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Tehran University of Medical Sciences

Different Techniques for Soft Tissue Augmentation Surrounding Maxillary Dental Implants

Mohseni Salehimonfared, Seyedhossein1; Poursafar, Farzaneh; Moravej, Asal

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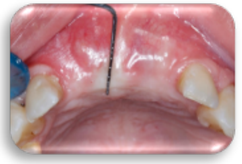
Introduction

Soft tissue conditions around dental implants is very important to prevent inflammatory reactions and ensure the healthy status.

Previous findings have indicated that implants with a narrow zone of keratinized tissue (<2 mm) had more signs of inflammation, whereas 80 % of sites with ≥2 mm width of keratinized mucosa (KM) remained healthy.

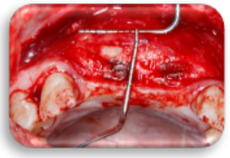
In this case series we compared different soft tissue augmentation techniques around dental implants.





Case 1: Lack of KM after implant placement

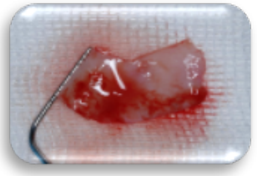


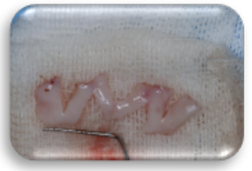


Bed preparation: split thickness

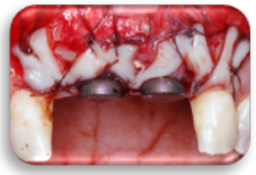


L-shaped Free Gingival Graft harvesting

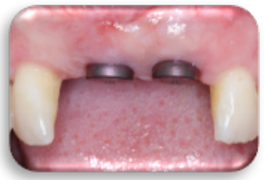




Accordion preparation to increase the graft length



Accordion graft fixation with interrupted sutures



Healing: adequate KM with favorable color match



Healing: occlusal view

Methods

44 patients with 214 Osseointegrated maxillary implants were treated with various methods to improve soft tissue conditions. All patients had a lack of KM and vestibular depth after implant placement.

Different therapeutic strategies include the following:

Autogenous free gingival graft (Conventional or Accordion), Apically Positioned Flap (APF), Modified Apically Pedicle Graft, Rotated Palatal Pedicle Graft (epithelialized or de-epithelialized) and Acellular Dermal Matrix Allografts (ADM). Moreover in 1 case lip switching was performed to reconstruct vestibular depth.

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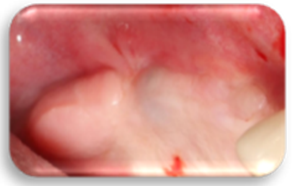
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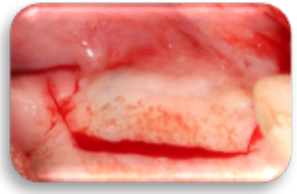
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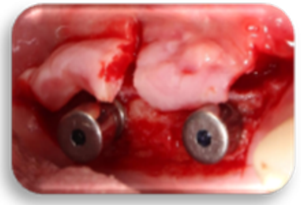


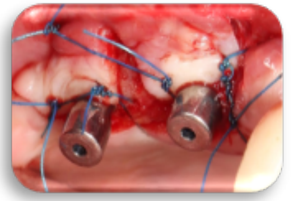
Case 2: soft tissue problem after implant placement



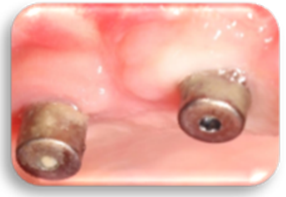


split thickness flap

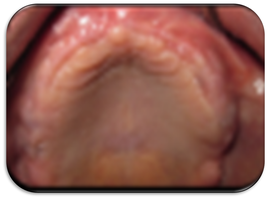




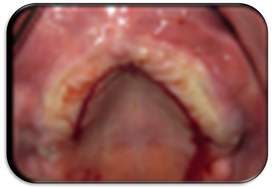
The flap was divided vertically and positioned apically and sutured



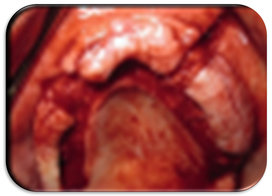
Healing: an adequate amount of KMwith vestibular reconstruction



Case 3: soft tissue problem after implant placement



Pedicle trapezoid flap: the first incision was made 8mm palatal to the mucogingival junction





The split-thickness flap was segmented into three parts with releasing incisions and positioned apically





Healing: Adequate keratinized mucosa maintain health and esthetic around the implant-supported prosthesis



Panoramic view

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Case 4: rolling test to show mucogingival problem after implant placement



Bed preparation



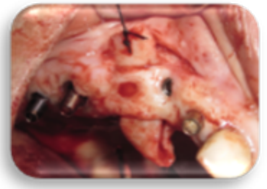
Epithelialized pedicle palatal graft harvesting



The crestal soft tissue was undermined to create a tunnel from the palatal to the buccal side of the implants

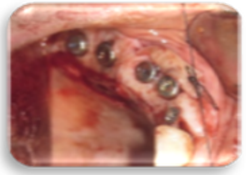


deepithelialization of the graft in the part that was inserted into the tunnel





The pedicle graft was rotated and passed through the tunnel





Simultaneous vertical and lateral soft tissue augmentation using a tunnel peThe pedicle graft was sutured at the buccal side dicle gingival graft:



Healing



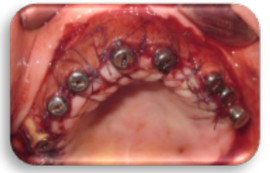
Healing after 7 yarse



Case 5: Lack of KM after implant placement

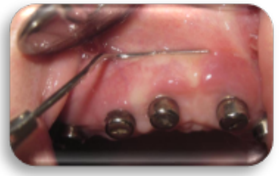


Bed preparation: split thickness





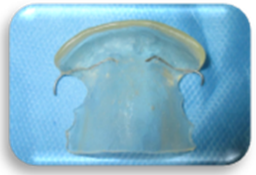
Acellular dermal matrix fixation with interrupted sutures



Healing



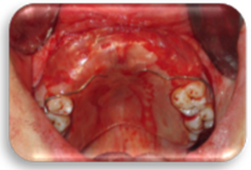
Case 6: Lack of vestibular depth and KM prior to implant placement



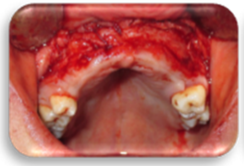
Acrylic plaque fabrication to determine the amount of required vestibular depth



Vestibular extension with split thickness flap

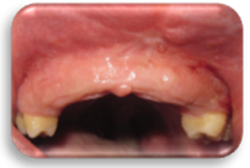


Periosteal sutures along witplaqueh placement of the acrylic





Periosteal sutures along with placement of the acrylic plaque and periodontal dressing to maintain the created vestibular depth



Healing: an adequate amount of KM with vestibular reconstruction and implant placement

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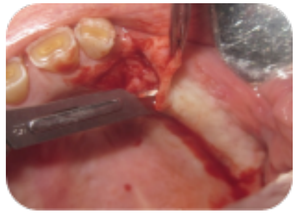
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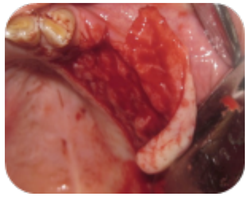
Case 7 : Roll test--displacement of mucogingival line (MGL), reduction of vestibular depth, and lack of keratinized gingiva



split thickness flap (STF)



A trapezium shape flap, longer arm about 8 mm far from MGL.



A small incision,3 mm far from the flap edge



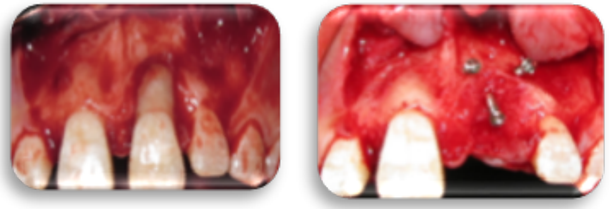
the flap was fixed (Continuous sling sutures around healing abutments)



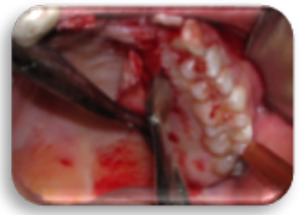
Increase the width of keratinized gingiva and reconstruction of vestibule

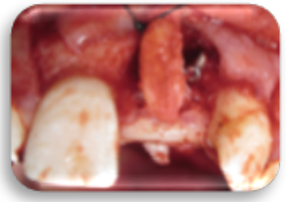


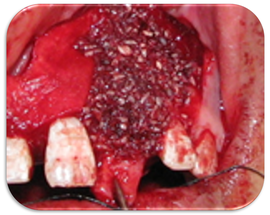
Case 8: Hopeless maxillary left central incisor

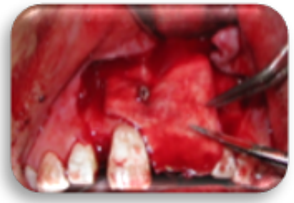


Extraction of hopeless tooth and placement of three screws on the buccal aspect as space maintainers

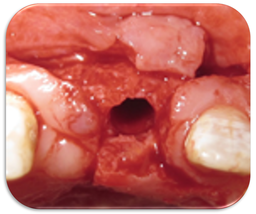








CTG with mesial pedicle was harvested from palate and then rotated through a tunnel that was created from the palatal to the buccal side (trimming, placement and fixation of resorbable membrane)









Result of simultaneous Hard and Soft Tissue Augmentation using Screw Guided Fast Bone Regeneration (SGFBR) and Rotated Pedicle Palatal Connective Tissue Graft (RPPCTG)

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Results

In all patients, the healing period was uneventful and without any serious complications.

Adequate width and thickness of Keratinized Mucosa was obtained and maintained for a long-term period

This can lead to favorable plaque control and peri-implant tissues health

Conclusion

All the mentioned techniques were capable to enhance Keratinized Mucosa and reconstruct vestibular depth around implants.

Technique selection is based on the clinician's experience and the advantages of each method.

For full arch soft tissue augmentation and vestibular reconstruction, Modified Apically Pedicle Graft is an appropriate technique. APF, Modified Apically Pedicle Graft, and Rotated Palatal Pedicle Graft are pedicle grafts and thus provide excellent blood supply that is critical for successful results especially in patients with compromised wound healing.

Conclusion

Furthermore, these techniques could provide abundant augmented Keratinized Mucosa with an excellent color match.

In large areas with a lack of Keratinized Mucosa , the Accordion Free Gingival Graft technique could expand the donor graft tissue length and probably decrease donor site morbidity.

Acellular Dermal Matrix (ADM) could be a substitute for palatal donor tissue in cases with the limitation of donor tissue harvesting.