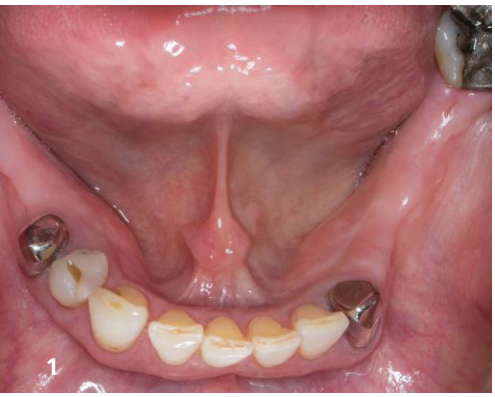
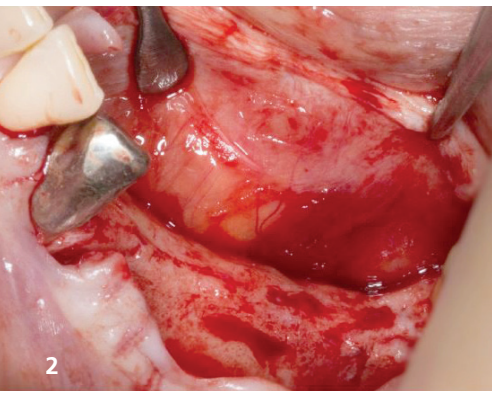
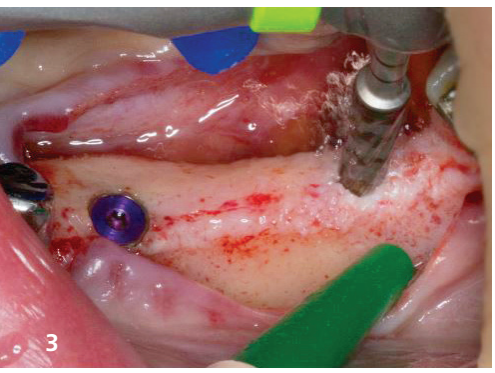
# Soft-tissue thickening—natural revascularisation with NovoMatrix®

Andreas van Orten, M.Sc., M.Sc., Germany

The presence or creation of an adequate peri-implant soft-tissue cuff appears to have a decisive influence on both the osseous and soft-tissue volume dimensions, as well as on the superstructure's ability to integrate inconspicuously into the peri-implant environment and establish inflammation-free conditions in the long term.[67] At the present time, there is no universal consensus regarding the need for the presence of keratinised mucosa around implants or the exact volume of soft tissue to prevent peri-implant diseases as effectively as possible. However, there is circumstantial evidence that soft-tissue augmentation has a long-term positive impact on peri-implant health.[29]







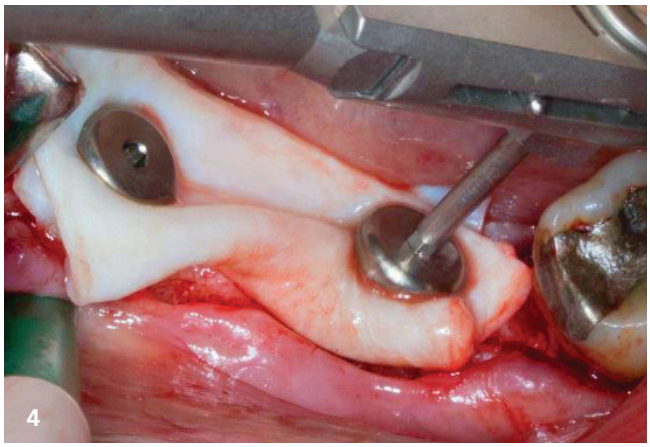
From a threshold value of just over 3 mm tissue thickness, it no longer seems possible for the human eye to detect discolorations caused by implants together with prosthetic components—a tissue thickness of 2 mm already appears to be sufficient for implants.[68]

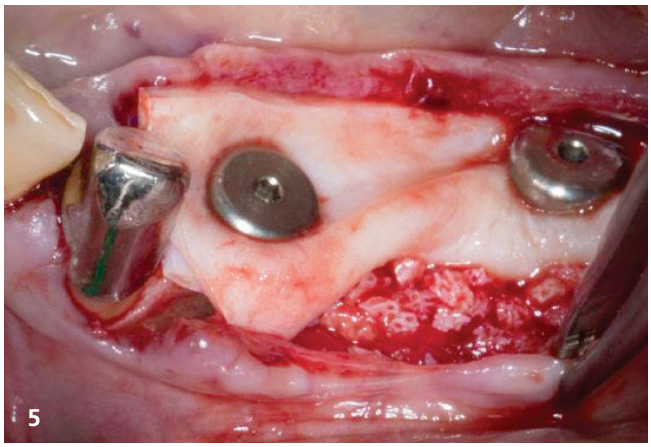
The threshold value above which the extent of postoperative remodelling around implants appears to decrease is > 3 mm. This value appears to be the lower limit to ensure adequate biological width. However, there are also studies that favour a value that could be close to 4 mm.

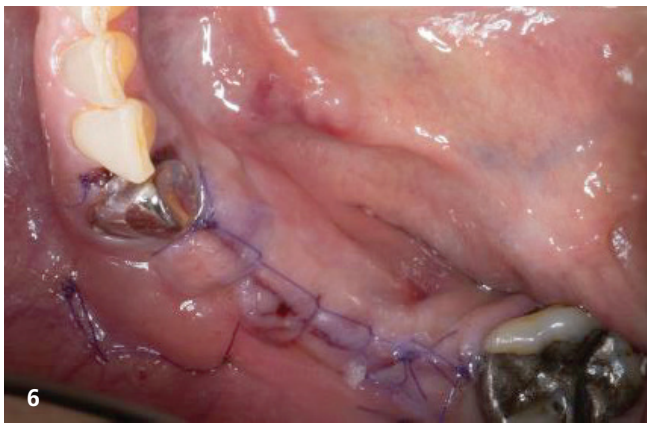
Not every implant morphology is suitable for achieving an increase in biological width through subcrestal placement. If the problem of a thin mucosa at the insertion site is to be solved by subcrestal implant placement, other problems such as an unfavourable crown/implant length ratio or a limited safety distance to relevant structures, such as nerve canals, may result as a consequence. If the option of subcrestal insertion is preferred, preference should be given to an implant with the option of so-called "Platform Switching", even though the absence of adequate soft-tissue thickness may possibly not be fully compensated.

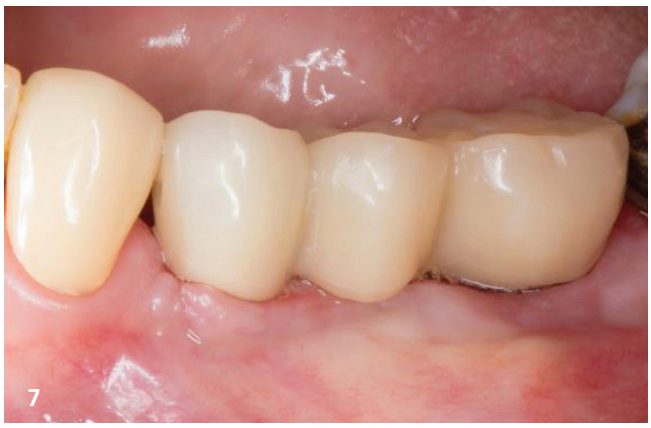
At the present time, the consensus is that—if modification of soft-tissue volume and widening of the zone of keratinised mucosa around implants is the objective—autologous connective tissue grafting should be considered as the "gold standard".[69] The disadvantages of intra-oral harvesting of the grafts are not difficult to name: they are mainly postoperative pain, possible wound healing disturbances at the harvest site, the limited harvest volume, the prolonged surgery time and, in the case of retained epithelium, the highly probable colour deviation from the "donor" to the "recipient site" in both combined connective tissue and free mucosa grafts.[70]

**Fig. 1:** After completion of carcinoma therapy, the image showed a severely atrophied jawbone in regions 34 to 36, and 46 and 47, due to unphysiological loading, caused by a poorly fitting telescopic prosthesis. The patient wished for a fixed restoration in the lower jaw, which was to be realised on two implants in each quadrant. The treatment steps are described based on a quadrant. **Fig. 2:** After digital implant planning, the incision was made midcrestally to compromise subsequent blood supply as little as possible. To enable tension-free wound closure even without periosteal slitting, the superficial fibres of the mylohyoid muscle were detached. The concept was chosen to spare the patient multiple surgical interventions in view of her prior medical history. **Fig. 3:** With the aid of prosthetic orientation templates and the Cervico system, the exact implant position was determined, and the implant beds were prepared according to the surgical protocol using the PROGRESSIVE-LINE surgical instruments. Implantation was performed in regions 34 and 36. In the further procedure, the components for the Platform Switching (PS) option were used.


4


5


6


7

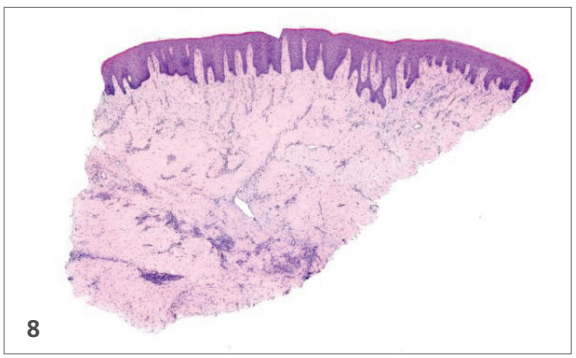

8

**Fig. 4:** To achieve a significant increase in soft tissue, the NovoMatrix was applied doubly. The matrix was perforated in the area of the implants and fixated with 6 mm high gingiva formers in each case. The gingiva formers acted in the context of the tentpole technique to reduce stress on the surgical site. **Fig. 5:** The coarse MinerOss® XP and autologous bone chips obtained from the drill tunnels were mixed with autologous blood to reconstruct the hard-tissue deficit. The augmentation was pushed from vestibular and lingual under the matrix. By keeping the gingiva away like a tent roof, the matrix is intended to initiate soft-tissue formation during the integration phase and regenerate the graft in a stable and calm manner. The bone substitute material was covered with additional PRF membranes. **Fig. 6:** Tension-free wound closure—in this case using a combination of deep horizontal mattress sutures and situation sutures in a second plane to close the alveolar ridge incision—allows undisturbed wound healing. The vertical increase in volume could already be observed at this time. The sutures were removed after twenty days, and regeneration was successful. **Fig. 7:** The soft tissue presented itself as adequate and stable. The aesthetic analysis showed no dyschromia when compared with the surrounding tissue. A firm soft-tissue cuff will establish itself peri-implant in the long term. The attached soft-tissue growth around the implants is clearly visible on the natural teeth—when compared with the keratinised gingiva. **Fig. 8:** An image of the biopsy of a section of tissue transplanted with the NovoMatrix from a female patient not presented in this case report. Here, too, a regular para-keratinised epithelium with moderate retention formation is impressive. Histology was performed in an independent institute by Prof. Dr Werner Götz, Bonn, Germany.

Author details

**Contact address**
**Andreas van Orten**
Gemeinschaftspraxis für Zahnheilkunde Andreas van Orten und Dr Dirk Krischik
Dortmunder Straße 24–28
45731 Waltrop, Germany

+49 2309 786161
mail@zahnaerzte-do24.de
www.zahnaerzte-do24.de