

Various Methods for Managing and Enhancing Keratinized Tissue for Implant-Supported Mandibular Overdentures

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Introduction

Due to some differences between connective tissue around the implants and teeth, such as less blood supply and fewer fibroblasts, and parallel direction of collagen fibers that are not attached to the implant surface, the need for keratinized tissue around implants has been advocated to ensure health and stability over time. The presence of wide and thick keratinized attached tissue around implants provides a soft tissue seal that is associated with better plaque control, lesser mucosal inflammation, and lesser marginal bone loss. In this case series, we presented various methods for managing keratinized tissue around implant-supported mandibular overdentures.



Case 1: Soft tissue problem after implant placement



Bed preparation: split thickness flap



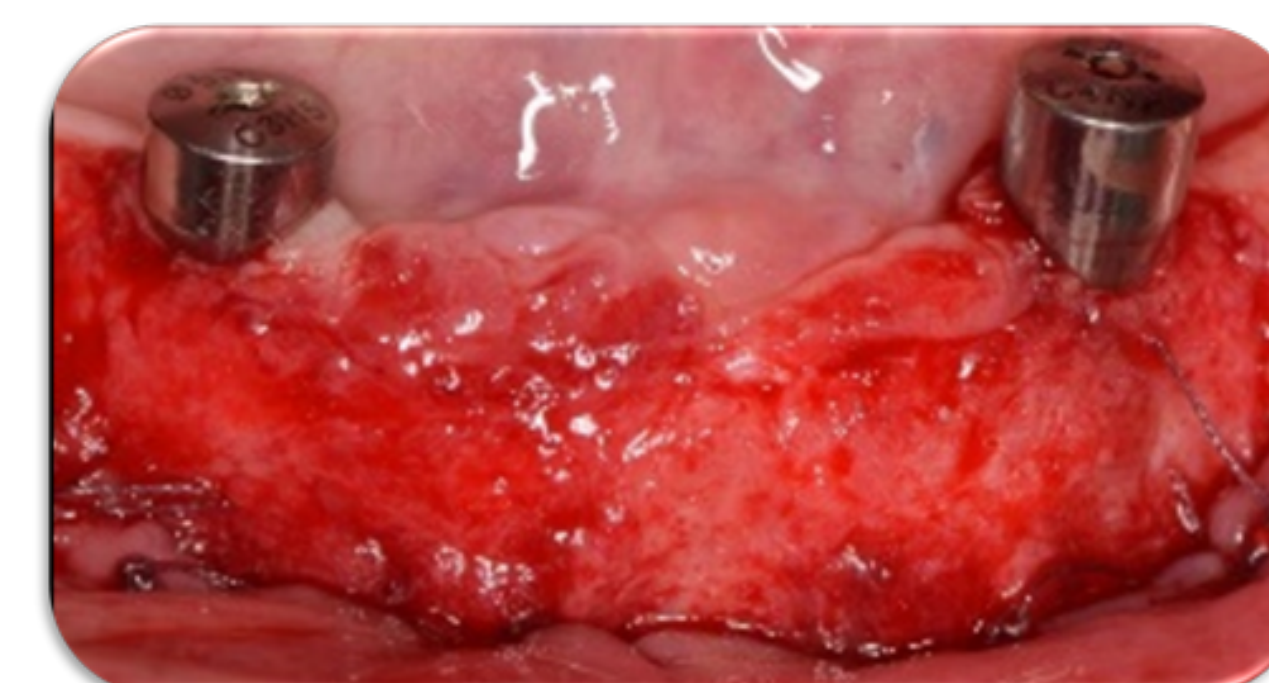
Accordion FGГ fixation with interrupted sutures



Healing after 6 months



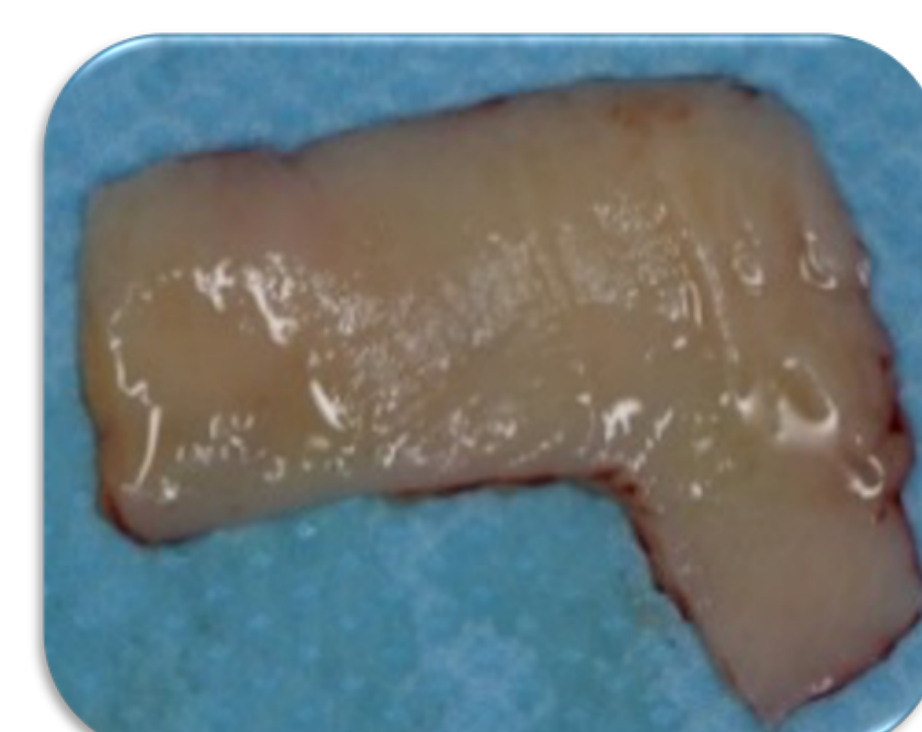
Case 2: Lack of KM after implant placement



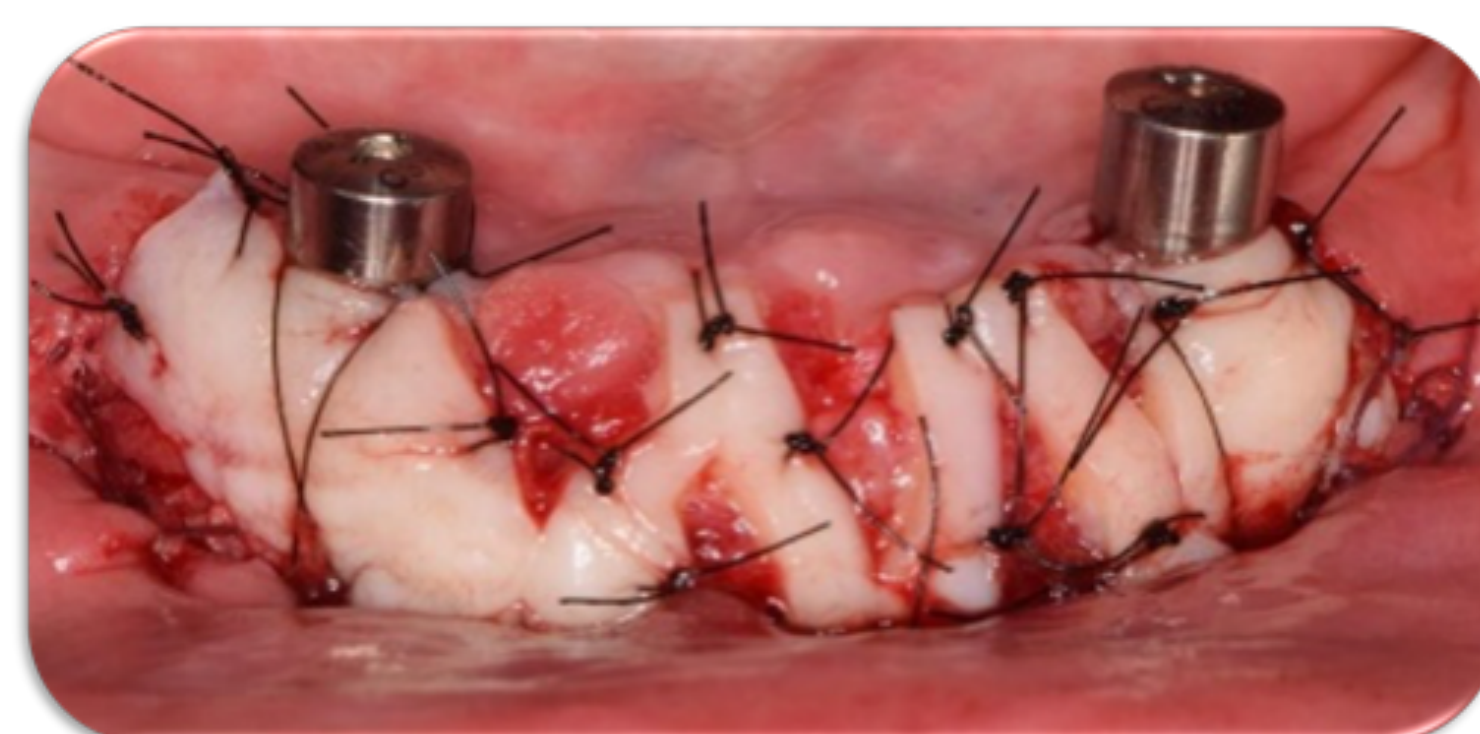
Bed preparation: split thickness flap



L-shaped FGГ harvesting from the palate



The middle part of the graft was expanded based on the Accordion technique



Graft fixation with interrupted and Ochsenbein sutures



Healing: an adequate amount of keratinized mucosa with vestibular reconstruction

Methods

Case1 and 2: During the second stage surgery, autogenous Free Gingival Graft (FGG) was harvested from the palate and expanded by alternate incisions on opposite sides based on the Accordion technique. In Case 2, the Accordion technique was done only on the middle part of the L-shaped graft that was not around the implants.

Case3: Because of donor site limitation, Acellular Dermal Matrix (ADM) Allograft was used to enhance soft tissue condition after implant placement. The length of the graft was increased by alternate incisions.



Case 3: Lack of KM and vestibular depth after implant placement



Bed preparation: split thickness flap

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Accordion preparation of ADM to increase in the length



ADM fixation with interrupted sutures



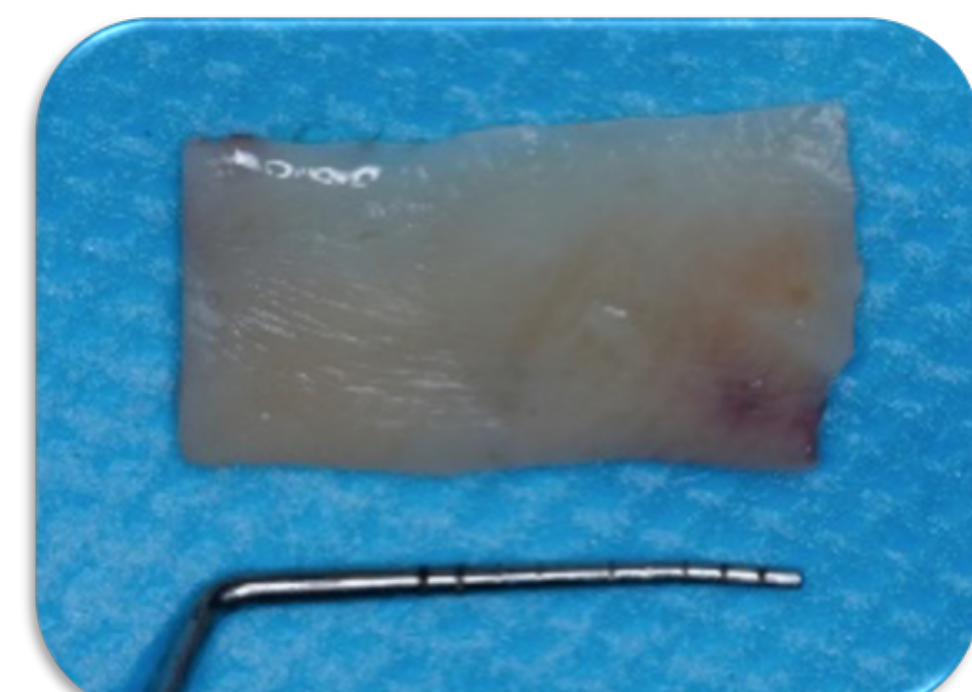
Healing after 2 weeks



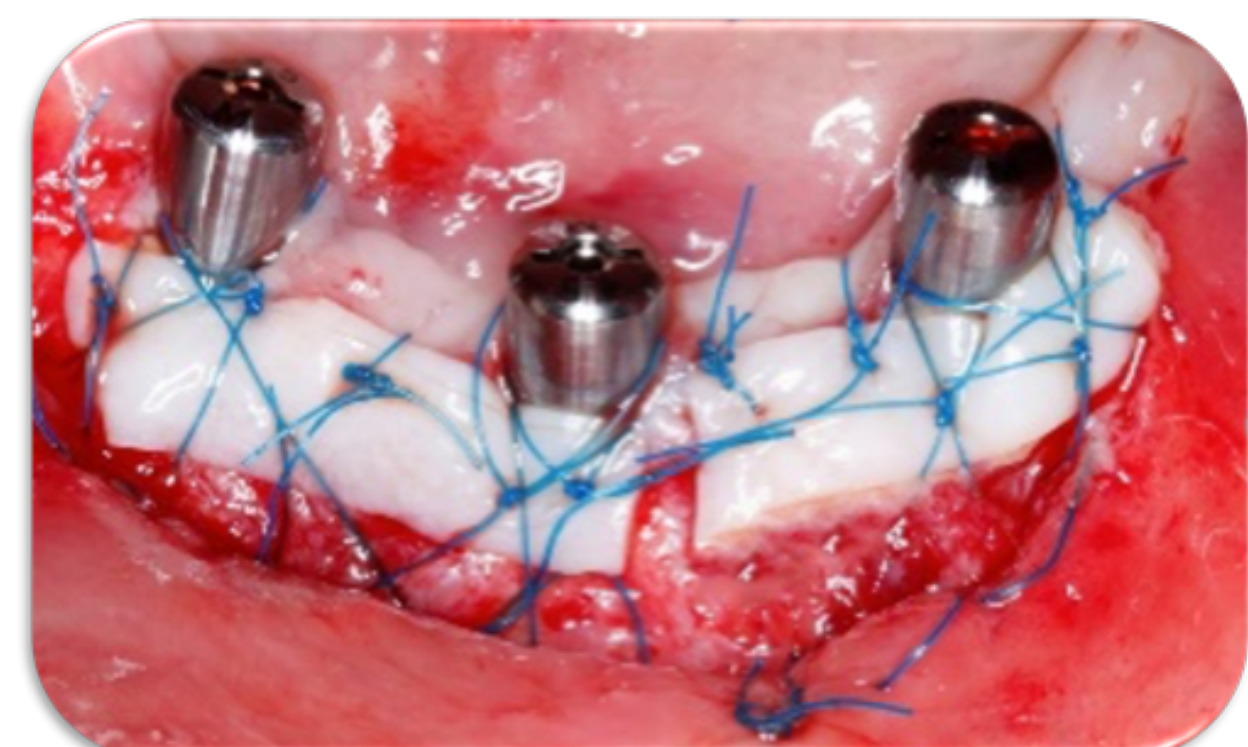
Healing after 1 year



Case 4: Soft tissue problem after implant placement



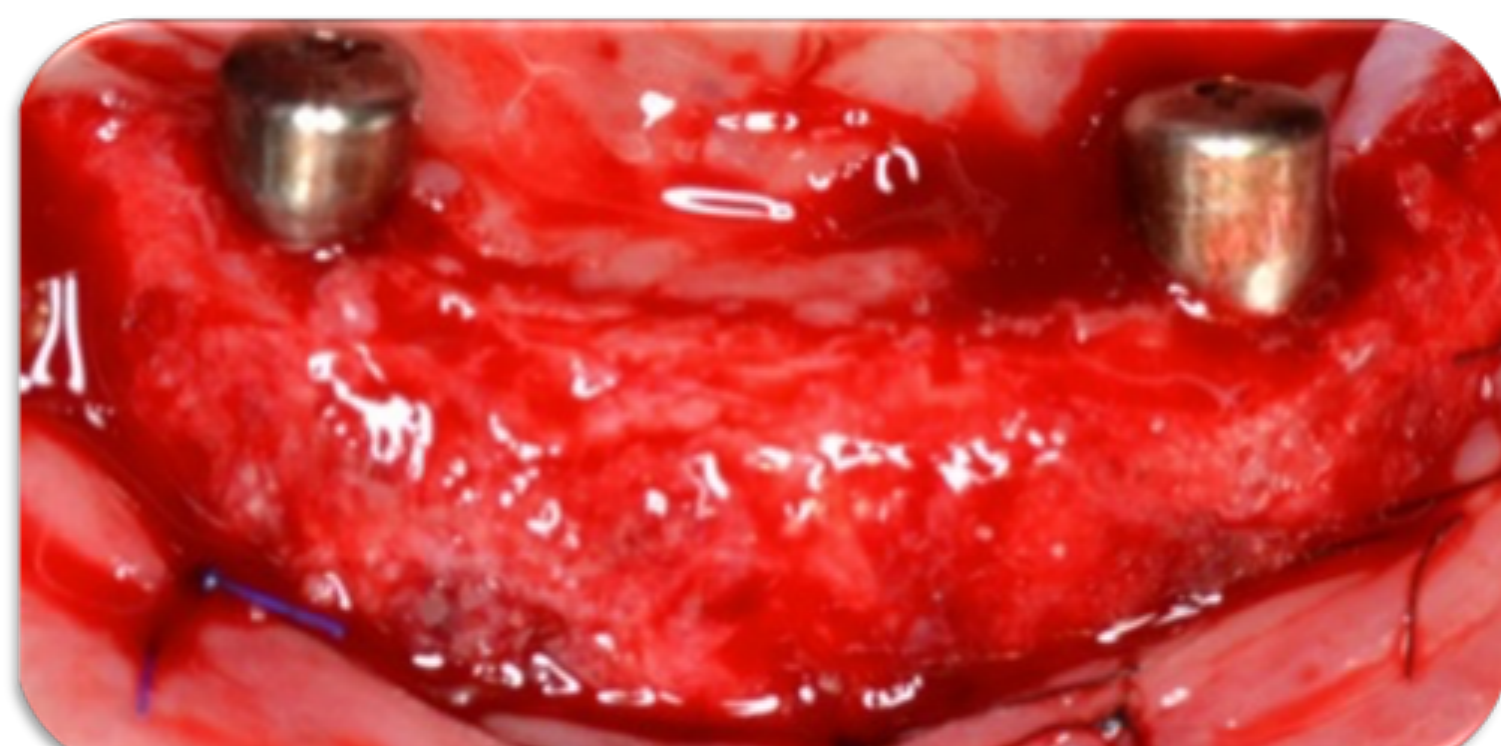
Free gingival graft



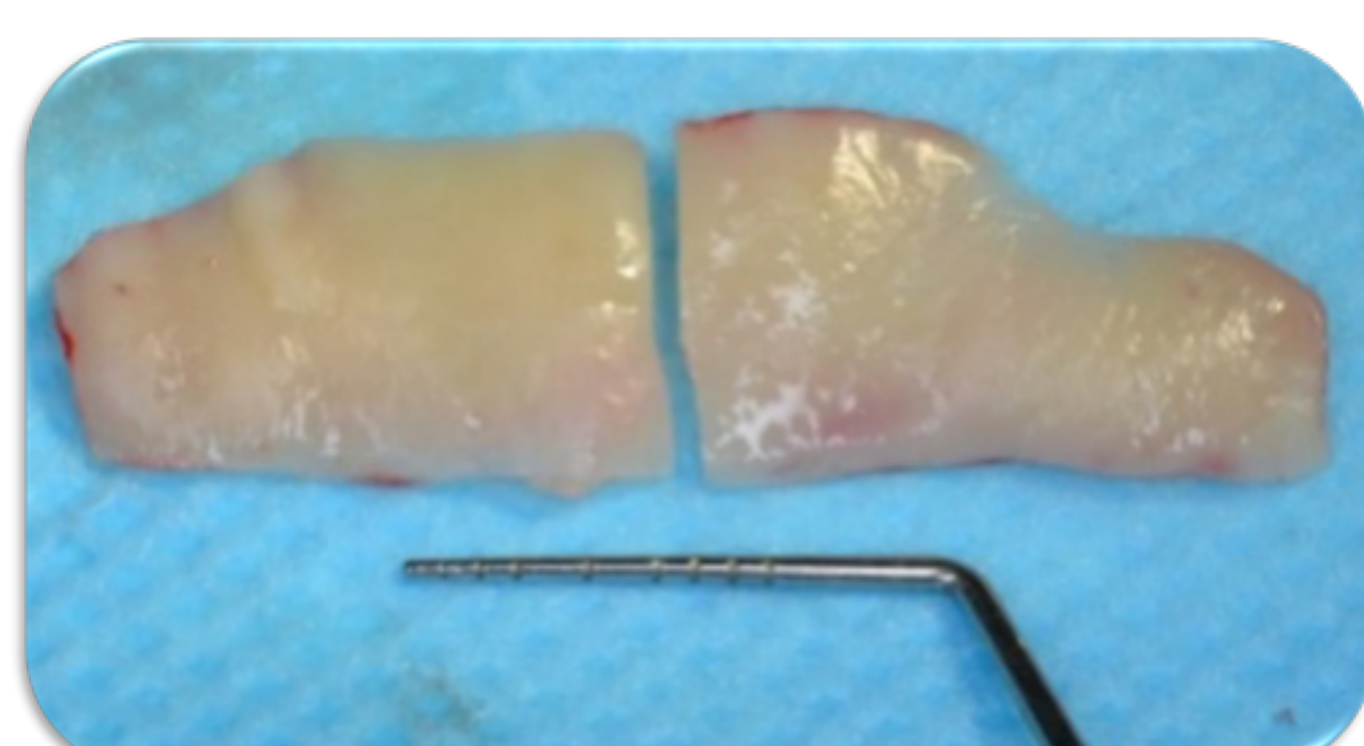
FGg was divided horizontally to cover the length of the recipient site



Case 5: Soft tissue problem after healing abutment placement



Split thickness bed preparation and apically fixation of the flap



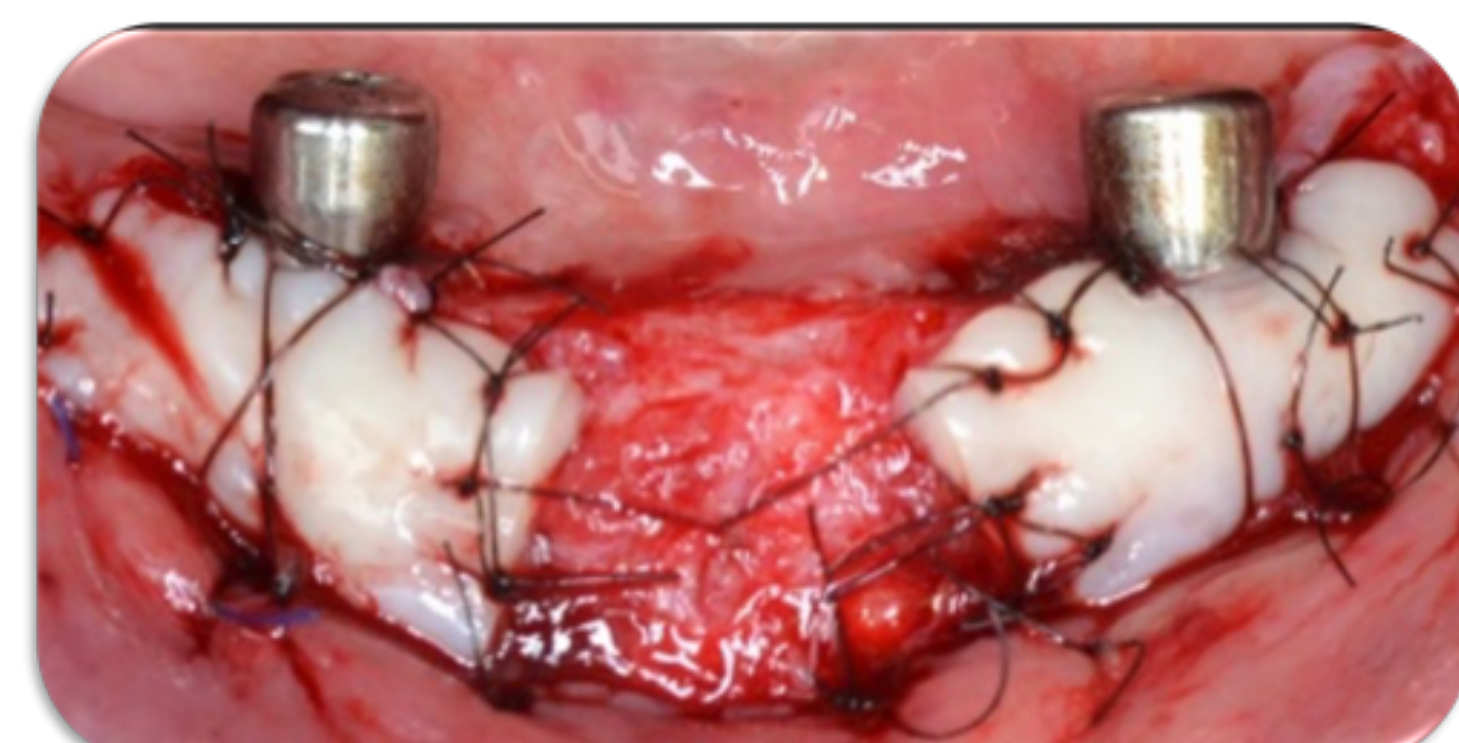
FGg was divided vertically

Methods contd.

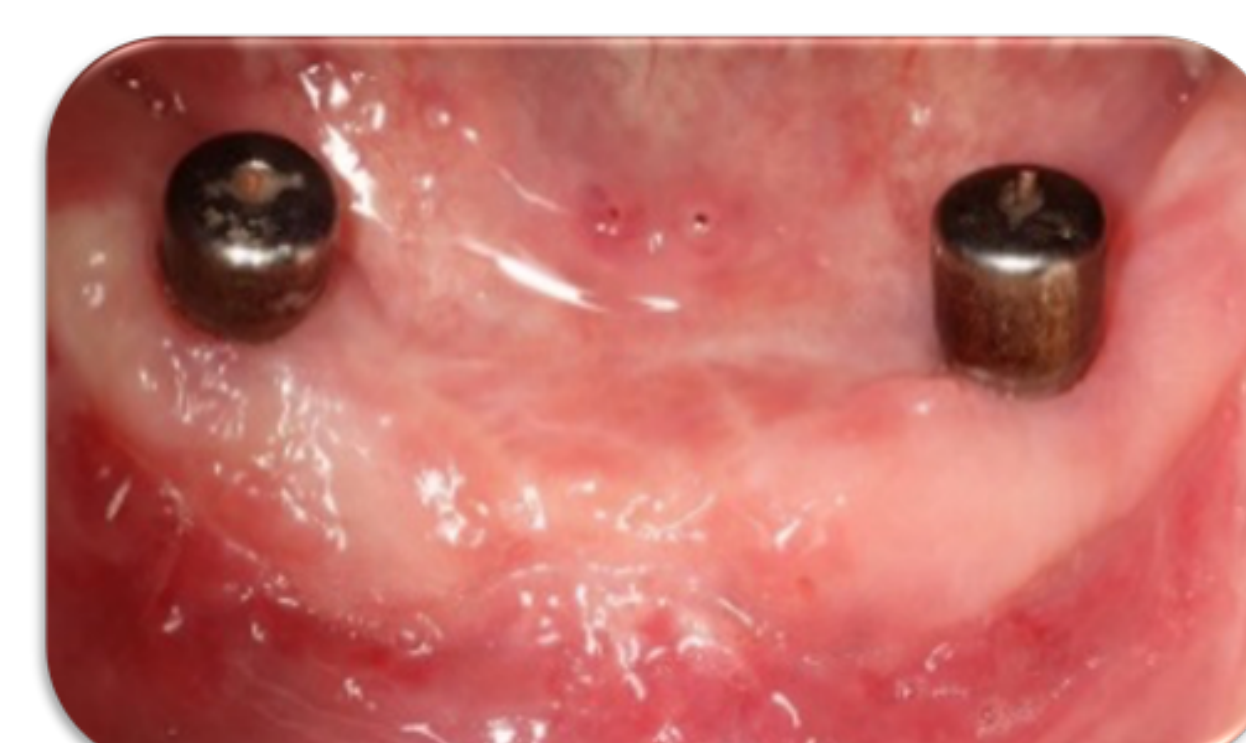
Case4 and 5: The harvested FGg was divided horizontally or vertically to cover the length of the recipient site.

Case6: After implant placement, Camping Tent Shape defect at the lingual side was treated initially by FGg placement at the buccal and lingual aspect of the ridge and then by apically repositioning of the mylohyoid muscle attachment.

Case7: Before implant placement, FGg was harvested bilaterally from the palate to increase the width and thickness of keratinized tissue and vestibular depth.



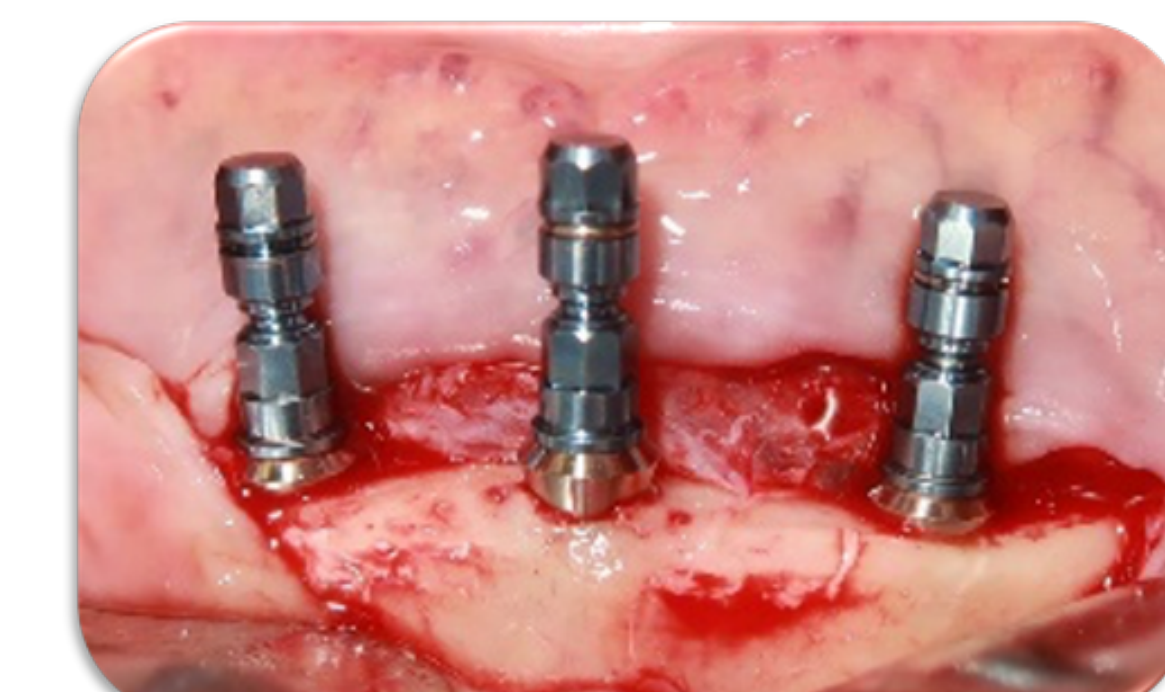
Graft fixation with interrupted and Ochsensbein sutures



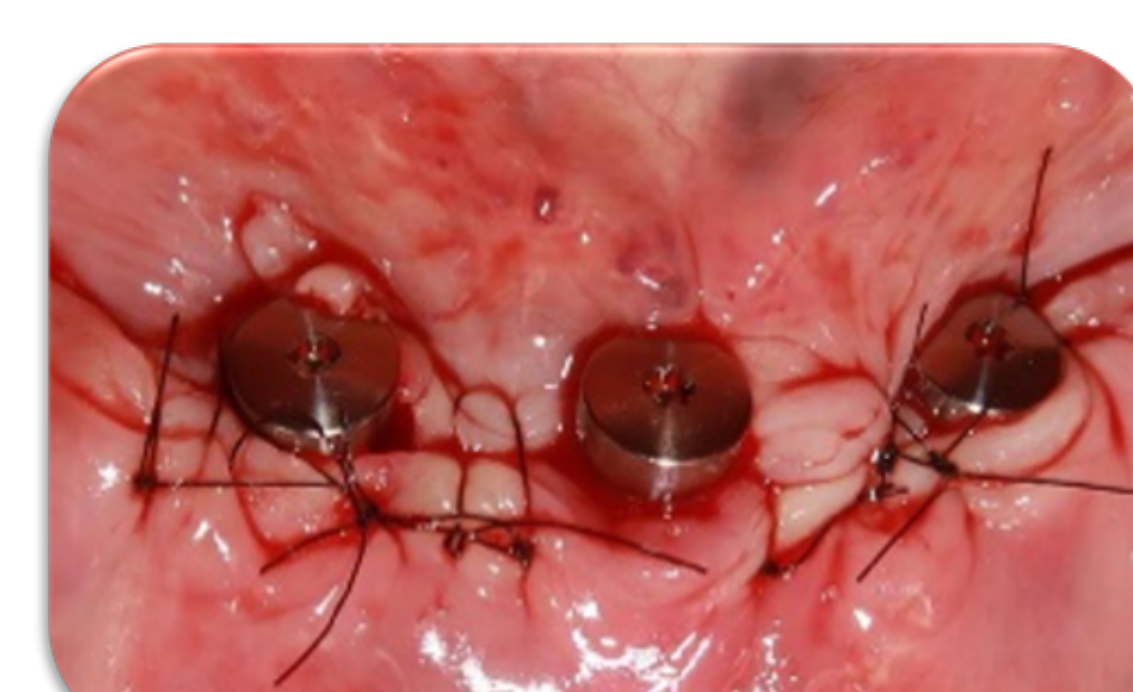
Healing: an adequate amount of keratinized mucosa with favorable color match



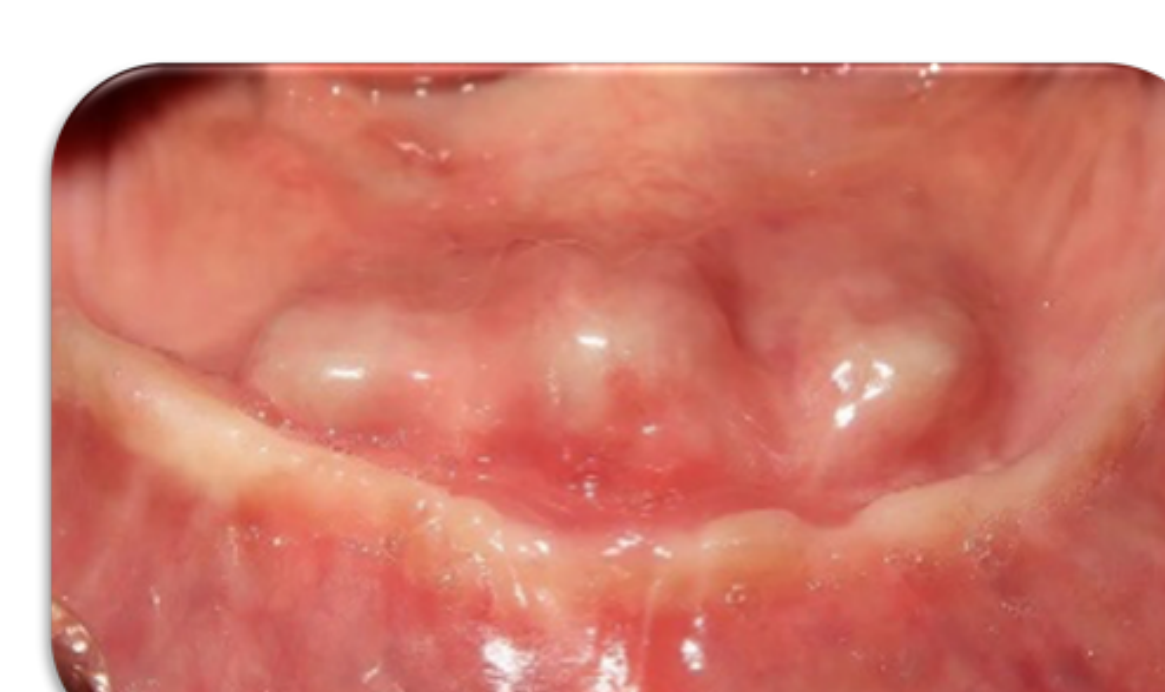
Case 6: Lack of KM prior to implant placement



3 tissue level implants placement



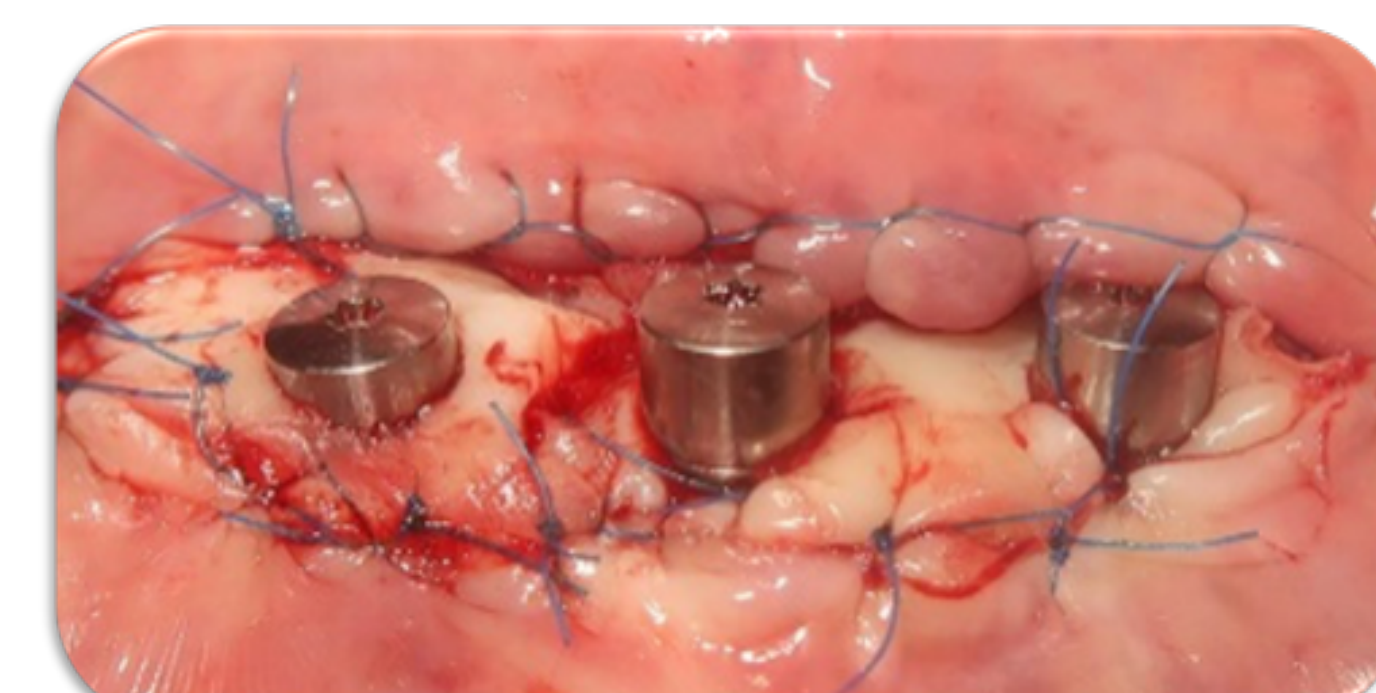
Healing abutments were placed



Camping tent shape defect after 3 months



FGg was harvested and fixed around the neck of the implants



Apically repositioning of mylohyoid muscle attachment



Healing: an adequate amount of keratinized mucosa with vestibular reconstruction at the lingual side

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Results

The outcome of soft tissue augmentation was uneventful in all cases. Successful results in terms of increase in vestibular depth and keratinized tissue width and thickness were achieved that help to long-term maintenance of dental implants.



Gingivectomy at the buccal side



Case 7: Lack of KM and vestibular depth prior to implant placement



FGG was harvested bilaterally from the palate



Soft tissue healing before implant placement



one-staged implant placement



Healing

Conclusion

Different strategies for providing the adequate length of the graft to cover the large areas, include bilateral gingival graft harvesting, Accordion or Strip technique, and ADM. Moreover, using ADM by eliminating secondary surgical site can decrease patient discomfort. However, the autogenous graft is still considered the gold standard. It should be noted mandibular soft tissue augmentation is more difficult due to muscle attachment and shallow vestibular depth.

References

1. Golmayo P, Barallat L, Losada M, Valles C, Nart J, Pascual-La Rocca A. Keratinized tissue gain after free gingival graft augmentation procedures around teeth and dental implants: A prospective observational study. *Journal of Clinical Periodontology*. 2021 Feb;48(2):302-14.
2. Zucchelli G, Tavelli L, McGuire MK, Rasperini G, Feinberg SE, Wang HL, Giannobile WV. Autogenous soft tissue grafting for periodontal and peri-implant plastic surgical reconstruction. *Journal of periodontology*. 2020 Jan;91(1):9-16.

