Soft-tissue management

A key factor in modern implantology

Stable peri-implant soft tissue is a fundamental prerequisite for implant restorations that succeed both functionally and aesthetically. In the following interview, Dr Elias Jean-Jacques Khoury discusses its clinical relevance and outlines practical, evidence-informed concepts for soft-tissue management in contemporary implant dentistry.

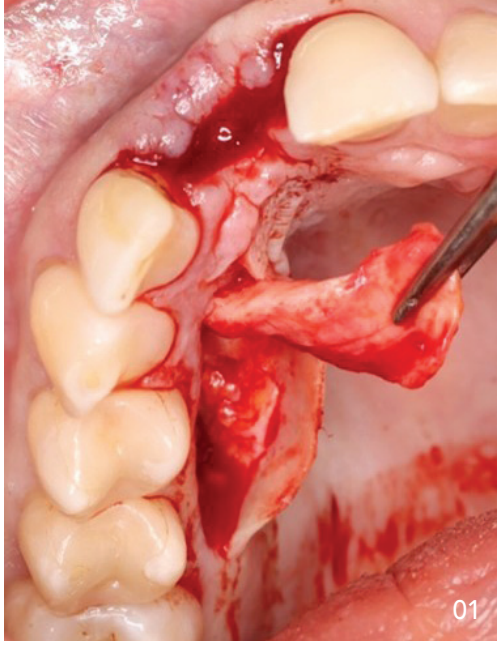
Dr Khoury, in contemporary implant dentistry, what are the primary goals of soft-tissue management, and how does it influence clinical outcomes regarding peri implant health, aesthetics, patient comfort, and long-term stability?
Implant dentistry has reached a high level of technical maturity in recent years; however, long-term success is increasingly determined by the quality and quantity of the peri-implant soft tissues. Beyond purely functional considerations, stability, cleansability, and aesthetics have become key priorities. Soft-tissue management is therefore not an optional add-on, but an integral component of treatment planning—before, during, and after augmentation and implant placement.

In the pre augmentation planning phase how does your evaluation of the soft tissue influence the overall treatment plan and timing? And which soft-tissue augmentation procedures do you consider "standard of care" at this stage?
Within a pre-augmentation treatment concept, the primary focus is initially on rebuilding hard-tissue structures. However, establishing stable, well-vascularised soft-tissue conditions is a decisive prerequisite for successful bone augmentation. Free connective tissue grafts are the most commonly used form of soft-tissue augmentation in this context, as they can be applied universally in both the maxilla and mandible and provide reliable increases in peri-implant soft-tissue volume.

In severely compromised recipient sites, the advantages of a pedicled palatal connective tissue flap can be leveraged. Because the graft remains pedicled to the palate, its vascularity is preserved, which typically supports improved integration and reduced postoperative shrinkage (Fig. 1). When combined with augmentation procedures, this approach enables a double-layer wound closure that effectively protects the bony graft from dehiscence, exposure, and infection. At the same time, it thickens the peri-implant soft tissues—an important benefit, particularly in the aesthetically critical maxillary anterior region. This technique, however, is anatomically limited to the maxilla.

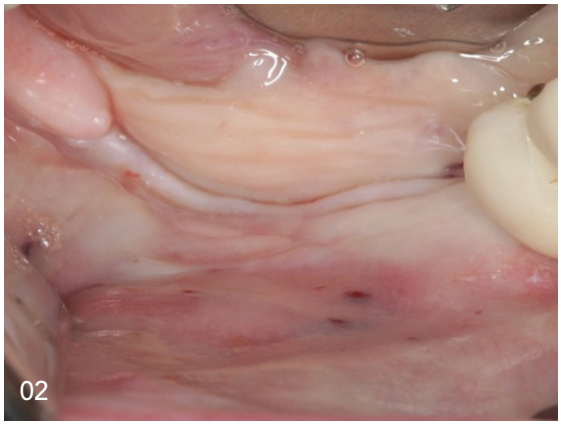
As an adjunct minimally invasive option, the Punch technique may be used, especially after tooth extractions, to protect the blood clot and stabilise early soft-tissue healing.

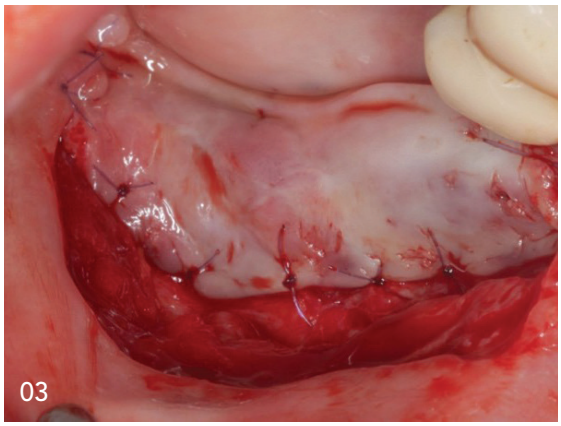
What options are available for targeted soft-tissue management during implant placement and bone augmentation?
During implant placement and bone augmentation, incision design, flap mobilisation, and suture positioning are critical to achieve a tension-free wound closure. Tunnel and lateral tunnel techniques allow the suture line to be kept away from the augmented area, thereby reducing the risk of dehiscence (Fig. 2).



01
A pedicled palatal flap is harvested from the palate for soft-tissue augmentation.

02
Clinical situation after vertical bone augmentation using the tunnel technique in the posterior mandible.





03
Correction of a shallow vestibule by Kazanjian vestibuloplasty, performed concurrently with implant placement.

04
Stable peri-implant soft tissues with an adequate zone of attached gingiva eight years after prosthetic rehabilitation.

A key challenge particularly in the mandible is the frequent lack of keratinised mucosa. In this setting, the Kazanjian vestibuloplasty enables reconstruction of the vestibule and creation of keratinised, attached mucosa in a single-stage approach performed simultaneously with implant placement and augmentation (Fig. 3).

By selectively repositioning the muscle attachment and relocating the mucosa, a functionally stable, cleansable soft-tissue environment can be achieved (Fig. 4).

As a more recent refinement, the masseter–buccinator periosteal flap can be used in the posterior mandible. By providing a double-layer wound closure, it offers particular advantages in compromised recipient sites and markedly reduces the risk of exposure of the augmented bone.

Which methods are suitable for soft-tissue management after implant placement?
After implant placement, the focus shifts to long-term stabilisation of the peri-implant tissues. Free mucosal grafts remain the method of choice for increasing the width of keratinised and attached gingiva. As an adjunct, apically positioned flaps—either alone or combined with connective tissue grafts—can be used to transpose keratinised mucosa vestibularly. Roll-flap techniques are particularly useful in the maxilla for horizontal soft-tissue volume gain and optimisation of the emergence profile.

In the aesthetic zone, papilla reconstruction may be required; these measures are planned on an individual basis depending on defect morphology and the available soft-tissue volume.

Looking ahead, what developments do you expect to most influence implant dentistry, and what evidence or clinical needs are driving that change?
Modern implant dentistry is increasingly moving toward a biologically driven, comprehensive treatment concept. Long-term therapeutic success will depend to a large extent on the quality and stability of the peri-implant soft tissues. Proactive soft-tissue management will therefore become a key hallmark of high-quality implant care.

Thank you for the interview and for sharing these clinically relevant insights.