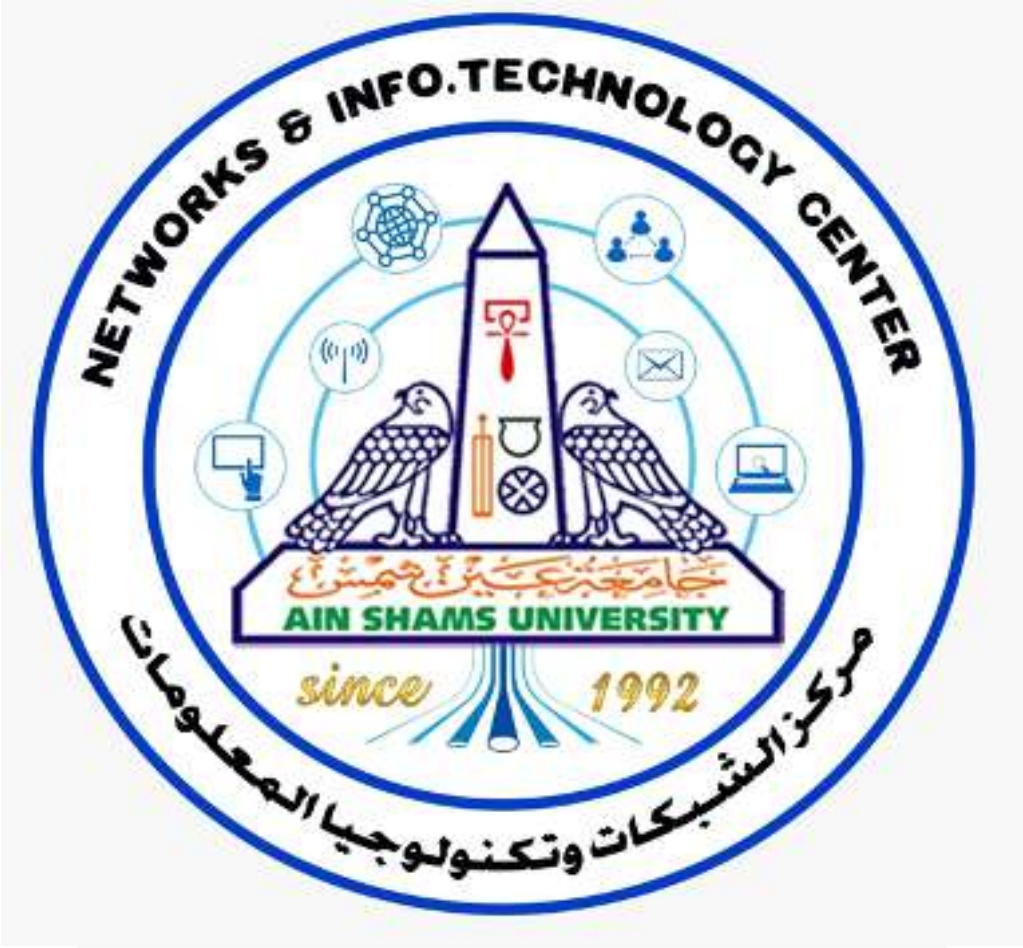
Hanaa Mohammed

بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



Safaa Mahmoud

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

Effect of Using Different Primary Crown Materials on the Frictional fit of CAD/CAM Telescopic Partial Dentures

A Thesis Submitted to Oral and Maxillofacial Prosthodontics Department,
Faculty of Dentistry - Ain Shams University
in Partial Fulfillment of the Requirements for Master's degree in
Oral and Maxillofacial Prosthodontics

By

Soha Saeid Mohammed Mohammed ElSaeid

B.D.S, Ain Shams University,(2013)

Faculty of dentistry
Ain-Shams University
2022

Supervisors

Dr. Hebatallah Tarek Mohamed

Associate Professor of Oral & Maxillofacial Prosthodontics

Faculty of Dentistry

Ain Shams University

Dr. Yasmine Galal Eldin Thabet

Associate Professor of Oral & Maxillofacial Prosthodontics

Faculty of Dentistry

Ain Shams University

بسم الله الرحمن الرحيم

وقل رب زدني علما

صدق الله العظيم

سورة طه – الآية (١١٤)

Acknowledgement

First thanks are for **Allah,** the Most Gracious and the Most Merciful, all praises to Allah for the strengths and his blessings in completing this thesis.

I'd like to express my respectful thanks and profound gratitude to **Dr. Hebatallah Tarek Mohamed**, Associate Professor of Oral & Maxillofacial Prosthodontics, Faculty of Dentistry, Ain Shams University for her keen guidance, kind supervision, valuable advice and continuous encouragement, which made possible the completion of this work.

I am also delighted to express my deepest gratitude and thanks to **Dr. Yasmine Galal Eldin Thabet**,Associate Professor of Oral & Maxillofacial Prosthodontics, Faculty of Dentistry, Ain Shams University, for her kind care, continuous supervision, valuable instructions, constant help and great assistance throughout this work.

I would also like to extend my sincere gratitude and thanks to **Dr. Mohammed Abdel Rahman M. Muwafi**, Lecturer of Oral & Maxillofacial Prosthodontics, Faculty of Dentistry, Ain Shams University for his enormous help and guidance throughout this work.

My deepest thanks and appreciation to all my professors and colleagues in the Oral and Maxillofacial Prosthodontics department for supporting and guiding me.

Didection

To My Family who supported me

My Father and my Amazing Mother

My Brother and Sisters Ahmed, Maha, Samar

My Friends Rana& Hanan

Thank you for the endless support and Love

List of Contents

List of Figures

List of Tables

Introduction

The treatment of a distal extension cases removable partial denture (Kennedy's Class I and II) represent a challenging case.The best treatment modality for restoring such case is implant supported prosthesis,despite it is not feasible option in some cases either due to lack of sufficient bone or economic reasons.thus, a castable removable partial denture is mostly preferred.(1)

Removable partial dentures are considered as a conservative and economical treatment approach to restore missing teeth in partially edentulous patients,enhancing their quality of life.However,conventional techniques are complicated and time-consuming.To improve the patients satisfaction aesthetically and functionally,recent materials and techniques of dentures construction are developed.(2)

Telescopic systems are used to retain removable dentures in patients with few remaining teeth.It is considered an ideal treatment approach when fixed treatment cannot be used as result of compromised or unfavorable general health condition.(3)Double crown retained partial dentures are proven to be effective rehabilitation method for decreased residual dentition because of improved patients' satisfaction and long-term durability.(4)

Double crown systems are composed of inner crown (primary crown) and an outer crown (secondary crown).The primary crown will function as a male part and is tightly cemented on the abutment tooth or implant,the secondary crown function as a female part for the retaining the removable partial denture.(4)

Usually,the combination of materials in telescopic retained RPDs comprises a metal–metal, zirconia–metal, or metal–polymer contact, that possess

different surface wear patterns thus,varying resistance to repetitive removal–insertion cycles.[5]

Precise milling of inner and outer crowns has been frequently applied with the introduction of computer aided design (CAD) and computer-aided manufacturing (CAM) technologies.Accordingly,additional materials for primary and secondary crowns as zirconia (ZrO2), titanium, or polyether ether ketone (PEEK) have been introduced.Milling of the primary and secondary crowns from these materials decrease human factor and manufacturing costs.[5]

Zirconia (ZrO2) which is a highly resistant polycrystalline ceramic, characterized by acceptable mechanical properties,excellent optical characteristics,aesthetic appearance,and chemical resistance,which are combined with the outstanding biocompatibility proven by clinical studies.[3]

So, this study was carried out to investigate the effect of different primary crown materials on the frictional fit of telescopic retained partial dentures.

Review of literature

I- Impact of edentulism

Edentulism is described as the loss of permanent teeth and it is the outcome of a multifactorial processes including biologic factors (dental caries,periodontal disease,trauma and others) in addition to non-biologic factors correlated to dental procedures (access to care,patient preferences).[6, 7]Partial edentulism is defined as a dental arch in which one or more but not all natural teeth are missing.[8]

The clinical consequences of an edentulous stomatognathic system include the following factors: (1) functional and Para functional significances; (2) modification areas of support (natural dentition vs. artificial one); (3) alteration in morphologic face height,and temporo-mandibular joint (TMJ); (4) cosmetic changes and adaptive responses.[9]

Partial edentulism has great influence on Masticatory muscle action. Moreover,various methods have been employed to evaluate mastication involving subjective and objective methods.Wide range of functional and oral health–related quality of life (OHRQoL) outcomes are utilized to measure the efficiency of any prosthetic treatment and investigate the effect of therapy on the recipients.The OHRQoL are evaluated by standardized questionnaires as the Oral Health Impact Profile (OHIP-14).Maximum bite force (MBF) is proven to be a key factor of masticatory function and masseter muscle thickness considered to be a major factor influencing the bite force.[10]

Edentulous people face difficulty in chewing foods that are hard or have tough texture,despite wearing well-made dentures.Since the Chewing movements are produced by a central pattern generator in brain stem.The patterns of the rythmatic muscular activity are modified constantly by sensory