

Issue: implants 3/2025

Title: Precision implant surgery in the **esthetic zone**
Buccal wall reconstruction using a resorbable magnesium membrane

Author: Dr Erick Mota Gonzalez, Dominican Republic

Literature

1. Hassan, S., Bilal, B., Nazir, M. S., Naqvi, S., Ali, Z., Nadeem, S., Muhammad, N., Palvasha, B., & Mohy-ud-Din, A. (2021). Recent progress in materials development and biological properties of GTR membranes for periodontal regeneration. *Chemical Biology & Drug Design*, 98(5), 1007–1024. <https://doi.org/10.1111/cbdd.13959>
2. Buser, D., Urban, I., Monje, A., Kunrath, M. F., & Dahlin, C. (2023). Guided bone regeneration in implant dentistry: Basic principle, progress over 35 years, and recent research activities. *Periodontology 2000*, 93(1), 9–25. <https://doi.org/10.1111/prd.12539>
3. Retzepi, M., & Donos, N. (2010). Guided bone regeneration: Biological principle and therapeutic applications. *Clinical Oral Implants Research*, 21(6), 567–576. <https://doi.org/10.1111/j.1600-0501.2010.01922.x>
4. Tan, W. L., Wong, T. L., Wong, M. C., & Lang, N. P. (2012). A systematic review of post-extraction alveolar hard and soft tissue dimensional changes in humans. *Clinical Oral Implants Research*, 23(Suppl. 5), 1–21. <https://doi.org/10.1111/j.1600-0501.2011.02375.x>
5. Araújo, M. G., Silva, C. O., Misawa, M., & Sukekava, F. (2015). Alveolar socket healing: What can we learn? *Periodontology 2000*, 68(1), 122–134. <https://doi.org/10.1111/prd.12080>
6. Ye, G. H., Duan, D. H., & Wang, E. B. (2021). Ridge volume stability of maxillary anterior implants placed with simultaneous lateral guided bone regeneration during healing: A radiographic analysis. *The Chinese Journal of Dental Research*, 24(4), 251–256. <https://doi.org/10.3290/j.cjdr.b2440825>
7. Monje, A., Rocuzzo, A., Buser, D., & Wang, H. L. (2023). Influence of buccal bone wall thickness on the peri-implant hard and soft tissue dimensional changes: A systematic review. *Clinical Oral Implants Research*, 34(3), 157–176. <https://doi.org/10.1111/clr.14029>
8. Qin, R., Chen, Y., Han, C., Wu, D., Yu, F., & He, D. (2023). Immediate implant placement with or without immediate provisionalization in the maxillary esthetic zone: A systematic review and meta-analysis. *The International Journal of Oral & Maxillofacial Implants*, 38(3), 422–434c. <https://doi.org/10.11607/jomi.10112>
9. Zhang, M., Zhou, Z., Yun, J., Liu, R., Li, J., Chen, Y., Cai, H., Jiang, H. B., Lee, E.-S., Han, J., et al. (2022). Effect of different membranes on vertical bone regeneration: A systematic review and network meta-analysis. *BioMed Research International*, 2022, 7742687. <https://doi.org/10.1155/2022/7742687>
10. Caballé-Serrano, J., Munar-Frau, A., Ortiz-Puigpelat, O., Soto-Penaloza, D., Peñarrocha, M., & Hernández-Alfaro, F. (2018a). On the search of the ideal barrier membrane for guided bone regeneration. *Journal of Clinical and Experimental Dentistry*, 10(5), e477–e483. <https://doi.org/10.4317/jced.54767>
11. Caballé-Serrano, J., Munar-Frau, A., Ortiz-Puigpelat, O., Soto-Penaloza, D., Peñarrocha, M., & Hernández-Alfaro, F. (2018b). On the search of the ideal barrier membrane for guided bone regeneration. *Journal of Clinical and Experimental Dentistry*, 10(5), e477–e483. <https://doi.org/10.4317/jced.54767>
12. Rider, P., Kačarević, Ž. P., Elad, A., Tadic, D., Rothamel, D., Sauer, G., Bornert, F., Windisch, P., Hangyási, D. B., Molnar, B., Bortel, E., Hesse, B., & Witte, F. (2021). Biodegradable magnesium barrier

- membrane used for guided bone regeneration in dental surgery. *Bioactive Materials*, 14, 152–168. <https://doi.org/10.1016/j.bioactmat.2021.11.018>
13. Liu, L., Wang, F., Song, W., Zhang, D., Lin, W., Yin, Q., Wang, Q., Li, H., Yuan, Q., & Zhang, S. (2024). Magnesium promotes vascularization and osseointegration in diabetic states. *International Journal of Oral Science*, 16, 10. <https://doi.org/10.1038/s41368-024-00222-4>
 14. Hu, J., Shao, J., Huang, G., Zhang, J., & Pan, S. (2023). In vitro and in vivo applications of magnesium-enriched biomaterials for vascularized osteogenesis in bone tissue engineering: A review of literature. *Journal of Functional Biomaterials*, 14, 326. <https://doi.org/10.3390/jfb14060326>
 15. Palkovics, D., Rider, P., Rogge, S., Kačarević, Ž. P., & Windisch, P. (2023). Possible applications for a biodegradable magnesium membrane in alveolar ridge augmentation—Retrospective case report with two years of follow-up. *Medicina (Kaunas)*, 59(10), 1698. <https://doi.org/10.3390/medicina59101698>
 16. Glenske, K., Donkiewicz, P., Köwitsch, A., Milosevic-Oljaca, N., Rider, P., & Rofall, S. (2018). Applications of metals for bone regeneration. *International Journal of Molecular Sciences*, 19, 826. <https://doi.org/10.3390/ijms19030826>
 17. Rider, P., Kačarević, Ž. P., Elad, A., Rothamel, D., Sauer, G., Bornert, F., & Witte, F. (2022). Analysis of a pure magnesium membrane degradation process and its functionality when used in a guided bone regeneration model in beagle dogs. *Materials*, 15, 3106. <https://doi.org/10.3390/ma15093106>
 18. Elad, A., Rider, P., Rogge, S., Witte, F., Tadić, D., Kačarević, Ž. P., & Steigmann, L. (2023). Application of biodegradable magnesium membrane shield technique for immediate dentoalveolar bone regeneration. *Biomedicines*, 11(3), 744. <https://doi.org/10.3390/biomedicines11030744>
 19. Blašković, M., Butorac Prpić, I., Aslan, S., Gabrić, D., Blašković, D., Cvijanović Peloza, O., Čandrić, M., & Perić Kačarević, Ž. (2024). Magnesium membrane shield technique for alveolar ridge preservation: Step-by-step representative case report of buccal bone wall dehiscence with clinical and histological evaluations. *Biomedicines*, 12(11), 2537. <https://doi.org/10.3390/biomedicines12112537>
 20. Chen, R., Zhang, L., Wang, H.-L., Zhou, W., Wang, Z., & Xu, L. (2025). Effectiveness of immediate implant placement into defective sockets in the esthetic zone: A systematic review and meta-analysis. *The Journal of Prosthetic Dentistry*, 133(2), 411–426. <https://doi.org/10.1016/j.prosdent.2024.05.014>
 21. Morton, D., Chen, S. T., Martin, W. C., Levine, R. A., & Buser, D. (2014). Consensus statements and recommended clinical procedures regarding optimizing esthetic outcomes in implant dentistry. *The International journal of oral & maxillofacial implants*, 29 Suppl, 216–220. <https://doi.org/10.11607/jomi.2013.g3>
 22. Chen, S. T., & Buser, D. (2014). Esthetic outcomes following immediate and early implant placement in the anterior maxilla--a systematic review. *The International journal of oral & maxillofacial implants*, 29 Suppl, 186–215. <https://doi.org/10.11607/jomi.2014suppl.g3.3>