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Biomaterials in Dentistry: An Overview

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Biomaterials in dentistry are essential for restoring oral function, aesthetics, and overall health. Advances in materials science have led to the development of composites, ceramics, polymers, and bioactive substances that closely mimic natural tooth structures and enhance tissue compatibility. The ideal dental biomaterial should demonstrate biocompatibility, mechanical strength, esthetic appeal, and long-term stability. Recent innovations, including nanotechnology, bioactive glasses, and smart materials, have improved properties such as antibacterial action, remineralization potential, and integration with surrounding tissues. Digital technologies and CAD/CAM systems further enhance the precision and efficiency of restorative and prosthetic procedures, offering patient-specific solutions. Despite these advancements, challenges persist in achieving the perfect balance between durability, biological harmony, and cost-effectiveness. Ongoing research continues to explore novel materials that provide safer, more effective, and patient-centered outcomes. Biomaterials remain at the forefront of modern dentistry, driving innovation in restorative, prosthetic, and regenerative practices to meet evolving clinical demands and improve patient's quality of life.

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