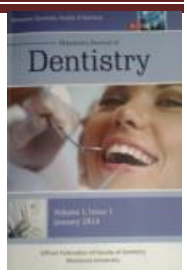

Effect of Topical Application of Hyaluronic Acid on stability of Immediate Loading Dental Implant in Posterior Maxilla

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Abstract:
Objectives: This study aimed at assessing the effect of application of hyaluronic acid on stability of immediate loading implant in posterior maxilla.
methods: Twenty implants were placed in fourteen patients in posterior maxillary region.Ten implants were placed in each group, in the control group non coated implant was placed while in the study group hyaluronic acid coated implant was used.
results: there was significant difference in the bone density from the buccal aspect in favor of the study group.
Conclusion: HA has a synergistic experimental and clinical effectiveness on quality and quantity of bone.

Introduction

Dental implantation is a surgical process in which a fixture placed in the jaw bone to support a crown, bridge, denture or facial prosthesis. [1]Multiple techniques of treatments applied to implant surface have been improved to enhance properties of titanium implants surface, as a result better osseointegration occurs .[2] Hydrophilic nature of implant surface is increased by coating it with HA. This process attracts the proteins and growth factors needed for osseointegration process and as a consequence faster bone healing occurs.[3]

Patients and Methods

Group I: Ten implants were conventionally placed in posterior maxilla and immediately loaded.

Group II: Ten implants coated with hyaluronic acid were placed in posterior maxilla and immediately loaded.

- **Pre-operative Measures:**

Preoperative photograph and study casts were made as a record. Also preoperative CBCT were done.

Surgical procedure:

Under local anesthesia,tissue punch was usedand preparation of the implant site was done using a low speed, high-torque contra-angled hand piece with coolant**.** The implant was then placed .Osstell ISQ RF Analyzer was used to evaluate implant stability after implant placement. Closed impression was done and then crown was cemented. Post medication consisted of amoxicillin1gm antibiotic twice daily for 4 days. Ibuprofen 400 mg was prescribed as needed.

Clinical evaluation:

Implant stability was assessed immediately after fixture placement and after 1, 3 and six months. Bleeding index and pocket depth were evaluated 6 months after loading.

Radiographic evaluation:

CBCT was utilized for bone density evaluation after 3 months.

Results:

1-implant stability:

Group I:The mean ISQ value immediately and after 1,3and 6 months were 67.7±6.34,65.7±6.68, 68.5 ±5.4 and 70.4± 4.97 respectively.

Group II:The mean ISQ value immediately and after 1,3, 6months were 68.8±5.05, 66.6±4.09, 71.5 ±4.74 and74 ±3.887 respectively

Comparing the two groups there was no statistical significant difference regarding the ISQ value at different times.

2-Peri-implant pocket depth(PPD):

There was no significant statistical difference when comparing the probing depth of the 2 groups from mesial, distal, buccal, lingual aspects as p-value =0.393, p-value=0.105, p-value=0.315 and p-value=0.739 respectively

3-Modified sulcus bleeding index(mSPI):

There was no significant difference between the 2 groups from mesial, distal, buccal, lingual aspects as p-value=1, p-value=0.702, p-value=1 and p-value=0.615 respectively

4-Relative bone density:

Comparing the two groups there was no significant statistical difference in bone density from palatal and apical aspects as p=0.11,p=0.25but there was from the buccal aspect as p=0.041.

Discussion:

The hypothesis of the present study was that coating the implant with bioactive osseoinductive material as hyaluronic acid will improve osseointegration and implant stability in immediate loaded implants placed in posterior maxilla.

Regarding implant stability, this study reported that there was no significant statistical difference between group I and group II. This indicates that hyaluronic acid did not result in significant change in primary or secondary stability over time. However, there was significant difference in the mean ISQ value at different times in the same group for both groups and this may be related to the start of healing and remodeling of bone, which includes bone resorption and there by a temporary bone weakening, and also this decrease in stability may be related to the extra burden on the immediate loaded implant[4]. The stability of the implant tends to raise with time, enforced by the new bone formation on surface of implant. Also there was no significant difference in the mean bleeding index and the probing depth from all aspects between the 2 groups.

Postoperative measurements were taken to record average bone density 3 months after surgery from buccal, lingual and apical aspects using CBCT which can be used as diagnostic tool but it is not accurate as CT.[5, 6] Regarding to the mean of the lingual and apical density there was no statistical difference but there was a difference regarding buccal density.

Conclusion: Based on the results obtained from this study, HA has a synergistic experimental and clinical effectiveness on quality and quantity of bone resulting in better

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