## 29. GUIDED BONE REGENERATION USING DIFFERENT TYPES OF MEMBRANES

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**Introduction.** In the Republic of Moldova, alveolar bone deficiencies are often found among patients. Nowadays, patients opt for implant-supported dentures, due to evolution of oral surgery. However, in many cases, severe bone loss causes difficulties in implant insertion. Statistically speaking, 65% of patients in need of implants require prior bone augmentation. For this reason, Guided Bone Regeneration (GBR) is a method that can help to achieve sufficient 3D bone volume for implant insertion. The main principle of this method is using a barrier material, like membranes or meshes, that temporarily separates the bone graft material from the surrounding soft tissues, enabling osteogenic cells to migrate and proliferate selectively, promoting bone regeneration. In modern oral surgery, the main two materials used are resorbable and non-resorbable membranes.

**Aim of study.** To evaluate and compare GBR techniques using both types of barrier materials from scientific literature, reviews of published studies and clinical data.

**Methods and materials.** The study includes data from publications in PubMed, Google Scholar, Web of science. Selected sources included 10 cases: 5 using titanium mesh and 5 with resorbable membranes. Patients were healthy and both types of membranes were used for vertical bone augmentation. Keywords for searching: GBR, collagen membrane, titanium mesh, barrier membranes.

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**Results.** Patients were evaluated at 6 months after the augmentation procedure involving both types of membranes. As a result, both groups of patients showed vertical volume of bone growth, however, the cases treated with titanium mesh showed less bone value loss compared to resorbable membranes. However, both methods provided enough bone volume for implant placement. Another aspect of these surgeries is that titanium meshes have a higher risk of membrane exposure during the healing period, compared to resorbable membranes, such as collagen.

**Conclusions.** Both methods have their strong and weak points, however, the right technique and appropriate following of the clinical characteristics of the case, gives perspective for good results in bone volume gain with using either type of materials. Titanium mesh GBR has a better predictability of the outcome, but a greater risk of exposure compared to collagen membranes. From another perspective, collagen membranes, being softer and less capable of supporting soft tissue pressures, provide a lower bone height than predicted during the procedure.

**Keywords.** Guided bone regeneration, Titanium Mesh, Collagen Membrane, Bone atrophy.

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