

## Update on peri-implant soft tissue augmentation

# How much soft tissue does an implant need?

DR GERNOT WIMMER, GRAZ, AUSTRIA

### Literature

- [1] Adell R, Lekholm U, Rockler B, Branemark PI, Lindhe J, Eriksson B, Sbordone L. Marginal tissue reactions at osseointegrated titanium fixtures (I). A 3-year longitudinal prospective study. *Int J Oral Maxillofac Surg* 1986; 15: 39–52.
- [2] Adibrad M, Shahabuei M, Sahabi M (2009) Significance of the width of keratinized mucosa on the health status of the supporting tissue around implants supporting overdentures. *J Oral Implantol* 2009;35:232–237.
- [3] Bouri A Jr, Bissada N, Al-Zahrani MS, Faddoul F, Nouneh I. Width of keratinized gingiva and the health status of the supporting tissues around dental implants. *Int J Oral Maxillofac Implants* 2008; 23: 323–326.
- [4] Boynuegri D, Nemli SK, Kasko YA. Significance of keratinized mucosa around dental implants: a prospective comparative study. *Clin Oral Implants Res* 2013; 24: 928–933.
- [5] Brito C, Tenenbaum HC, Wong BK, Schmitt C, Nogueira-Filho G. Is keratinized mucosa indispensable to maintain peri-implant health? A systematic review of the literature. *J Biomed Mater Res B Appl Biomater* 2014; 102: 643–650.
- [6] Chung DM, Oh TJ, Shotwell JL, Misch CE, Wang HL. Significance of keratinized mucosa in maintenance of dental implants with different surfaces. *J Periodontol* 2006; 77: 1410–1420.
- [7] Dello Russo NM. Gingival autografts as an adjunct to removable partial dentures. *J Am Dent Assoc* 1982;104:179–181
- [8] Esposito M, Grusovin MG, Maghaireh H, Coulthard P, Worthington HV. Interventions for replacing missing teeth: management of soft tissues for dental implants. *Cochrane Database Syst Rev* 2007; CD006697.
- [9] Frisch E, Ziebolz D, Vach K, Ratka-Kruger P. The effect of keratinized mucosa width on perimplant outcome under supportive postimplant therapy. *Clin Implant Dent Relat Res* 2015; 17(1 Suppl): e236–e244.
- [10] Jia-Hui Fu JH, Su CL, Wang HL. Esthetic soft tissue management for teeth and implants. *J Evid Base Dent Pract* 2012;S1: 129–142.
- [11] Gobbato L, Avila-Ortiz G, Sohrabi K, Wang CW, Karimbux N. The effect of keratinized mucosa width on peri-implant health: a systematic review. *Int J Oral Maxillofac Implants* 2013; 28: 1536–1545.
- [12] Lekholm U, Adell R, Lindhe J, Branemark PI, Eriksson B, Rockler B, Lindvall AM, Yoneyama T. Marginal tissue reactions at osseointegrated titanium fixtures. (II) A cross-sectional retrospective study. *Int J Oral Maxillofac Surg* 1986; 15: 53–61.
- [13] Lin GH, Chan HL, Wang HL. The significance of keratinized mucosa on implant health: a systematic review. *J Periodontol* 2013; 84: 1755–1767.
- [14] Lindhe J, Wennström J and Berglundh T. The Mucosa at Teeth and Implants. Chapter 3 in: J Lindhe, NP Lang, T Karring. (2008). *Clinical Periodontology and Implant Dentistry*, Vol. 1, 5th ed. Blackwell Munksgard.
- [15] Malo P, Rigolizzo M, Nobre M, Lopes A, Agliardi E. Clinical outcomes in the presence and absence of keratinized mucosa in mandibular guided implant surgeries: a pilot study with a proposal for the modification of the technique. *Quintessence Int* 2013; 44: 149–157.
- [16] Moon IS, Berglundh T, Abrahamsson I, Linder E, Lindhe J. The barrier between the keratinized mucosa and the dental implant. An experimental study in the dog. *J Clin Periodontol*. 1999 Oct;26(10):658-63.
- [17] Nabers JM () Free gingival grafts. *Periodontics* 1966;4:243–245.
- [18] Roos-Jansaker AM, Renvert H, Lindahl C, Renvert S. Nine-to fourteen-year follow-up of implant treatment. Part III: factors associated with peri-implant lesions. *J Clin Periodontol* 2006; 33: 296–301.
- [19] Rotundo R, Pagliaro U, Bendinelli E, Esposito M, Buti J. Longterm outcomes of soft tissue augmentation around dental implants on soft and hard tissue stability: a systematic review. *Clin Oral Implants Res* 2015; 26(11 Suppl): 123–138.

- [20] Salvi GE, Zitzmann NU. The effects of anti-infective preventive measures on the occurrence of biologic implant complications and implant loss: a systematic review. *Int J Oral Maxillofac Implants*. 2014;29 Suppl:292-307.
- [21] Schou S, Holmstrup P, Hjorting-Hansen E, Lang NP. Plaque-induced marginal tissue reactions of osseointegrated oral implants: a review of the literature. *Clin Oral Implants Res* 1992; 3: 149–161.
- [22] Schrott AR, Jimenez M, Hwang JW, Fiorellini J, Weber HP. Five-year evaluation of the influence of keratinized mucosa on peri-implant soft-tissue health and stability around implants supporting fullarch mandibular fixed prostheses. *Clin Oral Implants Res* 2009; 20: 1170–1177.
- [23] Sculean A, Gruber R, Bosshardt DD. Soft tissue wound healing around teeth and dental implants. *J Clin Periodontol* 2014; 41(15 Suppl): S6–S22.
- [24] Sculean A, Chappuis V, Cosgarea R. Coverage of mucosal recessions at dental implants. *Periodontology 2000*, Vol. 73, 2017, 134–140.
- [25] Strub JR, Gaberthuel TW, Grunder U. The role of attached gingiva in the health of peri-implant tissue in dogs. 1. Clinical findings. *Int J Periodontics Restorative Dent* 1991; 11: 317–333.
- [26] Thoma DS, Benic GI, Zwahlen M, et al. A systematic review assessing soft tissue augmentation techniques. *Clin Oral Implants Res* 2009;20(Suppl 4):146–165 .
- [27] Warrer K, Buser D, Lang NP, Karring T. Plaque-induced peri-implantitis in the presence or absence of keratinized mucosa. An experimental study in monkeys. *Clin Oral Implants Res* 1995; 6: 131–138. 42. Wennstrom JL, Bengazi F, Lekholm U. The influence of the masticatory mucosa on the peri-implant soft tissue condition. *Clin Oral Implants Res* 1994; 5: 1–8. 43.
- [28] Wennstrom JL, Bengazi F, Lekholm U. The influence of the masticatory mucosa on the periimplant soft tissue condition. *Clin Oral Implants Res* 1994; 5: 1–8.
- [29] Wennstrom JL, Derk J. Is there a need for keratinized mucosa around implants to maintain health and tissue stability? *Clin Oral Implants Res* 2012; 23(6 Suppl): 136–146.
- [30] Zarb GA, Schmitt A. The longitudinal clinical effectiveness of osseointegrated dental implants: the Toronto study. Part III: problems and complications encountered. *J Prosthet Dent* 1990; 64: 185–194.
- [31] Zigdon H, Machtei EE. The dimensions of keratinized mucosa around implants affect clinical and immunological parameters. *Clin Oral Implants Res* 2008; 19:387–392
- [32] Zitzmann NU, Berglundh T, Marinello CP, et al. Experimental peri-implant mucositis in man. *J Clin Periodontol* 2001; 28:517–523