

# **Evaluation of Bone Height Changes Around Implants with Two Different Attachments in Mandibular Implant Overdentures**

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partial fulfillment of the requirements for Doctor Degree in Oral and  
Maxillofacial Prosthodontics

Submitted by

**Mai Hassan Diab**

B.D.S. 2008 (October 6 University)

M.D.S. 2013 (Cairo University)

Assistant lecturer in Prosthodontics Department

October 6<sup>th</sup> University

**Faculty of Dentistry**

**Ain-Shams University**

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قال رسول الله  
صلى الله عليه وسلم  
من كان له علم  
فليعلم



Supervised by:

**Prof. Dr. Hany Ibrahim Eid**

Professor of Prosthodontics

Faculty Of Dentistry - Ain shams University

**Dr. Noha Helmy Nawar**

Assistant Professor of Prosthodontics

Faculty Of Dentistry - Ain shams University



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## *Dedication*

*I would like to dedicate this thesis to **my father** who had never failed me , gave me un believable love and support through all my life .*

*Words failed to express my appreciation and gratitude to my family members.*

- *My beloved Mother*
- *My wonderful Husband*
- *My lovely Brother*
- *My beautiful Daughter*



## **Contents**

<b>Title</b>	<b>Page No.</b>
<b>Introduction .....</b>	<b>1</b>
<b>Review of literature .....</b>	<b>3</b>
• <b>Implant overdenture.....</b>	<b>3</b>
• <b>Overdenture attachment .....</b>	<b>8</b>
• <b>Radiographic evaluation .....</b>	<b>22</b>
<b>Aim of study .....</b>	<b>36</b>
<b>Material &amp; methods .....</b>	<b>37</b>
<b>Results .....</b>	<b>56</b>
<b>Discussion .....</b>	<b>71</b>
• <b>Discussion of methodology .....</b>	<b>71</b>
• <b>Discussion of result .....</b>	<b>77</b>
<b>Summary &amp; conclusion .....</b>	<b>116</b>
<b>References .....</b>	<b>119</b>
<b>Arabic Summary .....</b>	

## **LIST OF FIGURES**

<b>Figure No.</b>	<b>Title</b>	<b>Page No.</b>
<b>1</b>	<b>Pre_operative cone beam.</b>	<b>39</b>
<b>2</b>	<b>Primary impression</b>	<b>41</b>
<b>3</b>	<b>Secondary impression</b>	<b>41</b>
<b>4</b>	<b>Centric occluding relation record</b>	<b>42</b>
<b>5</b>	<b>Complete denture insertion</b>	<b>43</b>
<b>6</b>	<b>Implant package</b>	<b>44</b>
<b>7</b>	<b>Two crestal incision</b>	<b>45</b>
<b>8</b>	<b>Drilling for the implant insertion.</b>	<b>45</b>
<b>9</b>	<b>Parallism between two implant</b>	<b>46</b>
<b>10</b>	<b>Implant installation by ratchet.</b>	<b>46</b>
<b>11</b>	<b>Cover screw was tightened over the implant</b>	<b>47</b>
<b>12</b>	<b>Mucoperiosteal flap was repositioned and sutured</b>	<b>47</b>
<b>13</b>	<b>The housing-cap assembly</b>	<b>48</b>
<b>14</b>	<b>locator inside the patient' mouth</b>	<b>49</b>
<b>15</b>	<b>The housing-cap assembly</b>	<b>49</b>
<b>16</b>	<b>The Ols attachment in the patient's mouth</b>	<b>49</b>
<b>17</b>	<b>Two relieved areas corresponding to the housing- cap assembly</b>	<b>50</b>
<b>18</b>	<b>Isolated ring of Ols attachment</b>	<b>51</b>
<b>19</b>	<b>Isolated ring of locator attachment</b>	<b>51</b>
<b>20</b>	<b>Duralay (inlay resin cement).</b>	<b>52</b>
<b>21</b>	<b>Housing cap assembly picked up in the fitting surface of denture for OLS attachment</b>	<b>52</b>

22	Housing cap assembly picked up in the fitting surface of denture for Locator attachment	52
23	Overdenture inserted in patient's mouth	53
24	Bone height measurement.	54
25	<i>Mean difference and standard deviation of all surfaces of group I during 1<sup>st</sup> 6 months</i>	57
26	<i>Mean difference and standard deviation of bone loss around implant surfaces of group I during 2<sup>nd</sup> 6 months</i>	58
27	<i>Mean difference and standard deviation of bone loss around implant surfaces of group I during 1<sup>st</sup> year</i>	60
28	<i>Mean difference and standard deviation of bone loss around implant surfaces of group II during 1<sup>st</sup> 6 months</i>	61
29	<i>Mean difference and standard deviation of bone loss around implant surfaces of group II during 2<sup>nd</sup> 6 months</i>	63
30	<i>Mean difference and standard deviation of bone loss around all implant surfaces of group II during 1<sup>st</sup></i>	64
31	<i>Bone loss difference in different time intervals in group I (Locator)</i>	66
32	<i>Bone loss difference in different time intervals in group II (OLS).</i>	68
33	Comparison between both groups regarding mean difference of bone loss at all time intervals.	70
32	Drilling for the implant insertion	78
33	Paralleling tools <i>in the osteotomy sites</i>	78

# LIST OF TABLES

Table No.	Title	Page No.
1	Mean difference (mm) and standard deviation of all surfaces of group I during 1st 6 months.	56
2	Mean difference (mm) and standard deviation of bone loss around implant surfaces of group I during 2nd 6 months.	58
3	Mean difference (mm) and standard deviation of bone loss around implant surfaces of group I during 1st year	59
4	Mean difference (mm) and standard deviation of bone loss around implant surfaces of group during 1st 6 months	61
5	Mean difference (mm) and standard deviation of bone loss around implant surfaces of group II during 2nd 6 months	62
6	Mean difference (mm) and standard deviation of bone loss around all implant surfaces of group II during 1st year.	64
7	Bone loss difference in different time intervals in group I (Locator)	66
8	Bone loss difference in different time intervals in group II (OLS).	68
9	Comparison between both groups regarding mean differences of bone loss at all time intervals	69

# **Introduction**

Dental implant with complete edentulism is considered an integrated and effective treatment modality in prosthetic dentistry. Implant prostheses have shown dramatic improvements in masticatory performance, aesthetics, and patient satisfaction. The dental implants and the insertion of implant-supported prostheses have been found to extraordinarily reduce bone loss in the edentulous mandible, as well as promote bone deposition distal to implants.

It was reported that two-implant overdenture became the model of care for edentulous mandible.

Bone preservation is deemed to be one of the most important factor that can be accomplished by teeth or implant supported overdentures. Furthermore, implant overdentures get better the prostheses support, retention and stability.

**Attachment** is defined as a mechanical device for the fixation, retention, and stabilization of a prosthesis. Also, It could be described as a retainer made from a metal receptacle and a similarly fitting part; the former (the [female] component matrix) is typically included in the regular or extended crown contours of the abutment tooth, and the latter . (The [male] part of the matrix), is attached to a pontic or denture framework.

Implant with attachment used together to improve the retention ,the stability and support of overdenture , so extending their longevity.

The attaching mechanism for an implant-retained overdenture should be choosed with taking into cosideration the following items : cost effectiveness, amount of retention needed, amount of available bone, expected level of oral hygiene, patient's social status, patient's expectation, maxillo-mandibular relationship, status of antagonistic jaw and inter-implant distance.

Locator attachments were found to be more advantageous than ball and bar systems regarding rate of complications in clinical practice.They are resilient, retentive, durable, and have some built-in angulation compensation. Moreover, repair and replacement are fast and easy. Locator attachments seem to function moderately well, but long-term evaluation is guaranteed.

Polyetheretherketone (PEEK) material was considered as an ideal partner in prosthetic dentistry and implantology due to its good mechanical and physical properties. PEEK has shown a worthy flexibility with high mechanical resistance to wear and high tensile, fatigue and flexural strength. PEEK is applied to make thermo-stable, electrically and thermally insulating, high-quality plastic component. It also achieves low specific mass, bone-like elasticity, and almost no material fatigue..

The question of this research here was if OLS attachment have an effect on mandibular implant supporting bone resorption or not.

## **Review of literature**

### **Implant Overdenture**

Implantation of implant dentistry in prosthodontics treatment options have solved many problems in esthetics, phonetics, retention and stability<sup>[1]</sup>.

Enhancing retention and stability of the prosthesis is deemed the most important factors for creating more favorable mandibular implant overdenture treatment consequence and improving patient satisfaction <sup>[2]</sup>.

Implant overdentures have shown to provide long-term clinical success. A lot of studies have reported an excellent implant survival rates between 94% and 100% and a well accepted patient satisfaction rates for implant overdentures. <sup>[3]</sup>.

Although, the cost of implants is quite high, so the use of fewer implant number (2 instead of 4) in mandibular implant overdentures offers a less expensive option for an edentulous patient <sup>[4]</sup>.

Mandibular implant overdentures reduce further bone resorption and improve success rate at least 95%. However, there are few serious complications <sup>[5]</sup>.

One of the obstacles facing implant overdentures is resorbed alveolar ridges in edentulous patients with limited bone height\width . in addition cases with limited inter-arch space as it may complicate the choice of prosthetic components <sup>[6]</sup>.

Furthermore, in implant prosthetic restoration prosthesis, the loosening of overdenture attachment was considered the most common,