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THE USE OF OLIVE OIL AS A PRESSURE INDICATOR PASTE MATERIAL IN CASES OF TRAUMATIC COMPLETE DENTURE ULCERS

(PENGGUNAAN MINYAK ZAITUN SEBAGAI BAHAN PASTA PENANDA TEKANAN PADA KASUS ULKUS TRAUMATIKUS GIGI TIRUAN LENGKAP)

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ABSTRACT

Traumatic ulcers are a common complication in edentulous patients following the placement of complete dentures, often causing significant discomfort and leading to denture discontinuation. These ulcers typically result from ill-fitting dentures, overextended flanges, improper adaptation, or poor occlusal contacts. Management involves denture adjustment, temporary discontinuation of use, and the application of systemic or topical medications to promote healing. A critical step in denture adjustment is identifying excessive pressure areas using pressure indicator paste (PIP). This case report discusses the management of traumatic ulcers in a 60-year-old male patient utilizing a mixture of olive oil and zinc oxide powder as an alternative PIP. The patient presented with a painful ulcer on the lingual alveolar ridge of the mandible, which was exacerbated by denture use. Intraoral examination revealed a single white ulcer with erythematous edges. The denture was adjusted by reducing excessive areas identified using

the olive oil-zinc oxide PIP and using Kenalog and Chlorhexidine gluconate 0.2% for ulcer healing. At the 7-day follow-up, the ulcer had healed, and the patient reported no pain. Using olive oil and zinc oxide as a PIP proved effective due to its non-setting properties and thick consistency, providing sufficient working time for precise adjustments. This mixture offers a practical and accessible alternative for identifying pressure points, ensuring optimal denture adaptation, retention, and stability. The case highlights the importance of addressing causative factors and utilizing innovative solutions for managing traumatic ulcers in complete denture wearers.

Keywords: complete denture; olive oil; pressure indicator paste; traumatic ulcer

ABSTRAK

Ulkus traumatikus merupakan komplikasi umum yang dialami oleh pasien tanpa gigi setelah pemasangan gigi tiruan lengkap, sering menyebabkan ketidaknyamanan dan mengakibatkan penghentian penggunaan gigi tiruan. Ulkus ini umumnya disebabkan oleh faktor-faktor seperti gigi tiruan yang tidak pas, sayap gigi tiruan yang terlalu panjang, adaptasi yang tidak tepat, atau kontak oklusal yang buruk. Penanganannya meliputi penyesuaian gigi tiruan, penghentian sementara penggunaan, serta pemberian obat sistemik atau topikal untuk mempercepat penyembuhan. Langkah kritis dalam penyesuaian gigi tiruan adalah identifikasi area tekanan berlebih menggunakan pressure indicator paste (PIP). Laporan kasus ini membahas manajemen ulkus traumatikus pada pasien pria berusia 60 tahun menggunakan campuran minyak zaitun dan bubuk zinc oxide sebagai alternatif PIP. Pasien datang dengan keluhan ulkus nyeri pada alveolar ridge lingual mandibula yang diperburuk oleh penggunaan gigi tiruan. Pemeriksaan intraoral menunjukkan ulkus tunggal berwarna putih dengan tepi eritematosa. Gigi tiruan disesuaikan dengan mengurangi area berlebih yang diidentifikasi menggunakan

PIP dengan bahan minyak zaitun-zinc oxide, dilanjutkan dengan pemberian Kenalog dan Chlorhexidine gluconate 0,2% untuk penyembuhan ulkus. Pada kontrol 7 hari, ulkus telah sembuh, dan pasien melaporkan tidak ada nyeri. Penggunaan minyak zaitun dan zinc oxide sebagai PIP terbukti efektif karena sifatnya yang tidak mengeras dan konsistensinya yang kental, memberikan waktu kerja yang cukup untuk penyesuaian yang presisi. Campuran ini menawarkan alternatif praktis dan mudah diakses untuk mengidentifikasi titik tekanan, memastikan adaptasi, retensi, dan stabilitas gigi tiruan yang optimal. Kasus ini menekankan pentingnya mengatasi faktor penyebab dan menggunakan solusi inovatif dalam manajemen ulkus traumatikus pada pengguna gigi tiruan lengkap.

***Kata kunci**: gigi tiruan lengkap; minyak zaitun; pressure indicator paste; ulkus traumatikus*

INTRODUCTION

Traumatic ulcers are the most common issue experienced by edentulous patients following the placement of complete dentures. These ulcers cause significant discomfort, often leading patients to discontinue the use of their dentures. Therefore, dentists need to eliminate the causative factors of mucosal ulceration, ensure patient comfort during the adjustment period, and establish trust between the dentist and the patient.[1,2]

Several factors contribute to the occurrence of traumatic ulcers in complete denture wearers, including pressure from ill-fitting or overextended denture flanges, irregularities in the denture surface, improper adaptation between the inner surface of the denture and the underlying tissue, and poor occlusal contacts. These causative factors can arise at various stages, such as during clinical procedures, laboratory processes, impression-taking, border molding, or denture polishing.[1]

Traumatic ulcers are often accompanied by pain at the ulcer site, which may radiate to surrounding tissues, as well as general discomfort, leading patients to avoid using their prostheses. This avoidance prolongs the adaptation period. In most cases, the duration of

traumatic ulcers ranges from 10 to 15 days.[3,4]

The management of traumatic ulcers in complete denture wearers includes denture adjustment, temporary discontinuation of denture use, and the application of systemic and topical medications to accelerate healing, reduce discomfort, and prevent the recurrence of oral ulcers.[5]

The most common denture adjustment needed for traumatic ulcers in complete denture wearers is the reduction in denture base. Significant adjustments include modifying undercut areas, reducing bulky border extensions, and relieving for frenulum. Certain places on the denture base should be reduced with pressure indicator paste (PIP) assistance to ensure precise reduction without compromising the denture's adaptation, retention, and stability.[6]

This case report discusses the management of traumatic ulcers in a complete denture wearer using olive oil as an alternative pressure indicator paste material at Rumah Sakit Gigi Mulut Universitas Jenderal Achmad Yani (RSGM Unjani).

CASE REPORT

A 60-year-old male patient came to RSGM Unjani with complaints of pain in the gum area near the tongue of the lower jaw 3 days ago. The patient said that he used a complete denture for 7 days, and the pain arose when the patient ate because of oral ulceration. The patient said the size of the ulcer was getting bigger day by day, and the color of the ulcer changed from red to white. The patient said the pain decreased when the denture was not used. The patient had no complaints or symptoms of other diseases when the sores appeared.

Extra oral examination revealed no abnormalities. Intra-oral examination revealed a single white ulcer lesion with erythematous edges measuring ±3 mm on the anterior lingual alveolar ridge of the left mandible. The lesion was oval and concave, smooth on the surface and soft to palpation with irregular borders (Figure 1). The patient's oral hygiene was moderate.

Figure 1. Intraoral examination of the patient.

Examination of the complete denture in the patient revealed that the denture fit, retention, stabilization and occlusion were in a good state.

The principle of traumatic ulcer management in removable denture cases is to identify problems, especially in the anatomical part of the denture. Sharp or excessive denture surfaces can traumatize the supporting tissues and cause pain and ulcers. The procedure for identifying sharp areas on the denture was carried out using gauze on all parts of the denture, and it was found that there were no sharp areas.

Identifying the excessive part of the denture is generally done with a pressure indicator paste (PIP) applied to the denture. Then, the denture is inserted into the patient's mouth. Excessive parts of the denture can be identified by missing or reduced areas of pressure indicator paste on the denture. Then, these areas will need to be reduced. In this case, a pressure indicator paste with olive oil and zinc oxide powder was used as an alternative.

Figure 2. Excessive areas of the denture.

Examination of excessive areas on the denture using a pressure indicator paste revealed excessive areas on the lingual area of the patient's mandibular complete denture. Complete denture base reduction was performed after identification of the excess area using PIP (Pressure Indicating Paste) of olive oil and zinc oxide powder. Denture base reduction was performed using an acrylic stone bur to remove the excess area as a contributing factor to the traumatic ulcer (Figure 3).

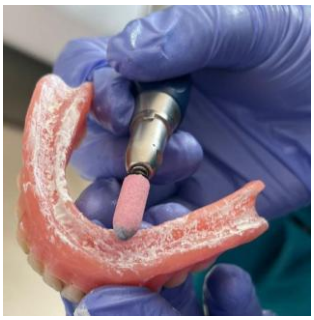

Figure 3. Denture base reduction.

Examination of excessive areas on the denture using pressure indicator paste was repeated to ensure that all areas had been removed. Medication included Kenalog and Chlorhexidine gluconate, and 0.2% were given to the patient (Figure 4). The medicine was applied 2-3 times a day at the site of pain, namely after meals and at night before bed, so that the medicine could contact the wound optimally. The medicine needs to be applied thinly to the wound.

Patients were also given Chlorhexidine gluconate 0.2% mouthwash as an antiseptic agent to rinse the patient's oral cavity twice a day in the morning and

at night. The patient was asked to come to RSGM for a 7-day control procedure.

At the time of control on day 7, the patient said the denture was usable, and there was no pain. The pain decreased gradually from the third day until now. The denture was found to be good for adaptation, retention, and stabilization. Intraoral examination found that the lesion on the lingual area of the patient's lower jaw was gone, and it was concluded that healing had occurred (Figure 5). The patient was instructed to maintain oral hygiene and regularly consume vegetables and fruits to maintain oral health.

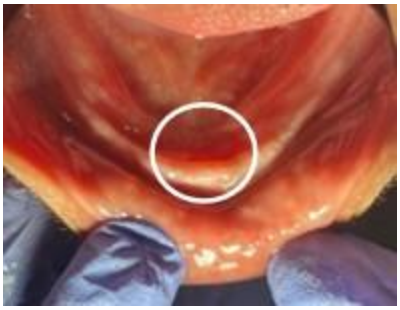

Figure 4. Intraoral examination of the patient on day 7.

DISCUSSION

Oral lesions in patient with complete denture are commonly caused by tissue changes or ill fitting prosthesis.[7] The main treatment for complaints of patients with dentures is to check the health of the gingival tissue as well as the fit of the denture.[8]

The examination need to be done by asking the history of the lesion that arose in the patient because oral squamous cell carcinoma lesions can resemble denture ulcers, where the history that is important to ascertain is how long the lesion has arisen and whether the lesion is intermittent with a changing position.[8]

Examination revealed that the lesions in the case indicated the occurrence of traumatic ulcers in the patient. The clinical features of traumatic ulcers due to mechanical trauma vary according to the intensity and size of the cause. It is usually a single ulcer that is oval and concave. The center of the ulcer is generally yellow-grey or white/grey with erythematous margins. The lesion's surface is smooth, the palpation is soft, and the lesion's shape is irregular. The lesion size is usually 1-8 mm, but the size can also vary and depends on the trauma that caused it.[1]

Complaints of denture-induced traumatic ulcers often occur in the period after complete denture insertion. A study conducted by Chaudhary, et al, reported that most female patients (62.7%) reported ulcers after denture insertion. This predominance was higher than that of men, which was 37.3%. Excessive areas on the denture base can compress the thin mucosal tissue and cause traumatic ulcers.[9,10]

Complaints of traumatic ulcers in denture-wearing patients were most common in the older age group of 61-70

years, with 48.7% reporting ulcers after denture wear. The second oldest age group was 71-80 years, at 36%, while only 15.3% of patients in the 50-60 age group developed ulcers. The older age group reported more traumatic ulcers, and it can be explained that the older age group tends to have poor oral mucosal tissue health, muscle weakness, as well as compromised systemic health, all of which contribute to poor denture tolerance, easy ulcer formation, and thus more complaints.[10,11]

Many denture-related factors are responsible for the occurrence of traumatic ulcers. In the oral cavity, traumatic ulcers can found both on keratinised mucosa such as the gingiva of the palate and tongue as well as the non-keratinised mucosa such as labial mucosa, buccal mucosa and floor of the mouth.[12] Roughness of the denture base was found to be the most frequent cause of ulcers (46.7%). Excessively long denture flanges were the second most frequent cause responsible for ulcers, at 22%, while occlusion imperfections accounted for 15.3%.[13]

The general management of traumatic ulcers in denture wearers involves adjusting the denture by smoothing any sharp edges on the denture base or reducing overextended areas using a stone bur and pharmacological treatment. Appropriate pharmacological treatment can help to reduce the symptoms caused by the lesion and also improve the prognosis of treatment.[14]

Additionally, balanced occlusion and articulation adjustments are made. The management approach is typically based on the underlying cause of the traumatic ulcer.

Reduction of overextended areas on the denture base should be performed with the assistance of pressure indicator paste (PIP) to ensure precise reduction without compromising the adaptation, retention, and stability of the denture. When applied to the denture, the pressure indicator paste helps identify overextended areas where the PIP is removed from the surface, indicating excessive pressure regions requiring reduction. Subsequent treatment involves addressing the symptoms accordingly.[6]

A commonly used pressure-indicating paste is the zinc oxide eugenol impression paste's zinc oxide component. The zinc oxide component of the zinc oxide eugenol impression material can be applied as a PIP using a toothbrush or stiff-bristled painting brushes. After the procedure, it can be wiped out using gauze.[6]

Zinc oxide paste can be utilized as a pressure indicator paste due to its thick consistency and non-setting properties,

which provide sufficient working time for denture adjustment. These characteristics allow for effectively identifying pressure points on the denture base, ensuring precise modifications to achieve optimal adaptation, retention, and stability.[6]

Mixing zinc oxide powder with olive oil can also prepare zinc oxide paste. Olive oil is a vegetable oil that contains 73% monounsaturated fatty acids and 55 to 83% oleic acid. It also comprises antioxidants, oleuropein, carotenoids, and oleocanthal.[15]

Olive oil is frequently used as a base for formulating pastes or ointments due to its ability to blend well with other materials, such as zinc oxide.[15] Generally, a mixture of olive oil and zinc oxide can create a paste with the desired consistency. The typical proportion used is similar to that of zinc oxide and eugenol, approximately 1:2 or 1:3 (olive oil to zinc oxide), depending on the desired viscosity. These two components do not undergo setting, which provides excellent working time when used as a pressure indicator paste.

CONCLUSION

A mixture of olive oil and zinc oxide powder can be utilized as an alternative to Pressure Indicator Paste (PIP) in traumatic ulcers associated with complete dentures. This mixture is a practical and accessible option for identifying areas of excessive pressure on the denture base. Applying the olive oil and zinc oxide mixture to the denture surface can detect areas of overextension or undue pressure, as the mixture will be displaced in regions where excessive force is exerted. This method aids in achieving proper denture adjustment, ensuring optimal adaptation, retention, and stability while addressing the underlying cause of traumatic ulcers.

CONFLICT OF INTEREST

The authors reported no potential conflict of interest.

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