Accuracy of Dental Implants inserted by Stereolithographic surgical guide using Partial versus Complete limiting designs in the posterior mandible:

A Split Mouth Study

Thesis

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Dedication

I dedicate this thesis to my lovely family and friends.

I dedicate it to my parents, twin, sister and brother and their spouses, to my parents in law and brothers and sister in law and their families for all their support and encouragement which guided me to accomplish this thesis.

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whom I love even before I see.

Wael Alaaeldin Hussein

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LIST OF ABBREVIATIONS

Abb.	Full name
3-D	Three-Dimension
CAD/CAM	Computer-Aided Design/Computer-Assisted Manufacturing
CAD	Computer-Aided Design
CAM	Computer-Assisted Manufacturing
CBCT	Cone Beam Computed Tomography
CT	Computed Tomography
MSCT	Multislice Computed Tomography
M.W.	Mouth Wash
Dx	Buccolingual Deviation
Dy	Mesiodistal Deviation
Dz	Apico-coronal Deviation

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INTRODUCTION

The position of the placed dental implants in the edentulous ridge determines its success prosthetically. The implants could be placed in a correct position according to the treatment plan yet have an incorrect angulation[1]. To overcome the discrepancies in angulations and place the dental implants in planned position, surgical stents were introduced. The stent is used with a sequential drilling, to minimize the possibility of a positional error due to freehand placement of dental implants[2].

Successful implant treatment is directly related to achieving integration and restoring hard and soft supporting structures for esthetics and function [(3)]. To achieve a predictable and acceptable outcome the clinician should have thorough understanding of the surgical and prosthodontic phases of treatment and be able to visualize the final prosthetic before dental implant placement. The desire for predictable results led to development of prosthetically guided implantology[4].

The placement of dental implant in correct position is challenging. Although recent advances in techniques and devices significantly improved the predictability of results, it remains a challenge. Three Dimension (3-D) radiographic information are required for the correct position and orientation of implants, making the diagnostic casts, probing depths and panoramic radiography of less importance due to their unpredictable results[3,5-9].

During dental implant planning, the clinician should plan the position of the implant in accordance with accurate mesiodistal and buccolingual location, angulation with residual bone and correct implant orientation, to achieve a successful prosthesis supported dental implant and avoid anatomical limitations[10].