Journal of Dental Sciences 19 (2024) 686–687

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.e-jds.com

Correspondence

# Free gingival graft harvested from maxillary tuberosity for buccal deficiency of a dental implant

Free gingival graft (FGG) has been developed to solve the insufficient keratinized tissue after tooth extraction, maintain soft tissue health around implant, and even avoid early bone loss.[1] Thick gingival biotype was reported to provide the favorable esthetic results for implant placement.[2] Previously, Müller et al.[3] have reported that the thickness of soft tissue at the tuberosity site is the highest followed by the palatal masticatory mucosa determined by ultrasonic devices. Therefore, the authors presented a case report of using FGG obtained from maxillary tuberosity for buccal deficiency of a dental implant with clinical improvements and 2.5-year stability of clinical outcomes.

The operative procedure for FGG procedure was approved by the Institutional Review Board at Chung Shan Medical University Hospital, Taichung, Taiwan (CSMUH No: CS2-22117). This 52-year-old female patient denied any systemic disease. She had the tooth #44 extracted for a while and asked for the restoration by a dental implant. The pre-operative photographs showed about 3 mm deficiency over buccal edentulous ridge (Fig. 1A and B). After the informed consent was obtained, a 4 × 10 mm implant was inserted into the edentulous tooth #44 region (Fig. 1C). Because the patient was a vegetarian, the FGG was determined to augment the buccal deficiency without the consideration of using the guided bone regeneration procedure. Apically positioned flap was elevated to deepen the buccal vestibular depth and also dissipate the buccal frenulum pulled. Then, a split flap was reflected and released to expose the periosteum for the preparation of the recipient bed. The FGG was harvested from the right maxillary tuberosity by gingivectomy procedure. As illustrated in Fig. 1D, the FGG was placed and sutured in the recipient bed according to our recent report.[4] Stitches were removed after 2 weeks. The wound healing was uneventful. The reddish-pink color of soft tissue with a new mucogingival junction was found after the 4-month follow-up (Fig. 1E and F). The graft area demonstrated stability with clinical health appearance during the 2.5-year follow-up period (Fig. 1G and H).

In this case report, the FGG obtained from the tuberosity was used successfully to augment the buccal deficiency of the tooth 44 dental implant and to increase the volume of keratinized tissue and maintain peri-implant tissue health. The advantages of the FGG harvested from the tuberosity may be explained as follows. The graft harvested from the tuberosity is much thicker than that from the mucosa of hard palate.[3] By the use of new periosteum suture technique, the FGG can be firmly adapted to the recipient site with minimal graft shrinkage.[4] In addition, when the FGG is harvested from the tuberosity site, the postoperative pain can be reduced.[5]

By our limited experience, the finding of this case report indicates that the FGG harvested from the tuberosity can not only reconstruct the alveolar ridge defect, but also increase the keratinized tissue width. However, further researches with a relatively large series of cases are needed for the confirmation of the clinical outcomes.

https://doi.org/10.1016/j.jds.2023.09.026

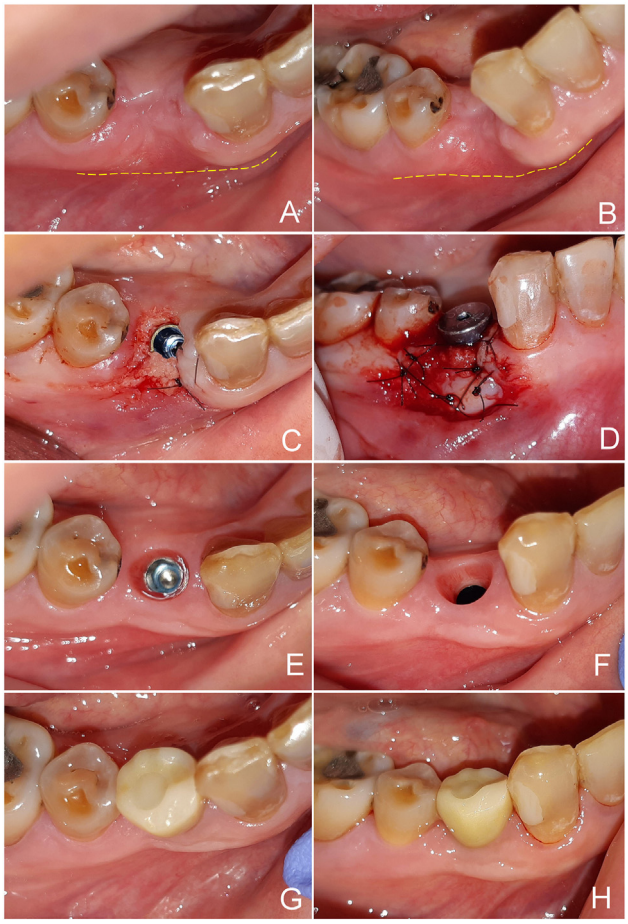


**Figure 1** The yellow dash lines indicate the area of buccal deficiency defect. Clinical images of tooth #44 pre-operative occlusal (A) and buccal (B) views, respectively. (C) The picture of a dental implant placement at tooth #44. (D) The postoperative photo of FGG augmented for buccal deficiency defect. The images of 4-month post-operative occlusal (E) and buccal (F) views, respectively. The occlusal (G) and buccal (H) views showed that buccal deficiency defect was gained with the acceptable volume of keratinized tissue at the recipient site after 2.5 years.

## Declaration of competing interest

The authors declare no conflicts of interest relevant to this article.

## Acknowledgments

The authors would like to thank Miss Catherine Liao for the help of data collection.

## References

1. Zuhr O, Bäumer D, Hürzeler M. The addition of soft tissue replacement grafts in plastic periodontal and implant surgery: critical elements in design and execution. *J Clin Periodontol* 2014;41:123—42.
2. Nagaraj KR, Savadi RC, Savadi AR, et al. Gingival biotype—prosthodontic perspective. *J Indian Prosthodont Soc* 2010;10:27—30.
3. Müller HP, Schaller N, Eger T, Heinecke A. Thickness of masticatory mucosa. *J Clin Periodontol* 2000;27:431—6.
4. Liao TH, Hsu MH, Liao YT, Chang YC. The perspectives of a novel operative procedure for free gingival graft. *J Dent Sci* 2023;18:1368—71.
5. Amin PN, Bissada NF, Ricchetti PA, Silva APB, Demko CA. Tuberosity versus palatal donor sites for soft tissue grafting: a split-mouth clinical study. *Quintessence Int* 2018;49:589—98.

Tsung-Hsuan Liao
*Private Practice, Shine Dental Clinic, Taichung, Taiwan*

Min-Hsun Hsu
*School of Dentistry, Chung Shan Medical University, Taichung, Taiwan*

Yu-Tsung Liao
*Private Practice, Win-Hope Dental Clinic, Changhua, Taiwan*

Yu-Chao Chang*
*School of Dentistry, Chung Shan Medical University, Taichung, Taiwan*
*Department of Dentistry, Chung Shan Medical University Hospital, Taichung, Taiwan*

*Corresponding author. School of Dentistry, Chung Shan Medical University, 110, Sec.1, Chien-Kuo N. Rd., Taichung, 40201, Taiwan.
*E-mail address:* cyc@csmu.edu.tw (Y.-C. Chang)

Received 20 September 2023
Final revision received 22 September 2023
Available online 4 October 2023