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بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني

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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 teeth positioning guides on the accuracy of CAD/CAM complete dentures: an in-vitro study

A thesis submitted to the Faculty of Dentistry,

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This work is dedicated to ….

My beloved wife and daughter,

My father, my mother, and my brothers,

My whole family and friends.

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Introduction

Conventional complete dentures are the most viable treatment option for the majority of edentulous patients, even when other alternatives can be provided due to several reasons that influence patients' preferences. They are the most practical intervention in scenarios that bring together the need to reduce costs and expand access to public dental health with low supply and high demand.

The inherent nature of the conventional fabrication techniques was the reason for the delayed usage of computer-aided technology in the fabrication of complete dentures.

The fabricating process of digital CDs involves scanning the definitive impressions or casts and the maxillomandibular records. Then the denture bases are designed and the artificial teeth are arranged by using a software program. Finally, the denture is manufactured by using either an additive (3D printing) or a subtractive (computerized numerical control milling) technique.

The use of 3D printing (3DP) technology in dentistry has increased as it allows the fabrication of objects with complex geometries and finer details. Moreover, it is fast, has greater mass production, and low material waste.

Accuracy of teeth positions in the denture bases plays an important role in achieving both esthetics and precise occlusion. Slight changes in teeth positions may cause esthetic defects and occlusal interferences which in return affect the stability of the complete denture and the vertical dimension of occlusion.

Several studies have shown that after the manufacturing process there were deviation of the teeth positions in the finished denture when compared to the original design. Up to date no studies had proposed any technique to increase the accuracy and decrease the deviation occurring after printing of the complete dentures.

Thus, this study was conducted to determine whether the teeth positioning guide will improve the accuracy of the denture teeth positions in the printed complete dentures.

Review of literature

The restoration of the impaired stomatognathic system functions after loss of teeth can be done through different prosthetic and surgical options. The goal of a removable prosthetic restoration, besides restoring the lost functions due to the completely edentulous condition, is to maintain the health of the oral mucosa and the residual ridge.[1]

A complete denture is considered one of the most popular and traditional prosthodontic treatment solutions for edentulous patients who have systemic, anatomic, or financial limitations for implant treatment.[2, 3]

The main objectives of conventional complete dentures are the restoration of the masticatory function, speech, and esthetics as well as, providing physical and mental comfort to the patient.[4]

The conventional techniques used for fabrication of complete dentures:

Conventional procedures include several clinical and laboratory steps. These procedures require at least five visits to acquire primary and secondary impressions and jaw relation records.[5]

The try-in step is an important step to verify all the previous clinical and laboratory steps. Then the delivery is the final step.[5, 6]