



ORAL PERI IMPLANT MUCOSAL FENESTRATION AND SOFT TISSUE DEFECTS: THE TREATMENT APPROACH

Dental Science

Dr. Harshitha Akkinapally*

MDS Oral Medicine And Radiology, Kamineni Institute Of Dental Sciences, Narketpally
*Corresponding Author

Dr. Avinash Vallabhaneni

BDS Kamineni Institute Of Dental Sciences, Narketpally

Dr. Batchu Lakshmi Mounika

BDS Kamineni Institute Of Dental Sciences, Narketpally

Dr. Thatiparthi Sony

BDS, Kamineni Institute Of Dental Sciences, Narketpally

Dr. Dachepalli Vaishnavi

BDS Kamineni Institute Of Dental Sciences, Narketpally

Dr. Gurram Sandhya Rani

BDS Kamineni Institute Of Dental Sciences, Narketpally

ABSTRACT

Dental implants frequently have soft and hard tissue defects surrounding them, which may jeopardize implant longevity. Following implant treatments, soft-tissue abnormalities that result from the modelling of the peri-implant mucosa frequently lead to soft tissue shrinkage, food debris collection, and cosmetic disarray. These lesions could serve as a breeding ground for bacteria and cause illness if they are not addressed. Combinations of soft and hard tissue abnormalities are frequently addressed and resolved using complex procedures. This review paper sheds light on the treatment process for peri-implant mucosal soft tissue abnormalities and provides a thorough analysis of them.

KEYWORDS

Peri implantitis, peri-implant soft tissue fenestration, bony dehiscence, connective tissue graft

INTRODUCTION

Numerous dental conditions can cause the loss of alveolar bone, which can result in a variety of osseous abnormalities. Common osseous defects include fenestration and alveolar dehiscence. A fenestration is a limited defect of the cortical plate that reveals the underlying root surface without affecting the alveolar margin of bone, whereas alveolar dehiscence indicates an absence of facial and lingual alveolar cortical plate, resulting in a denuded surface.

Mucosal fenestration is caused by some causes, such as reduced alveolar housing thickness, tooth labioversion in the dental arch, root apex contour, occlusal variables, orthodontic tooth movement, and periodontal and endodontic pathology, abscess formation, aberrant frenum.^[1]

These days, edentulism rehabilitation using dental implants offers enhanced appearance and long-term functionality. The state of the extracted tooth, post-extraction bone alterations, and pre-existing tissue shape are some of the primary causes of soft and hard tissue deficits surrounding the implant implantation site.^[2]

The effectiveness of peri-implant health care and implant stability may be impacted by tissue defects.^[3] The management of abnormalities during implant therapy and the prevention of tissue deficiencies as an early step before tooth extraction have been the subject of numerous clinical research.

After a month of recovery, soft tissue recessions and abnormalities frequently result in soft tissue shrinkage, patient unhappiness, and aesthetic disharmony. To avoid peri-implant irritation, oral hygiene, mechanical debridement, and local antiseptic are advised.

Peri-implant Mucosal Fenestration And Other Defects

It has been common to see soft tissue abnormalities and deficits surrounding dental implants.^[4] The amount, condition, and location of the pre-existing peri-implant bone are crucial factors that influence the growth of soft tissues later on and the preservation of soft tissue height. Modelling the peri-implant mucosa is the process that leads to soft-tissue abnormalities following implant treatments.^[5] It is thought that during the time between implant insertion and abutment attachment,

the buccal face of the implants experiences soft tissue recession and bone resorption of between 0.7 and 0.6 mm. A belt of keratinized tissue surrounding an implant is thought to protect against peri-implant bone loss in this situation.^[6,7]

According to Muller et al., thin mucosa is more pliable and heals more quickly than thick mucosa after surgery and mechanical stress.^[8] In addition to the presence of an adjacent implant, other risk factors for peri-implant soft tissue dehiscence in the aesthetic area include longer implant function times and greater buccal bone distance, which result in reduced keratinized mucosa width and mucosal thickness^[9], while soft tissue thickness strongly reflected marginal bone loss.

Compared to implants with substantial soft tissue, those with thin soft tissue showed a greater marginal loss of bone.^[2]

Canine teeth were also shown to have a higher frequency of face fenestration and dehiscence abnormalities, with a larger angle between the tooth's long axis and the ridge's midline than in the anterior teeth.^[10]

TREATMENT

The treatment of peri-implantitis can include both non-surgical and surgical techniques.

Following nonsurgical treatment of peri-implantitis with horizontal bone loss, a 7-year longitudinal clinical case study revealed notable alterations in the bacterial composition.^[11] The genus *Fusobacterium* in the phylum *Fusobacteria* and the genera *Porphyromonas*, *Prevotella*, *Alloprevotella*, and *Tannerella* in the phylum *Bacteroidetes* were shown to have declined over the 5-year follow-up. In contrast, the phylum *Firmicutes* had a notable growth in the genus *Streptococcus*. These findings demonstrated how nonsurgical therapy can aid in the recovery of the microbiota from dysbiosis. Additionally, systemic or adjunctive local antibiotics decreased probing depth (PD) and bleeding on probing (BOP).^[12]

A two-stage procedure was suggested to address soft tissue fenestration or peri-implant recession with significant buccal dehiscence or interproximal bone loss. Four to six months after the initial mucogingival surgery, osseous repair should be performed.^[13] Peri-implant tissue can be rebuilt plastically using a variety of

methods. There are two types of soft tissue grafts: autogenous and soft tissue substitute. Because autogenous grafts increase mucosal thickness and keratinized tissue width, they were preferred for preserving peri-implant health.^[14]

To increase the width and thickness of peri-implant keratinised tissue, autogenous soft tissue grafts, free gingival grafts, and connective tissue grafts were employed. The main indications for connective tissue grafting were peri-implant soft tissue dehiscence repair and peri-implant soft tissue thickness augmentation.^[15]

Compared to the treatment of bone plate fenestrations (BPFs), there are very few case reports on the management and correction of "pure" soft tissue peri-implant fenestrations.^[7,16] Two mucogingival surgical procedures are used to treat vestibular implant fenestration in the visible area of the mouth, according to a recent case report.^[17] According to a study by Zucchelli et al., buccal soft-tissue abnormalities surrounding single dental implants might be effectively covered by a combination of the coronally advanced flap, connective tissue graft (CTG), and final restoration.^[18]

CONCLUSION

Mucogingival surgery is a suitable surgical procedure that can be used to address soft tissue and cosmetic abnormalities surrounding an implant. In addition to the intriguing potential of using regenerative biomaterials like platelet derivatives, these treatments need to be further evaluated in a larger cohort with long-term follow-up.

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