At this year’s ICOI World Congress, Dr Henrik-Christian Hollay will address the importance of stability in guided bone regeneration therapy. In anticipation of his Sunstar pre-conference workshop on 15 October, Dental Tribune International had the opportunity to ask him about promising new technologies in regenerative practice and key factors for achieving the best possible clinical outcomes.

Dental Tribune International: Dr Hollay, could you please explain the importance of stability in guided bone regeneration therapy today?

Dr Henrik-Christian Hollay: Stability is and always has been key to successful bone augmentation and regeneration. In recent years, several methods and materials were developed to achieve this aim that are very complex and technique sensitive, such as titanium meshes, different types of membranes, which mostly have to be fixed with pins, and bone blocks that have to be screwed to the bone. Aside from the surgical challenge, the costs of these have driven the pursuit of materials that are cheaper and easy to handle and that facilitate the complete workflow. Bone graft materials that harden shortly after being placed and membranes that remain in position have made substantial progress in achieving these goals.

What techniques stand out in clinical practice?

Guided bone regeneration is the keyword of the moment. There are many interesting techniques that are relevant in daily practice. A technique that has been much discussed is socket or ridge preservation. There are also a few very special new techniques that have been developed in the last few years, such as the tunnel augmentation technique and different shell techniques. All of them are minimally invasive (tissue sparing) techniques (such as the tunnel and soft shell techniques described above). For example, GUIDOR easy graft from Sunstar is stable after 4 or 5 minutes forming an analogue of the defect site into which it is placed. Traditional techniques (even those delivered from a syringe) will remain mobile and often do not conform to the site morphology. The inherent mobility of a traditional particulate often requires placement of a membrane to stabilise and contain the particles. Typically in such instances, the membrane will need to overlap the defect on all sides by 2 or 3 mm necessitating a significantly larger access flap. Because of rapid enzymatic degradation, collagen membranes used in such instances must be covered by tension-free soft tissue closure. Techniques to achieve this may well require elevation of the periosteum and mobilisation of a free flap. This surgical cascade and the tissue trauma associated with it is technique sensitive, painful, and can delay healing as well as consume more time. Moreover, the micro-movements from a unstable site may well be associated with soft tissue invasion rather than the required hard tissue regeneration.

What are the main advantages of new technologies in the bone graft field compared to GBR with traditional particulate bone graft materials and membranes?

One of the most interesting technological developments is availability of materials with in situ hardening and putty like mouldability. These two feature allied to syringe delivery allow clinicians to consider minimally invasive (biocompatible membrane with the benefit of avoiding re-entry to remove it).

What are the most important factors regarding favourable outcomes in regenerative practice?

Next to stability, in my opinion, the most important factor is blood. Without strong bleeding from the cancellous bone in the recipient bone area, bone regeneration and augmentation will not occur. The pluripotent mesenchymal cells that are carried to the augmentation site via the blood do the real work for us, and it is important to bear that in mind. Several different techniques and materials can lead to a good outcome in guided bone regeneration performed correctly, but why is that so? It is because the human body has enormous healing potential and only needs a little bit of guidance from surgeons. After a long period of researching on materials and techniques, our next mission will be to return to nature.