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Case Report

Screwed Immediate Upper Complete Denture after Major Bone Augmentation Procedures. Technique Presentation

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Abstract

Introduction: Edentulous atrophic maxilla that is augmented with bone, the restriction of denture wear throughout the transitional period is extremely important to prevent traumatic injury to the treated bone augmented maxilla which may lead to soft tissue dehiscence. Early exposure of transplanted bone due to wound dehiscence is detrimental to the final results.

Patients and Methods: A patient with completely edentulous maxilla that necessitates onlay bone blocks grafting. Because of esthetic and comfort demands of the patient, his complete denture was screwed to the palate, after trimming and removal of its buccal flange, for throughout the healing period.

Results: The bone augmentation volume was maintained during the follow up period, no soft tissue dehiscence was observed. The patient was satisfied about the ability to use his denture. The treatment final results were satisfied and the dental implants were placed in anatomically correct position. Screwing of a removable denture in cases with major bone- augmented atrophic maxillae, give social and esthetic solutions to the patient and exclude traumatic injury to the treated jaw throughout the healing period. The aim of this report is to introduce a technique that may give the patients the chance to wear their dentures without damaging the grafted jaw.

Keywords: *Atrophic Maxilla, Bone Augmentation, Wound Dehiscence*

Introduction

Patients with complete edentulous maxilla have poor quality of life due to severe functional and esthetic disabilities. Reconstruction of the severely atrophic maxilla with dental implants is a frequent treatment which usually requires major bone grafting procedures.

Many reconstructive augmentation procedures have been suggested for these atrophied maxillae before implant placement [1-7].

Several intraoperative key factors are essential to increase the success rates of major bone augmentation procedures which include; convenient bone graft matching to the recipient site, immobilization of the grafting material that achieved by meticulous fixation, and primary tension free closure of the grafted recipient site. Preventing trauma to the augmented atrophied maxillae during the healing period plays an essential key factor postoperatively [8-11]. This may be achieved by instruct the patients to eat soft diet, to keep a scrupulous

oral hygiene and to abstain from denture wearing throughout the healing period in the interests of preventing any damage to the grafted jaw. The restriction of denture wear for several weeks after the operation may terrifies many patients from bone augmentation solutions.

The aim of this report is to introduce a technique that may give the patients the chance to wear their dentures without damaging the grafted jaw.

Case illustration and technique (Figure 1)

54-years old male was referred for bone augmentation at the maxilla, he had a complete removable denture for many years and his demand was to restore the maxilla with fixed prosthesis over dental implants.

The treatment plan was; first augmentation of his severe atrophied maxilla onlay bone blocks that followed by implants insertion and bilateral sinus grating at 4 months after the bone augmentation surgery. The patient was a mayor, and his main concern was using of his denture immediately after the grafting surgery.

At the first surgery, horizontal bone augmentation of the maxilla was performed with allogenic bone blocks. After good adaptation of the bone blocks to the recipient bed and rigid fixation with screws, the gaps between the blocks were filled with allogenic particulate bone followed by covering the grafted bone with resorbable membranes. Primary tension free soft tissue closure was achieved utilizing free buccal fat pad graft.

The buccal flange of the patient denture was removed at the level of the teeth and interdental papillae. After adaptation of the denture with soft liner, it was screwed to the hard palate with 3 screws (18 mm) to assure stable sitting in order to prevent its movement that can harm the fresh bone graft. The patient was informed about the home care of the denture, he instructed to use water pick twice daily to clean under the denture, to eat soft diet. Follow up of the surgery healing and the stability of the screwed denture was every 3 - 5 days by the surgeon (FK), and included throughout rinsing of the treated site with normal saline.

Six weeks after the surgery, the screwed denture was removed, the previous soft liner was also removed, and renewed. Reentry was performed after 4 months to place implants. Fixed prosthesis was performed 4 months after the implants insertion.

Figure 1a: *Clinical view; complete edentulous maxilla with severe atrophy.*

Figure 1b: *Intraoperative view: severe atrophy with inadequate bone width.*

Figure 1c: *Bone augmentation with onlay allogenic bone blocks, and particulate bone particles.*

Figure 1d: *Membranes over the bone graft.*

Figure 1e: *Buccal free fat graft covering the bone graft.*

Figure 1f: *Primary tension free closure of the recipient site.*

Figure 1g: *Screwing of the complete denture to the palate.*

Figure 1h: *Clinical view of the screwed denture without the buccal flange.*

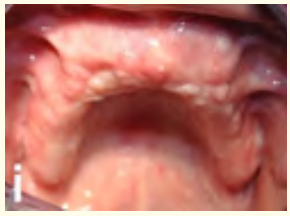

Figure 1i: *Clinical view of the final outcome that demonstrate the new volume of the maxillary ridge, without wound dehiscence.*

Figure 1j: *The new bone volume at 4 months after the bone graft surgery.*

Figure 1k: *Implants placement of the augmented maxilla.*

Figure 1l: *Suturing of the recipient site.*

Results

The bone augmentation volume was maintained during the follow up period, no soft tissue dehiscence was observed. The patient was satisfied about the ability to use his denture, he stated that his daily routine as mayor was not interrupted, and his self- esteem and comfort were satisfied due to the stable denture. The treatment final results were satisfied and the dental implants were placed in anatomically correct position.

Discussion

Rehabilitation of the atrophied edentulous maxilla with dental implants challenges the surgeon with major bone augmentation procedures that should be maintained during the healing period. The success of the grafting procedure depends mainly on the amount of revascularization [12,13]. The more rapid the revascularization, the more favorable are regeneration and graft survival. To enhance rapid and early revascularization of the bone graft, and to increase the predictability of the results, several intraoperative key factors should be respected by the surgeon which include; total matching between the grafted bone and the recipient site, immobilization of the bone graft that achieved by meticulous fixation, and primary tension free of the soft tissue at the recipient site [8,11], Free buccal fat pad graft may be used for this purpose [14].

The survival of the bone graft is depends also on several postoperative key factors. Medications, meticulous oral hygiene are important but soft diet during six weeks after major bone surgery is essential in order to prevent trauma to the operated sites. In full edentulous Maxilla that was augmented with bone, the restriction of denture wear throughout a long transitional period is extremely important to prevent traumatic injury to the treated maxilla which may lead to soft tissue dehiscence. Early exposure of transplanted bone due to wound dehiscence is detrimental to the final result, jeopardizing the possibility to place implant in the anatomically correct position. The restriction of denture wear over the bone augmentation at the maxilla may have great handicap impact to the patient. The current tech-

nique of screwing the denture to the hard palate gives the patient satisfied social and esthetic solution during the critical healing period, and at the same time prevents traumatic damage to the bone graft and the overlying soft tissue. The stability of the grafted bone and the integrity of the covering soft tissue are essential to the desired final results of the treatment.

Conclusions

Screwing of a removable denture in cases with major bone- augmented atrophic maxillae, give social and esthetic solutions to the patient and exclude traumatic injury to the treated jaw throughout the healing period.

Conflicts of Interest

There are no conflicts of interest.

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