



Tunneling techniques in surgical treatment of gingival recessions: integrative review

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ARTICLE INFO

Received 15 May 2026
Accepted 26 June 2026

Keywords:

gingival recession
tunnel technique
root coverage
biomaterials
long-term stability

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DOI: 10.62741/ahrj.v3iSuppl.
2.222

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ABSTRACT

Introduction: Gingival recession is a common condition in periodontal practice, often associated with functional and aesthetic concerns. Among surgical root coverage approaches, tunneling techniques have gained increasing attention due to their minimally invasive nature, ability to preserve vascularization, and favorable aesthetic outcomes. However, current evidence regarding their clinical effectiveness and long-term stability remains heterogeneous.

Objectives: To evaluate the effectiveness of tunneling techniques in the surgical treatment of gingival recessions with different biomaterials.

Methodology: This integrative literature review followed the PICO strategy and PRISMA guidelines. A systematic search was conducted in PubMed, Scopus, and SciELO databases, covering studies published between 2010 and 2025. MeSH terms and the keywords were combined using Boolean operators AND and OR. The selected study designs included randomized clinical trials, longitudinal studies, systematic reviews and meta-analyses assessing tunnel techniques for treatment of Cairo RT1 gingival recessions were included.

Results: The results indicate that tunneling techniques achieve high short-term root coverage, frequently exceeding 80%, with outcomes comparable to coronally advanced flap procedures. The use of biomaterial substitutes shows similar clinical effectiveness to autogenous connective tissue grafts, while reducing postoperative morbidity and improving patient comfort. Aesthetic outcomes are generally favorable, and patient satisfaction is high. However, long-term evidence demonstrates a gradual reduction in root coverage over time, regardless of the biomaterial used, with anatomical location influencing stability of results.

Conclusion: Tunneling techniques represent a predictable and effective option for the treatment of gingival recession, providing strong short-term clinical and aesthetic outcomes. Nevertheless, the limited availability of long-term studies highlights the need for further standardized research to better assess long-term stability and treatment predictability.

Contributions: Conceptualization: ZL, TJM and FAM; Data curation: ZL; Formal Analysis: ZL; Funding acquisition: Not applicable; Investigation: ZL, TJM and FAM; Methodology: ZL, TJM and FAM; Project administration: Not applicable; Resources: Not applicable; Software: Not applicable; Supervision: TJM and FAM; Validation: TJM and FAM; Writing – original draft: ZL; Writing – review & editing: TJM and FAM.

Please cite this article as: Lumbroso Z, Martins TJ, Martins FA. Tunneling techniques in surgical treatment of gingival recessions: integrative review. *Athena Health & Research Journal*. 2026; 3(Suppl. 2). doi: 10.62741/ahrj.v3iSuppl. 2.222