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Biography

Mohamed Elshabrawi, is a dedicated dental professional from Ismailia, Egypt, affiliated with the Faculty of Dentistry at Suez Canal University. With a strong academic and clinical background, he is committed to advancing dental education and promoting excellence in oral health care. Mr. Elshabrawi actively contributes to research and professional development within the field of dentistry, aiming to enhance both theoretical knowledge and practical skills among dental students and practitioners

TruNatomy Increases Postoperative Pain Following Root Canal Treatment: Evidence from a Meta-Analysis

Abstract:

Background: Postoperative pain remains a significant concern in endodontics, affecting patient satisfaction and treatment outcomes. TruNatomy, a novel heat-treated NiTi system designed for conservative preparation, shows promise in laboratory studies but clinical evidence remains conflicting. This meta-analysis evaluated TruNatomy's impact on postoperative pain compared to other systems.

Methods: We searched PubMed, Embase, Scopus, Web of Science, and Cochrane databases till September 2025 for randomized controlled trials comparing TruNatomy to other file systems regarding postoperative pain in adult patients. Two reviewers independently screened studies, extracted data, and assessed risk of bias using RoB 2. Standardized mean differences were pooled using random-effects models, with heterogeneity quantified using I^2 . Evidence certainty was graded using GRADE.

Results: Six trials involving 775 patients contributed to evidence synthesis. At 24 hours, no significant difference was observed between TruNatomy and controls (SMD 0.12, 95% CI -0.05 to 0.29, $I^2=19\%$). However, TruNatomy was associated with significantly higher pain at 48 hours (SMD 0.18, 95% CI 0.01 to 0.35, $I^2=0\%$). At 72 hours, no significant difference was observed (SMD 0.12, 95% CI -0.28 to 0.51, $I^2=59\%$). The certainty of evidence was moderate for 24- and 48-hour outcomes and low for 72-hour outcomes.

Conclusions: TruNatomy does not reduce postoperative pain compared to conventional systems and may be associated with higher pain at 48 hours. Clinicians should counsel patients accordingly and ensure adequate analgesic protocols when using this system.