

Biomaterials in maxillary sinus lift regeneration – a systematic review

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Background: Followed by a long period of edentulism, the remaining bone volume might become incompatible with an implant-supported rehabilitation. The maxillary sinus lift procedure with graft material is considered the most predictable and with the best prognosis pre-prosthetic surgical option, to restore an adequate bone volume.

Aim/Hypothesis: To answer the PICO question: "In maxillary sinus lifting, with a lateral surgical approach, for posterior implant rehabilitation, which graft material has better results, when the residual bone high is lower than 5 mm?".

Material and Methods: A research was made in the PubMed database with the keywords "maxillary sinus lift", "sinus floor elevation", "sinus graft", "dental implants" and "success rate of implants in sinus lift" for meta-analysis, systematic reviews, randomized controlled trials and controlled clinical trials, studies in humans in the last 10 years. The collected data was submitted to a meta-analytic analysis (Comprehensive Meta-analysis 3.0) with a 95% confidence interval. Eleven studies were included with a total of 3422 implants.

Results: The highest success rate was obtained with the combination of autologous bone, xenograft and bone substitutes, while the lowest success rate was obtained with the combination of xenograft and bone substitutes. The difference between the results of both groups is statistically significant.

Conclusions and Clinical Implications: The combination of autologous bone with bone substitutes seems to result in a higher implant success rate, since it allows joining the qualities of both grafting materials, enhancing implant integration. The complexity of these types of studies, as well as the fact that the implant success depends on countless interacting factors, makes it difficult to create guidelines with a strong evidence based foundation when it comes to maxillary sinus lifting procedure with graft materials.