



## Lecture Abstract

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#### **Main implantological topics:**

- Coatings
- De novo bone formation

#### **Professional skills:**

- Maxillofacial surgery

### **Biomaterials and tissue engineering - Future and vision**

Tissue engineering offers a new approach for guided regeneration of bony defects or the protracted healing of implants. Extended continuity defects of the jaw bone mostly require a reconstruction by autologous transplants, which are established as „gold standard “due to their osteogenous properties. Additional risks are associated with their removal such as infection, bleeding, pain, swelling, nerve damage, bony non-union and pain on motion. To avoid the problem of donor morbidity a great variety of osteoconductive bone substitutes are used as an alternative method, which serve as temporary substitute and allow the creeping substitution by local bone. Due to missing osteogenous characteristics of bone substitutes the current research concentrates on the ex vivo generation of bone within the scope of tissue engineering, whereas the plasticity of mesenchymal stem cells (MSCs) can be used. Unlike pluripotential embryonic stem cells, which may be used only under strict political and legal restrictions, MSCs are multi-potent tissue specific cells, which have the ability for self renewal as well as the potential to multilineage differentiation. Numerous questions arise when it comes to clinical application of tissue engineering procedures. The presentation will highlight the know abouts as well as the pitfalls in clinical application of tissue engineering in maxillofacial surgery.