

Case report

## Management of oral candidiasis in denture wearers

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### Abstract

In many cases, dentists try to manage denture pain by adjusting dentures. However, some patients complain of oral discomfort over a long period even after appropriate denture adjustments. In some of these situations, simple denture adjustment does not alleviate the discomfort of these patients.

It is known that denture stomatitis may occur in response to plaque accumulation on dentures. One of the chief pathogenic microorganisms causing this type of inflammation is *Candida albicans*. A common symptom of oral candidiasis is pain in the oral mucosa complicated by angular stomatitis.

In this paper, we report a case of oral candidiasis that was diagnosed and managed based on the patient's complaints.

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### 1. Introduction

Oral candidiasis is known to be one of the causes of painful stomatitis. In cases where oral hygiene and denture cleanliness is poor, *Candida albicans* develops a biofilm that adheres strongly to the denture base resin, resulting in denture plaque [1–9]. Denture plaque has been linked to various pathologies [3,7,10–17]. We report a case of denture pain that was not resolved by simple denture adjustment. The pain improved when traditional denture adjustment was augmented by management methods for oral candidiasis and fabrication of new dentures.

### 2. Outline of the case

**Patient:** 60-year-old female.

**First visit:** 30 August 2004.

**Chief complaint:** Difficulty in mastication due to poor fitting dentures.

**Medical history:** Oral medication for high blood pressure since 1994, surgery for myocardial infarction in 2002.

**Family history:** No specific remarks.

**Current denture history:** A local dentist fabricated dentures for the patient in October 2003. After repeated denture adjustments by this dentist failed to improve the instability of the dentures, the patient visited our clinic on the recommendation of a friend who was a patient at our clinic at that time.

**Present condition:**

**General status:** Average height and weight, normal nutritional status.

**Extraoral findings:** Bilateral angular stomatitis (length: approximately 10 mm).

**Intraoral findings:** The coronal portions of the maxillary left first and second premolars were completely broken, leaving only roots. Crowns were present on the maxillary left canine (porcelain fused to metal crown) and maxillary left first molar (full cast crown). The mandible was edentulous. The patient had both maxillary and mandibular dentures. The entire oral mucosa was red and inflamed, and the patient complained of severe pain while wearing the dentures. Her

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**Fig. 1.** Oral view at first visit—mild redness seen over the entire mucosa.

tongue was also red, with a smooth surface (Figs. 1 and 2).  
*Clinical diagnosis:* Maladaptation of dentures.

*Treatment and follow-up:* Initial treatment in September 2004 consisted of occlusal adjustment and tissue conditioning on the patient's existing dentures to improve the mucosal tissue. The patient was also instructed in thorough oral hygiene and denture cleaning. New maxillary and mandibular dentures were then fabricated in the conventional method in March 2005, followed by denture adjustment (Fig. 3). However, these measures did not result in improvement of the patient's angular stomatitis (Figs. 4 and 5) or the redness and pain on the oral mucosa. Suspecting oral candidiasis, we then conducted a diagnostic test using Stomastat (Dentsply Sankin, Tokyo, Japan) [18]. After obtaining a definitive suspicion of oral chronic atrophic (erythematous) candidiasis (*Clinical observation:* Erythema in the oral mucosa were found to correspond to the contact surface of the denture. *Laboratory findings:* The Stomastat result is positive (yellow) showed.), we administered 5 g of 2% Florid<sup>®</sup> gel (Miconazole, Mochida, Tokyo, Japan) for 7 days in addition to denture adjustment. We asked the patient to apply two tubes of Florid<sup>®</sup> gel (total 200 mg Miconazole) per day to the mucosa, tongue, dentures and the angles of the mouth. We observed an improvement in the oral mucosal redness and a slight improvement in the patient's subjective symptoms after 10 days. After 2 weeks we decreased the dose of Florid<sup>®</sup> gel to less than one tube, and then the dose was decreased to once every 2–4 days depending on the symptoms. The patient's subjective symptoms resolved after about 2 months (Figs. 6 and 7), at which point testing with Stomastat detected no oral *C. albicans*. Although no problems were found during continuous monthly check-ups, we fabricated new dentures in January 2006 and April 2008 to avoid any recurrence of oral candidiasis due to deterioration of the dentures. During this period, transient oral mucosal symptoms were observed when the patient's physical condition deteriorated; however, they were resolved by short-term use of Florid<sup>®</sup> gel. The patient is currently undergoing 3 monthly follow-up examinations, and no symptoms of oral candidiasis have been observed.



**Fig. 2.** Glossitis due to candidiasis (before treatment)—the entire surface of the tongue was smooth.

### 3. Discussion

Oral candidiasis presents as a white elevated mossy substance attached to the tongue or oral mucosa. In most cases, patients with oral candidiasis complain of pain, discomfort or taste disorder on the tongue and other oral mucosal surfaces [10]. Inappropriate denture cleaning is thought to allow the development on the denture surface of a biofilm containing microorganisms from the accumulation of denture plaque. And that may serve as a bacterial reservoir causing systemic diseases [5,13,15,19]. These microorganisms are known to contain a high proportion of *C. albicans* [5–10,20,21]. Additionally, some studies have reported that 33–82% of cases of denture stomatitis presenting with angular stomatitis and glossitis as well as redness and swelling of the mucosal tissue under the denture base are accompanied by oral candidiasis [1,7,9,10,12–15,17,22–25]. Oral candidiasis occurs frequently in the elderly and people with decreased protection against infection and compromised immune systems [10,11,15,16,26–29].

Although this patient's chief complaint was difficulty in mastication due to maladapted dentures, we observed persistent angular stomatitis and mucosal redness and pain that were not improved by treating the dentures. In particular, the bilateral angular stomatitis was severe, presenting with deep cracks and redness across a length of approximately 10 mm. Pain upon physical contact, wound dehiscence on mouth opening, and mild glossitis were also observed (Figs. 1, 2, 4 and 5). The patient mentioned that she had suffered from these symptoms for 10 years and had given up on a cure. We therefore suspected this case to be oral candidiasis based on the symptoms that remained after the denture problems had been treated and the results from the Stomastat test. After the diagnosis of oral candidiasis was established, the lesions were treated with Florid<sup>®</sup> gel dispensed in a tube. Characteristics of Florid<sup>®</sup> include easy application to the mucosa, tongue, angle of the mouth, and dentures, and a certain level of fluid resistance in the



**Fig. 3.** Intraoral photography in new denture insertion after adjustment.



**Fig. 4.** Angular stomatitis due to candidiasis (before treatment) showing redness and cracking at the angles of the mouth.



**Fig. 5.** Right angular stomatitis (before treatment) showing deep cracking.

oral environment. In this case, we asked the patient to apply a small amount of Florid<sup>®</sup> gel to the mucosa, tongue, denture and the angles of the mouth and conducted follow-up examinations. Symptoms started to be alleviated 10 days after application. Thereafter, the application time was reduced for a month and

the patient was examined every 2 weeks. Although redness at the angles of the mouth remained, the patient reported that denture use was less painful (Figs. 6 and 7). In addition, a negative Stomastat test was obtained, indicating an improvement in the oral candidiasis. Although the patient reported



**Fig. 6.** Angular stomatitis (after treatment) showing remaining redness, but no cracking.



**Fig. 7.** Right angular stomatitis (after treatment) showing healing of the deep crack, and normal appearance except for redness.

transient mild pain in the oral mucosa when she was in poor physical condition, no recurrence of the angular stomatitis has been detected to date. However, considering the increased likelihood of a recurrence of oral candidiasis due to biofilm development on deteriorated dentures [8,15,20,23], we have been fabricating new dentures every 1 or 2 years depending on the level of deterioration and the cleanliness of the dentures.

In this case, the patient had been suffering from angular stomatitis with crack formation inducing severe pain on mouth opening for 10 years. When she visited our clinic, her chief complaint was denture pain that had not resolved over a long period of time. As a result, the patient was triaged to the prosthodontic department in our hospital, asking for help for her denture problems only. Further conditions to be considered in this case were that the patient had been wearing dentures for a long time and that she had had insufficient instruction in oral hygiene and denture cleaning. We suggest that these conditions acted as risk factors for oral candidiasis

[1,2,7–10,12–17,20,23–25]. Many dentists tend to approach treatment by focusing on the patient's chief complaint. In situations such as this case, specialists in prosthodontics tend to provide treatment consisting only of denture adjustment and fabrication, thus narrowing treatment options. Moreover, because of previous routine dental experiences and self-diagnosis, many patients do not provide enough information to allow an accurate diagnosis to be made. As a result, sometimes the true cause of a pathological condition is obscured. We believe that to provide appropriate treatment regimens, dentists need to conduct subjective overall examinations to reveal the causes of oral discomfort beyond the patients' presenting complaints such as poor fitting dentures.

#### 4. Conclusion

We report a case of oral candidiasis presenting as long-term discomfort while wearing dentures. The patient's symptoms were improved by a combination of conventional denture fabrication and medication for oral candidiasis. We report the treatment process, including a literature review.

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