**BONE GRAFT SUBSTITUTES IN MAXILLO-FACIAL SURGERY**

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Biomaterials for reconstruction of bony defects of the skull comprise of osteosynthetic materials applied after osteotomies or traumatic fractures and materials to fill bony defects which result from malformation, trauma or tumour resections. Other applications concern functional augmentations for dental implants or aesthetic augmentations in the facial region. The wide range of biomaterials available on the market, together with lack of established criteria to guide the use of a speciﬁc biomaterial in a particular application, has resulted in different surgeons using different materials, with no uniformity in clinical application. The optimal biomaterial that meets every requirement (e.g. biocompatibility, stability, intraoperative fitting, product safety, low costs etc.) does not exist. The different material types are (autogenic) bone and many alloplastics such as metals, ceramics, plastics and composites. We discuss our clinical experience in the use of biomaterials for craniofacial application and we present our experience with some experimental laboratory studies . Based on literature review, we present guidelines for use of different biomaterials in maxillo-facial surgery.