Biologisation of bone substitute materials and collagen membranes for supporting surgery in dental medicine

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The regeneration of the soft and bone tissue within the oral cavity as a pre-implantological step is a complex process. In the last three decades blood concentrates have been used, in order to promote the tissue regeneration within oral cavity.
Up to now, however, there is no systematic approach, how to apply blood concentrates for different applications in dental surgery. In this lecture, the development of PRF (Platelet-Rich-Fibrin) as an autologous blood concentrate and the LSCC (low speed centrifugation concepts will be introduced. The results of multiple clinical studies for different indications will be shown, in order to highlight the potential of PRF for improving conditions during dental surgery.

Inflammation as basis for regeneration: How much barrier-function is needed for collagen membrane? Do bone substitute materials need to be fully degraded?

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Within the last decades multiple bone substitute materials as well as collagen membrane have been introduced to the international market. All companies are claiming to have the "best" material. While focusing on bone GBR or GTR the important aspect of inflammation and wound healing is neglected. In this lecture the necessity of understanding of the wound healing for a successful bone augmentation is highlighted. Explaining the processes during the wound healing and that after biomaterial implantation, the necessity of a physiological reaction as the main column for tissue regeneration is demonstrated. Collagen membranes, which do not induce a foreign body giant cell reaction will be shown to be fully integrated within the soft tissues. Bone substitute material with the absence of foreign body reaction will be demonstrated to be contributing to build a hybrid bone, which can serve as an optimal source within the implant bed.