

## Prosthodontic Appliance Wearing and Its Relationship to Oral Pain Sensation, Fungal Infection and Measures for Management

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### Abstract:

**Back ground:** *Many Iraqi dentures wearer suffered from oral pain sensation and candidiasis, so this study is important to prevent, decrease and manage the symptoms of these diseases, therefore the current study aimed to evaluate the relationship between the denture wearing, oral pain sensation and candidiasis caused by dentures and how it was managed.*

**Subjects and methods:** *Twenty patients (12males and 8 females) were selected from Hospitals and special private dental clinics in Baghdad as studied sample, all of them wore badly constructed partial or complete denture. Patient's ages ranged between 40-65 years. Similar control group was choosen with the same number of males and females and nearly similar age group, all of them did not wear any dental appliances.*

*Medical and dental history were taken from all the participants in the current study, also clinical examination and*

*laboratory investigations were done to evaluate the badly constructed dental appliances in feeling oral pain sensation and developing candidiasis.*

**Results:** *The study revealed that people who constructed bad dental appliances were more to be affected with oral pain sensation and candidiasis than others, especially with woman after 45 years or around the menopausal period or subjects with bad oral hygiene and that may lead to discomfortable oral mucosal sensation.*

**Conclusion:** *The recent study showed that people with continuous wearing of dental appliances are more commonly effected with candidiasis and oral pain sensation, the laboratory investigations revealed that candida albicans was the most common type that causes candidiasis, also many local and systemic factors may share in the occurance of these diseases. Two types of drugs were used to treat the candidiasis, that means the patients in the study ground when they were treaded, some of them removed the dentures from their months during the period of treatment, those developed improvement than others.*

**Keywords:** *Dental appliance, oral pain sensation.*

## **Introduction:**

Denture induced stomatitis (DIS) causes certain clinical changes in the oral mucosa of the denture bearing tissues [1], the most popular methods of classification of denture induced stomatitis are derived from Newton's original methods that scores according to the severity of the erythema [2]. These changes are characterized by flat or granular erythematous area and are found under complete or partial denture in both jaws, but more frequently in the maxilla [3].

The etiology and predisposing factors of denture induced stomatitis included systemic and local predisposing factors such as microbial factors, denture cleaning methods, wearing dentures (especially through the night), ill-fitting dentures, denture integrity (fracture, crack, hole...), poor oral and dental hygiene, xerostomia, smoking, quality and quantity of saliva, occlusion, parafunctional habits and carbohydrate rich diets [4].

The extent of interplay of these factors is still controversial. Lack of denture cleaning and presence of the plaque forming on the tissue fitting surfaces and dentures are considered to be, the most important factors involved in the etiology of denture induced stomatitis [5]. It is interesting, that in similar studies about the etiology and predisposing factors associated with denture induced stomatitis, in individuals, who develop denture related stomatitis, the most frequently encountered species identified was candida albicans. Prosthetic hygiene was related to the intensity of candidal growth and the development of denture related stomatitis. Candida albicans live as saprophyte in the oral cavity, but it is capable of causing infection if there are predisposing conditions related to the host. Successful management of patients with oral candidiasis requires identification, and when possible correction of the specific

underlying predisposing factors in an individual patient. Without this recognition subsequent treatment using antifungal therapy may only result in the temporary relief of infection, with relapses inevitably following.

Instructions should be provided on appropriate oral hygiene practices. Use of steroid inhalers should be coupled with rinsing the mouth with water after administration. All patients should be advised on the importance of reduction of smoking, oral hygiene practices are also essential in removal of candidal biofilms on host surfaces and oral prostheses, any identified nutritional deficiency should be corrected, and advice provided on dietary habits such as appropriate carbohydrate intake however, despite these interventions, situations arise in which the underlying cause cannot be resolved, such HIV infection or immunosuppressive therapy following organ or bone marrow transplant. In these circumstances, treatment of oral candidiasis is based on the use of antifungal therapy.

Nystatin used as one lozenge 100.000 units q.i.d.x 7-14 days or suspension; 500.000 units by rinse and swallow q.i.d.x 7-14 days.

In addition to other medications such as amphotercin and dobrimazole in addition to that there are many antifungal used as systemic administration such as ketoconazole and fluconazole.

### **Aim of the study:**

The study was designed to evaluate the effects of dentures wearing on the development of oral pain sensation and candidial infection in addition to it's management.

### Subjects and methods:

Twelve male patients included in the study group divided as follow:

Nine patients used complete dentures and they were categorized according to the signs and symptoms of the oral disease as:

- a. Four patients suffered from oral burning sensation, they aged 50-65 years.
- b. Two patients developed candidiasis with slight oral sensation their ages 48, 63 years.
- c. Two cases aged 60, 64 years complained from denture stomatitis and denture hyperplasia.
- d. One case was free from any oral sensation, pain, denture-related stomatitis and candidiasis, he aged 62 years.

All the cases mentioned above were in bad oral hygiene conditions. The other 3 males, two of them wore partial dentures and one had orthodontic appliance, their ages ranged between 35-45 years.

Two males wore partial denture, one of them developed oral sensation and the other one suffered from oral pain and candidiasis. One case wore orthodontic appliance, aged 30 years with long period, developed gingival stomatitis in the upper labial area of the gum. Five female patients wore complete dentures, aged 55-65 years and they were divided as follow:

- Three of them suffered from oral sensation and candidiasis, an other one female complained from oral pain only, while the last female did not suffer from candidiasis or oral sensation.
- Three female cases aged 30-40 years, one of the cases developed candidiasis; other had simple oral pain sensation

and the last female developed simple stomatitis in the upper molar region area.

### **Results:**

All the patients with candidiasis had a positive culture of candida, and by biochemical test, it was found that the most common species of candida was candida albican. Thirteen patients of the studied group had systemic diseases specially. Diabetic mellitus, hypo-thyroidism, hypertension and anxiety, they were recorded according to their medical reports by the specialist physicians in the Hospitals or medical centers.

All wearer dentures and most of the cases of partial dentures were in bad oral hygiene conditions. The dentures were not clean, the remnants of tea, coffee and food were present on the dentures. The most common severity of oral pain and candidiasis was present in continuous wearing dentures people.

These diseases were more severe for old ages than other ages. Two types of medications were used to achieve treatment of candidiasis, the cases with candidiasis were divided into 2 groups, one group was treated with topical nystatin as one lozenge; 100,000 units q.i. dx 14 days. The other group was treated with amphotericin as one lozenge (10mg) q.i.d for 15 days the results of treatment for both drugs was nearly similar, and the effect of medications was moderate, but it was found that more benefit was obtained when the patient takes out his denture during treatment, and the drugs become more efficient, so the oral sensation and candidiasis are more in the studied group than that in the control group, that means ill-fitted or incorrect dental appliances induced the development of candidiasis and oral pain sensation.

### **Discussion**

Although the dentures and dental appliances played a role in oral burning pain in addition to the progression of fungal invasion to the

mucosal oral soft tissues, there were many other agent may share in causing oral sensation such as dry mouth for most male and female patients, menopausal periods for most female patients over 40 years, diabetes mellitus disease, the side effects for some medications to some systemic diseases contributed in the feeling of oral pain sensation, so this pain can be considered as multifactorial etiology.

Dentures exert stress on certain muscle and tissue of the oral cavity, evaluation to the denture and bridges that the patients wearing from any porosity and roughness. In addition to that special attention must be given to the dentures, since it has been demonstrated that there is a possible correlation between the adjustment and the design of denture both may cause changes in sensory nerve function causing atypical oral pain [7].

No sensitivity test had been made to the acrylic materials against the oral mucosa, but such cases were detected by patients experience and clinician observation. Among the studied Iraqi sample, it is found that nine male and female patients has allergy to the acrylic materials of the dentures base, especially in the old ages; the diabetic patients with old ages mainly wore complete dentures, may be due to early loss of teeth because of the diabetes mellitus disease, also this study revealed that the patients (males and females) with complete and partial dentures and treated with antibiotics, developed fungal infection more than others, may be due to the increase of the activity of the *Candida Albican*.

Budtz-Jorgensen in: 1981 cleared that *candida albican* hyphae and *lactobacillus* were more frequently present in patients wearing maxillary and mandibular complete dentures continuously (8). That was agreed with the recent investigations of this study.

Muzika Bcetal and Rossi in 1999 had a study which was proposed to investigate a possible relation yeasts from, *candida* genus as an associated etiologic factor in burning mouth syndrome. That agreed with the findings of the recent research.

Grush'ka M, et al in 2002 explained that the increased use of prostheses (most of them with inadequacies) was important factor

for the presence of species from the genus candida in the oral mucosa, also the result of the current study revealed that candida albican had a higher frequency of complete and removable prosthesis wearers.

## **Conclusions and Suggestions:**

### **1. Conclusions:**

Patients with increased use of complete and partial prosthesis were more susceptible to be infected with candidiasis especially with the type of candida albicans and may develop oral pain sensation. The incidence of the oral pain increased in old ages patients and women in and after menopausal periods, also poor oral hygiene had negative impact in developing of the disease, also systemic diseases affected the patients and aid in the development of oral mucosal pain sensation. Candida increased in patients under antibiotic cover.

### **2. Suggestions:**

More studies are needed to evaluate the relationships between dental appliances with fungal infection and the occurrence of the oral pain sensation, in order to put the planning to prevent or decrease the disease.



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## تأثير استعمال اجهزة الاسنان التعويضية داخل الفم وعلاقتها بتكوين الم تحسس في الفم وظهور الالتهابات الفطرية وكيفية معالجتها

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### المستخلص

العديد من العراقيين الذين يستعملون اطخم الاسنان يعانون من اعراض مرض تحسس الفم والالتهابات الفطرية لذا فان هذه الدراسة مهمة لمنع او تقليل او معالجة اعراض مرض تحسس الفم والالتهابات الفطرية لذا فان الدراسة الحالية تهدف الى توضيح مدى العلاقة بين استعمال اطخم الاسنان من جهة وظهور اعراض تحسس الفم مع الالتهابات الفطرية من جهة اخرى وكيفية التعامل مع هذه الحالات.

عشرون شخصا بواقع (12) شخص من الذكور و (8) من الاناث تم اختيارهم من المستشفيات وعيادات طب الاسنان الخاصة في بغداد وتم اعتمادهم كنموذج دراسي وجميعهم يستعملون اطخم اسنان كاملة او جزئية ليست جيدة داخل فم هؤلاء الاشخاص. اعمار هؤلاء الاشخاص تتراوح بين (40-65) سنة وتم اختيار مجموعة ثانية اخرى كمجموعة ضبط جميعهم ليسوا من مستعملي اطخم الاسنان وبنفس العدد والترتيب واعداد مقارنة للمجموعة الاولى. ثم التاريخ المرضي فيما يخص الحالة العامة وصحة الاسنان لكلا المجموعتين كذلك فحوصات سريرية واخرى مختبرية قد عملت لكلا المجموعتين لتقييم تأثير اطخم الاسنان على ظهور اعراض التحسس والالتهابات الفطرية اظهرت هذه الدراسة بان الاشخاص من ذوي اطخم الاسنان غير الجيدة في المجموعة الاولى (النموذج الدراسي) هم اكثر عرضه للاصابة باعراض تحسس الفم والالتهابات

الفطرية عند النساء بعد سن 45 سنة او الاشخاص غير المعنيين بنظافة الفم في حين ان المجموعة الاخرى المقارنة لاتعاني من هذه الامراض كذلك تشير الفحوصات المختبرية الى ان اشهر انواع الفطريات الذي تسبب الالتهابات الفطرية هي من نوع (Candida albicans) كذلك تشير هذه الدراسة الى ان هناك اسباب محدودة او محددة عامة قد تشارك في وجود وتكوين اعراض تحسس الفم من الالتهابات الفطرية. ثم استعمال نوعين من الادوية لمعالجة الفطريات في هذا البحث.

**الكلمات الرئيسية:** أجهزة طب الأسنان، إحساس الألم الفموي.