable dentures with new ones. Written informed consent was obtained from the patient's son before the procedure and for publication of this case report. His medical history revealed that the patient had experienced dementia since 2016, and his medical condition worsened in 2020.

2.1. General Health History

Patients also suffer from coronary heart disease, stroke, anemia, and osteoarthritis. The patient repeats a lot of words in his communication. The medicines the patient is taking include Atorvastatin, Bisoprolol, and Lansoprazole. On arrival, the patient was in a wheelchair but could be transferred to the dental unit with assistance

2.2. Dental history

The patient had worn acrylic removable dentures on the upper and lower jaw. Dentures cannot be used for eating because they are loose, damaged, and painful. The patient has been wearing dentures from 2012 to 2022 for ten years. The upper and lower jaw dentures once fell and broke and then were repaired by a dentist near the patient's house, but not too long the denture then broke again in the same place. The old denture is loose, with crossbite occlusion; the denture elements have attrited. The color of the denture elements and base is discolored; the denture wings are short, the anterior base is broken, and there are traces of fillings with soft curing acrylic material, the patient's old denture is in the upper jaw region only replaced six teeth out of 12 teeth that had been removed. In contrast, the lower jaw denture looked broken and had no grip (Figure 1).

Figure 1. The patient's old denture and the old denture in the mouth (private documentation).

2.3. Extra oral examination

Straight profile, oval face shape, symmetrical eyes, no obstruction in the nose, normal mandibular tempo, no abnormalities. The upper jaw and lower jaw lips were normal (Figure 2).

Figure 2. Face shape and patient profile (private documentation).

2.4. Intra-oral examination

Loss of teeth in the maxillary region: 16, 15, 14, 13, 12, 21, 22, 23, 24, 25, 26, where the remaining teeth are teeth 17, 27, which on vitality examination of the remaining teeth are still vital, there are class composite restorations II on tooth 17 and a porcelain metal crown on tooth 11. In the lower jaw region, the missing teeth are regions 37, 36, 35, 34, 33, 32, 31, 41, 42, 43, 44, 45, 46, 47. Tooth 48 is vital with class I amalgam fillings.

Examination of the maxillary residual ridge height is moderate. The mandibular residual ridge height is low posteriorly and moderate anteriorly. The maxillary palate depth is moderate, the maxillary vestibule depth is moderate, and the lower jaw vestibule depth is low posteriorly and anteriorly (Figure. 3).

Figure 3. Intra-oral examination (private documentation).

2.5. Maintenance procedure

On the first day of the visit, the first impression was taken with alginate material using a stock tray. The Borders of the individual tray were marked and then transferred to the anatomical model. The custom tray was made using self-polymerizing acrylate. Functional impression was taken using the custom tray by utilizing a combination of compressive impression technique in relatively mobile mucosa and a compressive for the immobile mucosa and then was followed by a border molding technique. When the satisfactory retention and stabilization of future dentures were achieved. The working models were made using hard stone printing and were carried out using alginate impression material. after that, a plate was made, and a bite block was made to find the relationship between the maxilla and mandible.

The horizontal maxillary-mandibular position for the patient was achieved by the functional method, for moving the patient's chin forward with the help of the dentist's hands and instructions for jaw movements with the help of her son. For facial measurement method uses a vernier caliper (Figure 4). After obtaining the jaw relationship, proceed with the preparation of the denture. Occlusal schemes use Bilaterally balanced occlusion (with balancing ramps), and the arrangement of denture elements uses non-anatomic denture elements, this is to avoid the instability caused by disorders of the masticatory muscles.

When installing a new mandibular denture, the patient still finds it difficult to accept it. The dentist found that the mucosal surface of the denture did not fit properly because there was a part pressing on the base. After adjusting the denture base, the dentist adjusted the occlusal surface using articulating paper to eliminate lateral cusp interference (Figure 5). Next, the dentist educates the child on how to manage dentures, including fitting, removing, and cleaning, and the patient goes home wearing their new dentures.

Figure 4. Jaw Relation Measurement (private documentation)

Figure 5. Occlusion of a new removable denture (private documentation)

A week later, the patient was checked for adjustments to his denture. The son said he did not complain or indicate the dentures made the patient feel discomfort or show any pain, the patient didn't try to remove the dentures after placing them. Her son also reported that the patient could eat soft, solid foods, and his appetite had increased. The patient came back after two weeks for adjustment of his denture. After the occlusal adjustment of her denture, she enjoyed wearing her denture again (Figure 6).

On the next visit, the patient is asked to come for control after three months after installing the denture. When he arrived for the visit, the patient could chew any kind of food, such as vegetables, fish, and meat also, the patient's weight had gained 4 kg. This shows her ability to function well with the denture.

3. Discussion

Treating geriatric patients with removable partial dentures requires maximum effort to obtain optimal retention and stability and produce satisfactory denture aesthetics. Currently, geriatric patients have more expectations for

prosthodontic therapy. In the past, wearing a denture aimed only to restore the function of the masticatory system, but nowadays, the aesthetic factor of dentures is essential for patients. Thus, today, the aesthetic aspect of prosthodontic treatment for geriatric patients is much higher than the standards of several decades ago[13]

Figure 6. Installation of removable partial denture (private documentation)

Denture treatment aims to replace tooth loss and avoid alveolar ridge resorption. The retention and stability of dentures depend on the supporting tissue that holds the prosthesis in the patient's oral cavity. In this patient's case, the supporting tissues for the maxillary prosthesis are the remaining teeth, palate, alveolar ridge, and muco buccal fold area. When used to function, the load on the denture will be transferred to the supporting tissue under the maxillary denture. The supporting tissues for the mandibular denture are the remaining teeth, the mandibular alveolar ridge, and the muco buccal fold area. Retention and stabilization of mandibular partial dentures are difficult to achieve due to the proximity of the tongue, the small surface area of the supporting tissue, and the difficulty of achieving a neutral muscle position.[14]

When making dentures for geriatric patients with dementia, the dentures must be comfortable to wear and easy to clean and provide overall oral hygiene. Dentists could face many problems in making dentures in these patients because increased salivation, tremors, poor muscle control, and reduced adaptive skills make the recording of jaw relationships and taking impressions more difficult which can affect denture retention.[15,16]

Problems occur when the patient is going to take border molding and looking for a jaw relationship. Borderer molding was only carried out on the lower jaw in the mucobuccal area from the left to the right posterior regions up to the anterior edentulous area, which was done repeatedly with the help of her son by giving examples of movements followed by the patient. Determining the patient's bite to obtain occlusion is done by assisting the patient's jaw movements by holding the patient's jaw and helping to move it forward and backward with the help of his son's instructions. The arrangement of the teeth in the anterior is made edge to edge because of the maximum lower jaw movement obtained from the patient's jaw movements.[16,17]

The technique described here is relatively simple and very different from conventional procedures. Because Maintenance visits are carried out unlike conventional visits in general patient denture care, maintenance visits are shorter considering the patient's condition. With this technique, the denture is placed in three visits and is also very economical for the patient. Although this technique increases laboratory time, it reduces clinical visits to a greater extent without compromising the basic principles of denture fabrication.[14,17]

Although decision-making in providing prosthodontic dental care to dementia patients is challenging, the patient's quality of life related to the oral health needs to be considered because many psychosocial aspects contribute to this. Proper management of denture care can improve the patient's quality of life as best as possible; it

is important to maintain healthy oral function until the final stages of dementia occur. The goals of denture treatment are further influenced by the structural health of the patient's oral system during home treatment.[18,19]

4. Conclusion

Considering the physical and mental condition, cooperation with geriatric patients and the patient's family must be strong, and this treatment also needs a whole patience and understanding from practitioners. Patients with decreased cognitive abilities and dementia find it more challenging to carry out treatment, especially denture care. Still, care carried out appropriately can help improve the patient's health and quality of life.

References

[1] Kyeong Hee Lee, YoonYoungChoi. Association between oral health and dementia in the elderly: a population-based study in Korea. Scientific Reports | (2019) 9:14407 https://doi.org/10.1038/s41598-019-50863-0

[2] Sherry Shiqian Gao, Chun Hung Chu, Fanny Yuk Fun Young, Oral Health and Care for Elderly People with Alzheimer's Disease. Int. J. Environ. Res. Public Health 2020, 17, 5713; doi:10.3390/ijerph17165713

[3] Suriastini NW, Turana Y, Supraptilah B, et al. Prevalence and Risk Factor of Dementiaand Caregiver's Knowledge of the Early Symptoms of Alzheimer's Disease. Aging Medicine And Healthcare 2020; 11(2):60-66. doi:10.33879/AMH.2020.065-1811.032

[4] Ilgin Asena Cebeci, Damla Ozturk, Basak Dogan, et al. Assessment of Oral Health in Elders with and without Alzheimer's Disease: A Cross-Sectional Study. Clin Exp Health Sci 2021; 11: 849-855. doi: 10.33808/clinexphealthsci.983730

[5] K. Pavithra, Antonette Rhea, M. Dhanraj. Prosthodontic Management of a Patient with Parkinson's Disease- A Case Report. J Young Pharm, 2018; 10(3): 377-379

[6] Raisa Mariam Jacob, Amrutha Lal, George Francis. Prosthodontic Rehabilitation Of A Patient With Parkinson's Disease: A Case Report. Journal of Dental and Medical Sciences (IOSR-JDMS). June. 2021; 20 (6) : 51-55. doi: 10.9790/0853-2006075155

[7] Barbe AG, Schmidt P, Bussmann M et al. Xerostomia and hyposalivation in orthogeriatric patients with fall history and impact on oral health-related quality of life.Clin Interv Aging 2018; 13:1971-9.https://doi.org/10.2147/CIA.S178370

[8] Nitschke I, Wendland A, Weber S et al. Considerations for the Prosthetic Dental Treatment of Geriatric Patients in Germany. J Clin Med 2021;10(2):304. https://doi.org/10.3390/jcm10020304

[9] World Alzheimer Report 2015 The Global Impact of Dementia An analysis of prevalence, incidence, cost and trends:6-27

[10] Pantea M, Tancu AMC, Petre A et al. Elderly Patients' Perception of Previewing the Prosthetic Treatment Outcome. Med Life 2020;13 (1):82-6.

[11] Patcharaporn Gavila, Orapin Komin. Case Report: Prosthesis (Complete Denture) for Communication and Behavioral Impaired Dementia Patient. CM Dent J. 2023; 44(1): 65- 71Riset Kesehatan Dasar (RISKESDAS) Tahun 2018, Kementerian Kesehatan Indonesia. 2015-2025.

[12] Tahani B, Khademi A, Fathollahi S. Status of geriatric education and meeting thestandards of facilities in dental schools. J Educ Health Promot 2019;8:163. doi:10.4103/jehp.jehp_220_19 https://pubmed.ncbi.nlm.nih.gov/31544128

[13] Maja Anđelkovic, Nikola Gligorijevic, Milena Kostic. Prosthetic Rehabilitation of Geriatric Patients: A Case Report. Acta facultatis medicae Naissensis 2022; 39(2): 249- 254. doi : 10.5937/afmnai39-34371

[14] R Dyas, M Nathanael, M Indrasari et al. Analysis of the effects of removable dentures on the psychological status, quality of life, and masticatory function of the elderly. Journal of Physics: Conf. Series 884 (2017) 012084. doi :10.1088/1742- 6596/884/1/012084

[15] Aryen Kaushik, Anurag Bhatnagar,Taranjeet Kaur. Removable Prosthodontic Considerations for Patients having Neurologic and Neuromuscular Disorders. J Int ClinDent Res Organ 2022;14:24-30. doi: 10.4103/jicdro.jicdro_57_20

[16] Yoshiro Fujii.Two Cases of Severe Dementia Showing Dramatic Improvement after Denture Placement. Advances in Alzheimer's Disease, 2016, 5, 46-52 http://dx.doi.org/10.4236/aad.2016.52004

[17] Schüler IM, Kurtz B, Heinrich-Weltzien R et al. Testing the ability for autonomous oral hygiene in hospitalized geriatric patients-clinical validation study. Clin Oral Investig 2021; 25(3):1059-68. https://doi.org/10.1007/s00784-020-03402-5

[18] Seyed-Mohammad Fereshtehnejada, Sara Garcia-Ptaceka, Dorota Religa. Dental care utilization in patients with different types of dementia: A longitudinal nationwide study of 58,037 individuals. Alzheimer's & Dementia 14 (2018) 10-1911 https://doi.org/10.1016/j.jalz.2017.05.004