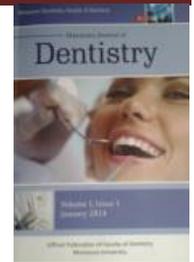




Aclinical comparative study between crestal and Subcrestal placement of immediate dental implants.



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Abstract:

Purpose: The aim of this study was comparing clinically the crestal and the subcrestal immediate dental implant.

Material and methods: the study included 16 patients with single hopeless maxillary anterior or premolar teeth. They were selected from Oral Surgery Department in Mansoura University. They were divided randomly into two groups: group A (implant placed subcrestally) and group B (implant placed at crestal level). Follow up of patients at 3, 6, and 12 months.

Results: Patients were followed up in this study (3 males and 13 females) with 100% success rate. After 12 months follow up the esthetics variables according to esthetics pink score the P value was <0.001 which is statically significant.

Conclusion: Within the limitations of this study, all esthetics parameters were better in subcrestal immediate dental implants with higher success rate.

Introduction

Tooth replacement by an implant is derived from an evolution in the concept of osseointegration regarding concepts and technology. The method of osseointegration is well documented as implant supported prosthesis has improved function, osseous preservation and esthetics, the single tooth implant replacement is more better for the patient than fixed partial denture that include preparation of the teeth.⁽¹⁾ To wait several months before placement of the implants after tooth extraction to allow alveolar bone healing along with 3-6 months of load-free period to ensure Osseointegration of the implants, it lead to obvious drawback of this treatment modality due to long treatment period.⁽²⁾ Accordingly, the gold standard of dental implant treatment aimed to decreasing the period of treatment and the surgical steps reduction so that no need to wait for complete healing of extraction site before implant insertion.⁽³⁾

To date, the opinion expressed widely in the scientific literature has been that subcrestal implant placement leads to increased crestal bone resorption. However, clinical studies addressing the implant-placement depth in relation to crestal bone have been rare. Data on subcrestal versus crestal placement have mostly come from animal studies,⁽⁴⁻⁷⁾ so that the aim of this study was to compare the esthetic differences between crestal and subcrestal immediate dental implant.

Materials and Methods

Sixteen patients with hopeless maxillary anterior and premolar teeth were selected from out patients' Clinic, Oral and Maxillofacial Surgery Department, Faculty of Dentistry, Mansoura University. Dental implants were used by

inserting in fresh extraction sockets followed by delayed loading after six months.

Inclusion criteria:

1. Non restorable maxillary anterior and premolar teeth that indicated for extraction.
2. Good oral hygiene.
3. Intact bony socket walls with at least 2mm thickness of labial and/or buccal cortical wall.
4. Patient age is more than 18 years.

Exclusion criteria:

- 1- Medically compromised patients
- 2- Patients aged <19 years.
- 3- Heavy smokers or previous heavy smokers.
- 4- Acute inflammation or infection that may affect immediate implantation.
- 5- Pathological conditions that lead to severe buccal bone resorption.
- 6- Trauma with detached or fractured bone plates

Diagnostic aids:

Cone beam CT was used to evaluate the amount of bone, presence of any infection and the ideal measurement of the used implants.

Patients and methods:

Sixteen screw shaped, two pieces, commercially available titanium implants were used in this study. These selected 16 patients were randomly divided into 2 equal groups: Group A: It consists of 8 patients who received immediate implant with subcrestal placement by 1.5mm. Group B: It consists of 8 patients who received immediate implant with the crestal placement.

Surgical technique:

A traumatic extraction was made for the tooth to be replaced with maximum effort to maintain intact periodontal tissues of the adjacent teeth. A full thickness mucoperiosteal flap was reflected buccally to expose the alveolar ridge of implant site. The preparation of the recipient site was performed following the instructions of implant manufacturer under

abundant saline solution irrigation. Then implants were placed through the bone which is relatively wide in the diameters with good initial stability with no grafting materials in the gumping space around the implants. The surgical site was irrigated with sterile saline solution and the mucoperiosteal flap was repositioned to its original site and sutured using 4-0 black silk.

An immediate periapical radiograph was taken to verify the final position of the implant. Postoperative antibiotic and analgesic were prescribed. Patients were instructed for maintaining good oral hygiene with only cold fluids and soft diet were recommended for the first 3 days. The sutures will be removed 6-7 days later.

Prosthetic phase:

All patients were recalled after 6 months for starting the prosthetic phase which include implant exposure using simple crestal incision, followed by removing the cover screw and insertion of the suitable healing abutments, leaving the patients with healing abutments for 3 weeks for gingival forming. After 3 weeks all steps of indirect impression technique were followed using impression posts, implant analogues and addition silicone rubber base impression material. Metal try in was done followed by cementing the final porcelain fused to metal crowns.

Clinical evaluation:

All patients were seen at regular time intervals for evaluation at 3, 6 and 12 months after implant placement with using pink esthetic score for evaluation of esthetics.

Ethetics

Table 1: Comparison of Ethetics among different studied groups.

		Group A		Group B		P
		Mean	±SD	Mean	±SD	
Ethetics	6 Months	11.00	1.41	4.00	1.31	<0.001*
	12 Months	10.75	1.16	3.50	1.07	<0.001*

SD

:standard deviation P:Probability*:significance<0.05

Test used:Student's t-test

The success rate was 100% of the both groups after 12 months follow-up in both groups.

Discussion:

At 6 months the mean and standard deviation were 11.00 (±1.41) at group A, 4.00 (1.31) at group B, at 12 months 10.75 (± 1.16) at group A and 3.50 (±1.07) at group B. The P value was < 0.001 which was statically significant. All esthetics variables according to the pink esthetic score were higher in group A (subcrestal group) which in terms made this group much better regarding our results, it was similar to Richard et al.⁽⁸⁾

Radiographic evaluation:

Standard periapical radiographs were used to evaluate the implants at different follow up visits.



Figure 1: Photographs of A) apre-operative case after B) crestal immediate implant placement with C) final crown, and D) pre-operative case after E) subcrestal immediate implant placement with F) final crown

Results

Conclusion:

From the previous mentioned results, it may be clear that immediate dental implant that placed in subcrestal position is better than equicrestal positioned one

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