

**A biological evaluation
between heat cured relining
material and soft acrylic resin.**

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LIST OF CONTENTS

	Page
❖ Introduction	1
❖ Review of Literature	4
Denture base materials	4
Problems associated with complete denture	6
Denture base relining	8
Tissue conditioners	10
Cold cured soft acrylic resin	11
Long term soft liners	12
Silicon rubber materials	12
Chemically activated silicone material	12
Heat activated silicone material	13
Heat cured soft acrylic resin	13
Physical changes of soft liners	14
Biocompatibility of denture soft liners	17
Adverse reactions of denture base relining materials	18
Relining techniques	20
Bacterial genera found in the oral cavity	21

Candida albicans	22
Predisposing factors for oral candidosis include	22
Virulence factors	23
Host reaction	25
Types of oral candidal infections	25
A-Role of surface properties on Candida colonization	28
B-Role of salivary properties on Candida colonization	32
Laboratory diagnosis of denture stomatitis	33
Isolation and identification of Candida albicans	34
Imprint culture technique	36
Oral rinse technique	36
Candidal identification	36
Germ tube test	36
Genotyping methods	37
DNA fingerprinting techniques	38
DNA fingerprinting with C3a probe	38
Phenotypic identification	39
❖ Aim of the study	40
❖ Materials and Methods	41

❖ Results	58
❖ Discussion	69
Discussion of the results	75
❖ Summary and Conclusion	80
❖ References	82
❖ Arabic summary	

LIST OF FIGURES

Figure	Page
1) Primary upper and lower alginate impression	46
2) Secondary upper and lower rubber base impression	46
3) Waxed up denture with monoplan occlusion	47
4) Wax elimination	49
5) Tin foil spacer	49
6) Trial packing with tin foil spacer	50
7) Molloplast B heat cured lining material	50
8) Vertex heat cured soft acrylic	50
9) Application of the soft lining material	51
10) Collection of samples from the fitting surface of maxillary denture	54
11) Sterile swab	54
12) Sabouraud's agar plates. (B) Plate streak method	54
13) Positive growth of <i>Candida albicans</i> culture grown on Sabouraud's dextrose agar medium for 48H at 37°C	55
14) Light microscopy of <i>Candida albicans</i> grown on sabouraud 's dextrose agar medium stained by gram stain(+ve) showing budding stage (arrowed). Bar scale: 2.5µm	56

15)	The mean of colony forming unit (CFU) for group I, during the follow up period	60
16)	The mean of colony forming unit (CFU) for group II, during the follow up period	61
17)	Means of the CFU in group I and group II throughout the follow up period.	63
18)	The prevalence of colony forming unit (CFU) scores in group I	65
19)	The prevalence of colony forming unit (CFU) scores in group II	66
20)	Comparison between groups at different follow up period	68

LIST OF TABLES

Table No.	Description	Page
Table (1)	Mean, standard deviation and ANOVA test of colony forming unit (CFU) scores for group I during the follow up period.	59
Table (2)	Mean, standard deviation and ANOVA test of colony forming unit (CFU) scores for group II during the follow up period	61
Tables (3)	Mean, standard deviation and Paired – T test of colony forming units count for group I and group II patients during the follow up period. in no clearance design	63
Table (4)	The prevalence of colony forming unit (CFU) scores in group I(Molloplast B) during the follow up period	64

Table (5)	The prevalence of colony forming unit (CFU) scores in group II (Vertex soft acrylic) during the follow up period	66
Table (6)	Chi-square test of colony forming units score for group I and group II patients during the follow up period.	67

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Introduction

Loss of teeth is accompanied by adverse esthetic and biomechanical sequel. These problems are accompanied by reduction of the person ability for mastication and there for disturbed nutritional state accompanied with defective speech and bad esthetics.

Conventional heat cured acrylic denture is intolerable for many patients because certain parts of the supporting regions of the alveolar ridge are sensitive to pressure from hard prosthetic materials such as resorbed bony alveolar ridge or non resilient mucosa this includes knife edge ridges, ridges with bony prominences sharp Mylohyoid ridges , severe tissue undercuts ⁽¹⁾.

Resilient lining materials have been used to provide a cushion between the denture base and the supporting tissues, and allow for a more uniform distribution of stress at the mucosa lining interface, reduce the impact force on the denture supporting structures and preserve the residual oral structures as much as possible.

. Resilient denture lining materials are advantageous when treating patients with residual ridge atrophy or resorption, relatively thin and non-resilient mucosa, bony undercuts, bruxism, xerostomia, and when the dentures oppose natural dentition⁽²⁾.

Resilient denture liners have been recommended for many years to line the tissue surface of complete denture. In principle, retention of the denture can be improved and pressure on the mucosa can be reduced by using resilient of soft liners.

The resilient denture lining materials are broadly classified according to their chemical composition into acrylic based liners and silicone based elastomers. Acrylic based resilient denture liners are plasticized [polyethylmethacrylate polymer](#). They are characterized by their bonding strength to acrylic resin base; however their major drawbacks are high water sorption and low resiliency ⁽³⁾. Silicone-based resilient liners are poly-dimethyl siloxane polymer. Silicone liners are color stable, and more resilient than acrylic based liners. The polymer is an elastomer, which does not require an external plasticizer and is, therefore, more stable over time ⁽⁴⁾.

The clinical use of resilient lining material has been associated with many problems. Among these are staining, color change, porous surface texture, degradation and decreased resiliency with time. The porous surface texture as well as debonding between the denture and the resilient liner favor the accumulation of food debris and encourage bacterial growth. Loss of surface integrity and surface roughness can irritate the denture bearing area and create an environment for the colonization of oral micro-organism ⁽⁴⁾.

Candida species are normal oral commensals present in 17% to 60% of apparently healthy persons. Multiple factors have been implicated to predispose to Candidal growth and colonization. Wearing of dentures is among the most important risk factors affecting Candidal carriage. The presence of an intraoral appliance produces alteration in the ecological environment of the prosthesis covered area. Such ecological changes promote colonization and adhesion of Candida albicans which was found to flourish in denture wearers ⁽⁵⁾.

Awareness of the susceptibility of denture base liner to Candida albicans colonization should be an important factor in their use to preserve and maintain the health of oral mucosa.

Accordingly this study was made to evaluate and compare the effect of heat cured silicone based soft liner and the soft acrylic denture liner on candidal growth

Review of literature

The definition of complete denture is the replacement of natural teeth in the arch and their associated parts by artificial substitutes⁽⁶⁾.

Denture base materials

Denture base is either fabricated of polymeric material or metals the most popular material is Polymethylmethacrylate (PMMA) which is introduced as denture base material in 1937 it has characteristics as by colorless, odorless, transparent, stable in temperature below 75°C, may be dissolved in liquids as alcohols. ,polymers are easily shaped and formed and do not weight as much as metallic materials⁽⁷⁻⁹⁾. PMMA resins are classified into:

1-Conventional Heat cured acrylic resins,

May be supplied in form of sheets or powder liquid form

The powder is based on Polymethylmethacrylate [PMMA] polymer or copolymer, benzoyl peroxide initiator, pigments, dyes, opacifiers and plasticizer liquid is methylmethacrylate [MMA] monomer with cross linking agent [usually 5%-15% glycol dimethacrylate]and small amount of inhibitor [hydroquinone] to avoid premature polymerization and enhances shelf life. When they are mixed with appropriate

plasticizer liquid the glass transition temperature of cured resin will be below mouth temperature^(10,11).

Conventional acrylic resins shows some disadvantages such as tissue hyper sensitivity due to its high residual monomer content that leaches out within 17 hours causing tissue irritation, dimensional instability which is either due to polymerization shrinkage or water sorption and porosity which affects the strength of material especially against sudden drop⁽¹²⁾.

2-Chemically activated denture base resins

It is known as cold cured resin or self cured resin. The material contains a chemical activator, which activates benzoyl peroxide so that polymerization can be completed at room temperature. The degree of polymerization achieved by the use of chemical activator is not as high as activation by heat. Color stability of the chemically activated resin is inferior to the heat cured resin⁽¹³⁾.

3-High impact resins

These are modified with elastomers[butadiene styrene rubber base spheres] added to powder (5-10%) to increase impact resistance. Urethane dimethacrylate materials modified with thoxy oligomers are also used and may contain rubber spheres⁽¹⁴⁾.