



Editorial

Endocrowns vs. Biomimetic composite restorations: A comparative analysis

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Restorative dentistry has evolved significantly, offering multiple approaches for managing endodontically treated teeth. Among the most debated options are endocrowns and biomimetic composite restorations. Both techniques emphasize minimally invasive principles and adhesive bonding, yet they differ in clinical application, longevity, and biomechanical behavior. This editorial compares these two techniques, highlighting their advantages, limitations, and scientific evidence supporting their efficacy.

1. Understanding Endocrowns

An endocrown is a monolithic, full-coverage restoration designed for endodontically treated teeth with significant coronal loss. Unlike conventional crowns that rely on a post and core for stability, endocrowns derive their retention from the pulp chamber and the remaining coronal structure.¹ They are typically fabricated using modern ceramic materials such as lithium disilicate or zirconia, which ensure excellent durability and esthetics.

2. Biomimetic Composite Restorations: A Conservative Alternative

Biomimetic dentistry aims to restore the natural properties of teeth by preserving their structural integrity and mechanical behavior. Composite restorations follow this principle by mimicking the properties of dentin and enamel. Instead of full-coverage restorations, biomimetic composite restorations utilize a layering technique with adhesive bonding to reinforce the remaining tooth structure.² This

approach reduces stress concentration within the tooth and maintains its natural biomechanics.

3. Strengths and Limitations

3.1. Endocrown

3.1.1. Advantage

1. Provides excellent resistance to occlusal forces and wear.³
2. CAD/CAM fabrication ensures precise fit and esthetic outcomes.
3. Eliminates the need for post placement, reducing the risk of root fractures.

3.1.2. Limitations

1. Success depends on sufficient pulp chamber depth and enamel support.
2. More aggressive preparation compared to biomimetic techniques.

3.2. Biomimetic composite restorations

3.2.1. Advantages

1. Preserves more natural tooth structure compared to endocrowns.⁴
2. Allows for gradual flexure under load, reducing fracture risks.
3. More cost-effective and repairable in case of failure.

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3.2.2. Limitations

1. Susceptible to wear and marginal discoloration over time.⁵
2. Higher technique sensitivity requiring meticulous layering and bonding protocols.

4. Clinical Decision-Making: Which is Better?

The choice between an endocrown and a biomimetic composite restoration depends on several factors, including the amount of remaining tooth structure, occlusal forces, and patient preference. Endocrowns are often preferred for molars due to their load-bearing capacity, whereas biomimetic restorations are ideal for premolars and anterior teeth where aesthetics and minimal invasiveness are priorities.

5. Future Perspectives

Advancements in adhesive dentistry, material science, and digital workflows will continue to refine these techniques. Research into hybrid materials that combine the benefits of ceramics and composites may further bridge the gap between these two approaches, providing clinicians with more versatile options for restoring endodontically treated teeth.

6. Conclusion

Both endocrowns and biomimetic composite restorations offer compelling benefits in the management of extensively

damaged teeth. While endocrowns provide superior strength and longevity, biomimetic restorations prioritize tooth preservation and natural biomechanics. A patient-centered approach, considering clinical factors and material advancements, will help determine the most suitable choice for each case.

7. Conflict of Interest

None.

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