

# The peri-implant tissues from an esthetic perspective

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av

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Avhandlingen baseras på följande delarbeten:

- I. Moontaek Chang, Jan L. Wennström, Per A. Ödman & Bernt Andersson (1999) Implant supported single-tooth replacements compared to contralateral natural teeth: Crown and soft tissue dimensions. *Clinical Oral Implants Research* 10: 185-194.
- II. Moontaek Chang, Per A. Ödman, Jan L. Wennström & Bernt Andersson (1999) Esthetic outcome of implant-supported single-tooth replacements assessed by the patient and prosthodontists. *International Journal of Prosthodontics* 12: 335-341.
- III. Moontaek Chang & Jan L. Wennström (2009) Longitudinal changes in tooth/single-implant relationship and bone topography. An 8-year study. *Manuscript*.
- IV. Moontaek Chang & Jan L. Wennström (2009) Peri-implant bone alterations in relation to inter-unit distances. A 5-year longitudinal study of implant-supported FPDs. *Submitted to Clinical Oral Implants Research*.
- V. Moontaek Chang & Jan L. Wennström (2009) Peri-implant soft tissue and bone crest alterations at fixed partial dentures: A 3-year prospective study. *Submitted to Clinical Oral Implants Research*.

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### **Abstract:**

The overall objective of the thesis was to evaluate the dimensions and position of peri-implant soft tissues in relation to the topography and alterations of the bone support, and the tissues' significance for an esthetic appreciation of implant therapy.

A comparative evaluation of crown and soft tissue dimensions between implant-supported single-tooth replacements and the contralateral natural tooth was made in *Study I*. In *Study II*, patients' and dentists' judgment of the esthetic outcome of implant-supported single-tooth replacements was assessed and compared by means of a questionnaire in which various esthetic-related variables were addressed. Longitudinal changes in tooth/implant relationship and bone topography adjacent to single implants with a micro-threaded, conical marginal part were evaluated in *Study III*. In *Study IV*, bone alterations around implants with a conical implant-abutment interface were evaluated longitudinally in relation to implant-tooth and inter-implant distances. Furthermore, peri-implant soft and hard tissue alterations from the time of implant placement were longitudinally evaluated in a 3-year prospective study involving patients receiving implant-supported fixed partial dentures (*Study V*).

Despite differences in clinical crown height and soft tissue topography between the implant-supported single-tooth replacement and the contralateral natural tooth (*Study I*), patients' satisfaction with the appearance of their single implant-supported crown restoration was high, whereas prosthodontists rated the esthetic outcome significantly lower (*Study II*). Soft tissues topography and crown form influenced the dentists' overall satisfaction with the esthetic appearance, while no specific factors could be identified with regard to patients' satisfaction. Hence, factors considered by professionals to be of significance for the esthetic result of restorative treatment may not be of decisive importance for the patient. The marginal bone level at the teeth adjacent to single implants with a micro-threaded conical marginal part was not influenced by the horizontal or vertical tooth-implant distance (*Study III*). Observed continuous eruption of the adjacent teeth with infra-occlusal positioning of the implant restoration might cause esthetic dissatisfaction. Loss in the bone crest height in the inter-implant areas was influenced by bone loss at bordering implants and horizontal inter-unit distance, but no such relationship was proven for the proximal area between the implant and the tooth (*Study IV*). Soft and hard tissue changes around implant-supported fixed partial dentures took place primarily during the first 6 months after the one-stage implant installation surgery (*Study V*). Significant explanatory factors for the loss in proximal bone crest height at 3 years were horizontal inter-unit distance and peri-implant bone level change. The presence of a tooth next to the implant had a positive influence on the topography of the inter-unit soft tissues and the maintenance of the proximal bone crest level.

**Keywords:** clinical, dental implants, esthetics, single-tooth replacements, soft tissues, infra-occlusion, bone alterations

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