

## RAPORTEURS

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## study

# Soft-tissue volume gain around dental implants using autogenous subepithelial connective tissue grafts harvested from the lateral palate or tuberosity area: a randomised controlled clinical study

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## RELEVANT BACKGROUND

Procedures of subepithelial connective-tissue grafting (SCTG) can improve the prognosis of the aesthetic outcomes at implants, by compensating for bone-volume deficiencies following tooth extraction.

To this end, two different donor sites are often used: the lateral palatal aspect and the maxillary tuberosity.

Tissue harvested from the tuberosity contains more collagen and less fatty and glandular tissue than that from the palate, which could make it less prone to shrinkage. Only a few studies have compared the two donor areas, but there seems to be a trend in favour of using the maxillary tuberosity.

## AIMS

This randomised controlled clinical study reports on soft-tissue volume gain around single-tooth implants when using SCTG from either the lateral aspect of the palate or from the maxillary tuberosity, after three months of follow-up.

## MATERIALS AND METHODS

This study was designed as a randomised controlled clinical trial with a parallel design. Thirty-two patients in need of a single implant between two natural teeth were randomly assigned to receive an SCTG graft from the lateral palate (LP) or from the tuberosity area (TA). After harvesting, the grafts were de-epithelised and standardised to measure 10mm in height, 12mm in length, and 1.5mm in thickness. The SCTG was placed either six weeks after placement for implants with transmucosal healing or after 12 weeks in implants placed in a submerged fashion.

Soft-tissue volume changes that were buccal to the implant (primary outcome) were assessed with an intraoral scanner at baseline (SCTG procedure) and three months after the surgery. After superimposition of the two intraoral scans, the distance between the preoperative and postoperative soft-tissue profile was measured from 1mm to 7mm, in an apical direction from the healing abutment at the buccal aspect of the implants by a single blinded examiner.

Various clinical periodontal parameters (e.g. bleeding index, probing depth, width of keratinised tissue) at the buccal aspect of the implant and both adjacent teeth were assessed by three experienced, calibrated, and blinded examiners. Furthermore, the aesthetic outcome was assessed by a single blinded evaluator using a modified Pink Aesthetic Score (PES) based on clinical photographs taken two weeks after delivery of the final restoration.

## results

- A total of 33 of 36 placed implants were included in the final analyses; one implant was excluded because of an unevaluable scan image, and two patients dropped out. The recipient site was the maxilla and the anterior region in most cases.
- On average, no statistically significant differences ( $p=0.64$ ) between the two donor sites regarding mean horizontal contour increase were observed:  $0.69 \pm 0.23\text{mm}$  in the LP and  $0.79 \pm 0.10\text{mm}$  in the TA groups.
- The only statistically significant differences between the LP and TA were observed at 6mm and 7mm apically to the healing abutment, which favoured the TA.
- Transmucosal or submerged healing did not influence soft-tissue volume changes.
- A statistically significant difference between the groups was observed only in regards to keratinised tissue width at three months, favouring the TA group.
- PES mean values were 10.07 for the LP and 9.15 for the TA, out of a maximum score of 14.

**LIMITATIONS**

- The study was completed in three months, but tissue maturation may need a longer follow-up period.
- Inclusion criteria were sites with a buccal concavity or sites with soft-tissue thickness  $<2\text{mm}$ ; healing between these two conditions may have differed but was not analysed.
- Patient-related outcome measures such as morbidity were not assessed.

**CONCLUSIONS**

- Using an SCTG from the tuberosity area yielded similar amounts of soft-tissue volume and significantly larger keratinised tissue width compared to SCTG from the lateral aspect of the palate.
- Further follow-up is needed to evaluate long-term stability.

**IMPACT**

- As the clinical findings which compared harvesting the SCTG from LP or TA had a similar positive effect in terms of volume gain, the choice of donor site could be determined by the palatal and tuberosity anatomy and by the surgeon's preference.



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