

## Effect of Denture Base Acrylic Resin, Denture Adhesive Material, and Denture Liner on Denture Stomatitis (A Longitudinal Study)

Khalid Ahmad Omar Arafa

Assistant Professor of Prosthodontics, Dean, Faculty of Applied Medical Sciences, Albaha University, P.O. Box: 1988 Al-Baha, Saudi Arabia  
[drkhalidarafa@yahoo.com](mailto:drkhalidarafa@yahoo.com)

**Abstract: Background/Objective:** Denture stomatitis is a common complication of the complete denture, so the aim of this study is to evaluate the amount of candida that accumulated under the denture in the normal denture, in the denture with adhesive material, and denture with soft lining material. **Materials and Methods:** A sample of sixty edentulous patients was used, and was divided into three equal groups each consisted of twenty patients: Each group was subdivided into two subgroups, one was wearing the denture only during the day, and the other was wearing the denture during day and night. The collected data were analyzed by Statistical Package for Social Sciences (SPSS, version 20). **Results:** Candida colonies were detected by taking a palatal swaps and were stained with KOH stain and examined by optical microscope (Olympus, Japan) at X400 magnification. These swaps were taken after nine months of wearing the dentures according to the instructions and calculated in each patient then the results were tabulated as expressed in cells/mm<sup>2</sup>. **Conclusion:** Denture fitting surface of the complete denture is a dominant cause for stomatitis. Wearing the denture with adhesive material decreases the amount of *candida albicans* to the least number and using liner decreases the possibility of stomatitis along time.

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**Keywords:** denture, stomatitis, candida.

### 1. Introduction

Denture stomatitis (DS) is an incendiary sore, in which there is redness of the oral mucosa underneath a complete denture. Despite the fact that *Candida albicans* is a segment of ordinary microbial vegetation, neighborhood and systemic elements can bring about pioneering contaminations (1). Ineffectively fitting or unhygienic dentures prompts the vicinity of yeasts appended to it., and bring about aggravation. Treatment strategies incorporate redress of sick fitting dentures, plaque control, and topical and systemic antifungal treatment. Nystatin and Amphoteresin B are utilized topically as suspension.

Since candidiasis is exceptionally impervious to antifungal specialists, systemic utilization of ketoconazole, fluconazole or itraconazole are essential (2). Be that as it may, the systemic utilization of these medications can bring about reactions like liver harmfulness, drug cooperations and so on. Studies demonstrate that connections may exist with the measure of tissue scope by a maxillary denture, vitamin A levels, smoking of cigarettes, and not uprooting dentures (3).

Despite the fact that the prevailing etiologic element now seems, by all accounts, to be parasitic disease, different components must be viewed as; these incorporate the prosthetic gadget itself

furthermore nearby and systemic considers patients who are maturing and edentulous (4).

### 2. Material and Methods:

A sample of sixty edentulous patients was used, and was divided into three equal groups each consisted of twenty patients: Group 1: patients wearing complete dentures.

Group 2: patients wearing complete denture with adhesive material (Coriga, USA).

Group 3: patients wearing complete dentures with soft lining material (Mollosil M, Detax, GmbH, Germany) Each group was Subdivided into two subgroups, one was wearing the denture only during the day, and the other was wearing the denture during day and night.

Candida colonies were detected by taking a palatal swaps and were stained with KOH stain and examined by optical microscope (Olympus, Japan) at X400 magnification. These swaps were taken after nine months of wearing the dentures according to the instructions and calculated in each patient then the results were tabulated as expressed in cells/mm<sup>2</sup>.

### 3. Results:

**Table (1): Mean and slandered deviation of the number of candida in different groups.**

Subgroup	Group 1		Group 2		Group 3		P value
	Mean	±SD	Mean	±SD	Mean	±SD	
Day wearing	3100.2	±98.8	1270.3	±26.8	2050.9	±39.7	P<0.001
Day and night wearing	3426.7	±118.3	1580.8	±117.4	2580.8	±520.2	

P\* value is significantly different.

**Table (2): one-way ANOVA test comparing candida numbers among groups in day wearing subgroup.**

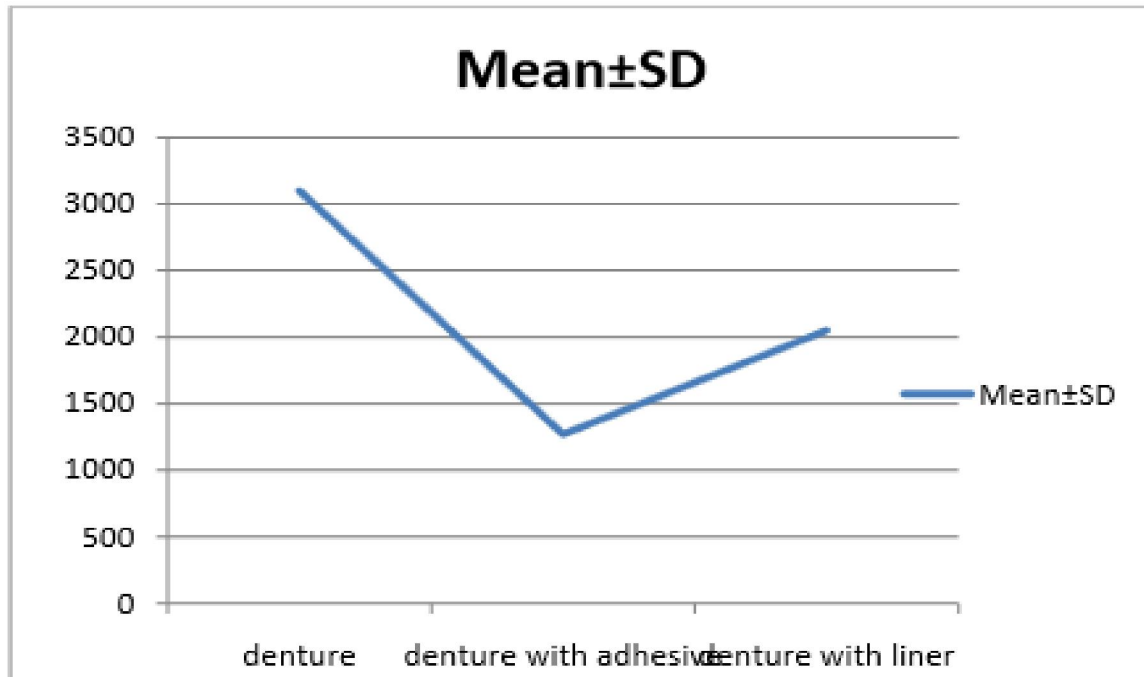
Groups	F- value	P- value	Significance
denture	30.843	P<0.001	S
Denture with adhesive			
Denture with liner			

S= significant

**Table (3): one-way ANOVA test comparing candida numbers among groups in day and night wearing subgroup.**

Groups	F- value	P- value	Significance
denture	82.16	P<0.0001	HS
Denture with adhesive			
Denture with liner			

HS= highly significant



**Fig (1): Mean and SD of the candida in different groups in cells/mm2 in patients wearing the dentures during day.**

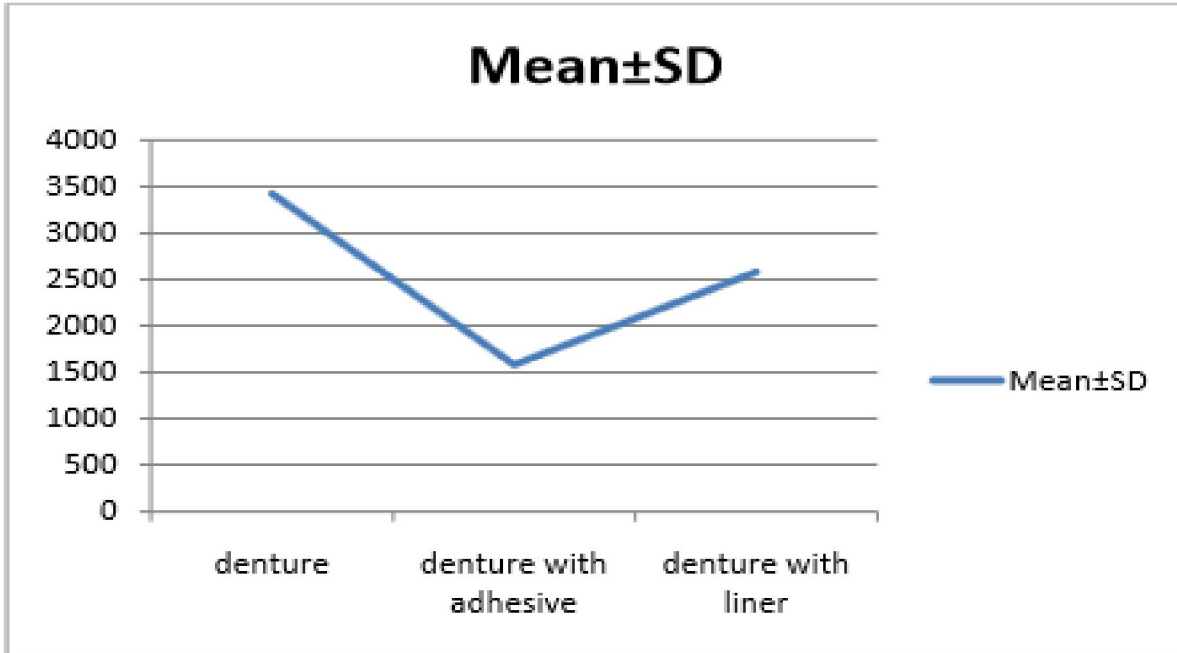


Fig (2): Mean and SD of the candida in different groups in cells/mm<sup>2</sup> in patients wearing the dentures day and night.

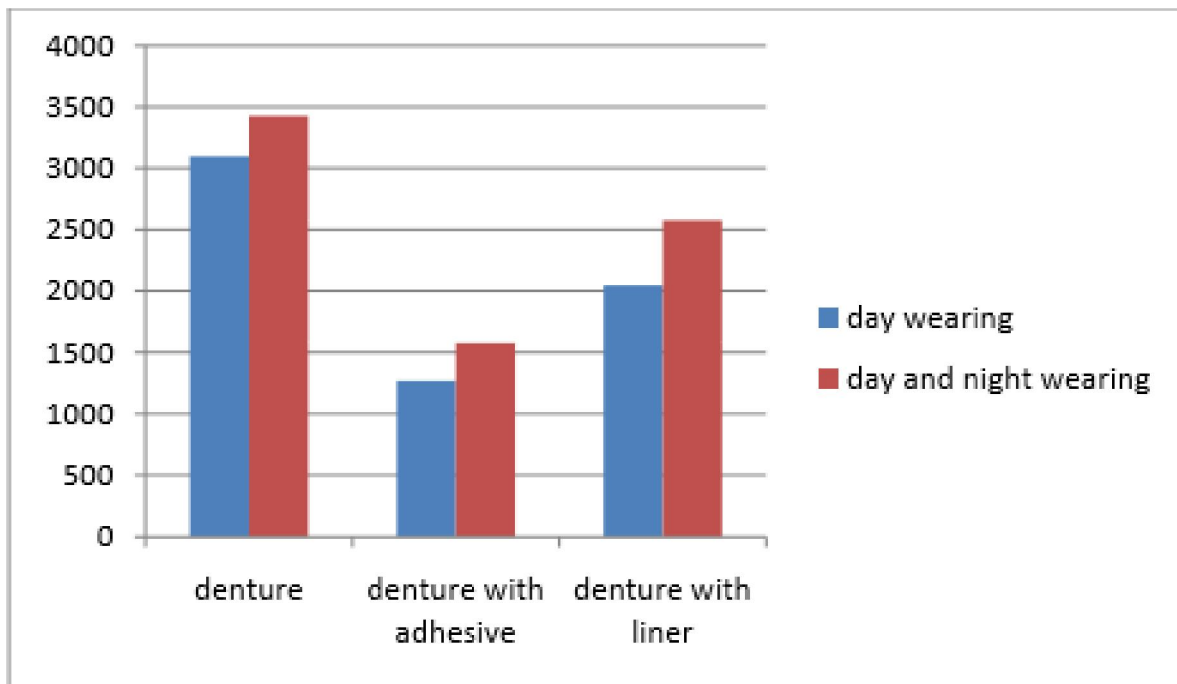


Fig (3): Mean and SD of the candida in different groups in cells/mm<sup>2</sup>

**4. Discussion:**

*Candida albicans* can produce biofilms on natural surfaces, such as teeth, and foreign surfaces, such as prostheses. These biofilms are normally resistant to common antimicrobial therapy, an increasing problem in clinics.(3) *Candida* species

are generally ubiquitous commensal microorganisms that are part of the normal mucosa microflora. If, however, the balance of the normal flora is disrupted or the immune defenses are compromised, *Candida* yeasts can invade mucosal surfaces and cause

diseases, such as Candida-associated denture stomatitis.(4)

*In vivo*, such surface defects would provide an ideal protective area for microorganisms and the potential for a focus from which outgrowth and infection might proceed.(5) Materials with rough surfaces make the cleaning of the prosthesis and mechanical removal of the microorganisms difficult, also, they cause discoloration of the denture base materials.(6) Another study(7) stated that the differences in surface topography affects the attachment of microorganisms to a surface, with higher number of cells retained on rough surfaces and surface irregularities would increase the likelihood of microorganisms remaining on the surface. This result agrees with.(8,9,10,11,12) A study of(13) found that, during microbial colonization, cells produce acidic substances as an outcome of their natural metabolisms that affects the pH of the surface they can interact with. In this longitudinal study, the number of candida albicans differed according to the time of wearing the denture, day time only or all day and night time.

#### Conclusions:

- 1-Denture fitting surface of the complete denture is a dominant cause for stomatitis.
- 2-Wearing the denture with adhesive material decrease the amount of *candida albicans* to the least number.
- 3-Using liner decrease the possibility of stomatitis along time.
- 4-Wearing the denture at night, during sleep, increases the possibility of stomatitis and increase number of *Candida albicans*.

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