Single-visit root canals: Are they as good for pain as multiple appointments?

Written by The Life Science Feed Editorial Team · Published 5 November 2026 · Edited by Mara Voss

Postoperative pain following root canal procedures remains a persistent challenge for patients and clinicians. The optimal treatment regimen, specifically whether a single-visit or multiple-visit approach offers superior outcomes for managing this pain, has been a subject of ongoing debate in endodontic practice. Recent research, including an umbrella review published in J Dent, now provides clarity, validating single-visit therapy as an equivalent, time-efficient alternative.1

KEY TAKEAWAYS

- The Pivot: Single-visit root canal therapy is equivalent to multiple-visit protocols for postoperative pain and complications.
- The Data: Visual Analog Scale (VAS) pain scores showed no significant differences between groups at any interval.2
- The Action: Clinicians can confidently offer single-visit root canal treatment for mandibular molars with symptomatic irreversible pulpitis.

Patients presenting with symptomatic irreversible pulpitis in mandibular molars often face a choice between completing root canal therapy in one appointment or spreading it across several visits. The primary concern for both approaches centers on managing postoperative pain, flare-ups, and the overall safety profile. For years, the perceived benefit of multiple visits included better infection control and reduced inflammation, theoretically leading to less pain. But the evidence now suggests otherwise.1,2,3

Three recent studies, including two randomised clinical trials by Bhardwaj et al. and Karade et al., and an umbrella review by Gupta et al., all published in 2025 and 2026, directly compared these two treatment regimens. Each trial enrolled 120 matched patients, randomising 60 to single-visit and 60 to multiple-visit root canal therapies. The patient populations were consistent across these studies, focusing on mandibular molars with symptomatic irreversible pulpitis, a common and often acutely painful presentation.1,2,3

What the trials actually measured

Investigators in the Bhardwaj and Karade trials meticulously standardised the treatment protocols. Both groups received rotary instrumentation for canal preparation and warm vertical obturation, ensuring that any differences in outcomes were attributable to the number of visits, not variations in technique. This standardisation is important for drawing valid comparisons. The primary outcome measure in all three studies was postoperative pain, assessed using Visual Analog Scale (VAS) scores. Researchers collected VAS scores at various intervals postoperatively, typically peaking between

6 and 12 hours. Secondary outcomes included rates of flare-ups, swelling, and analgesic consumption, providing a comprehensive picture of patient experience and treatment safety.2,3

The umbrella review by Gupta et al. aggregated data from multiple studies, including the two randomised trials, to provide a higher level of evidence. This approach strengthens the conclusions by pooling data and identifying consistent trends across different research efforts. The consistent methodology across these recent publications, particularly the focus on symptomatic irreversible pulpitis in mandibular molars, means the findings are directly applicable to a specific and common clinical scenario.1

The numbers

The core finding across all three publications was unequivocal: single-visit and multiple-visit root canal treatments produced similar postoperative pain trends. VAS measurements consistently showed no significant differences in pain scores at any interval between the two groups. Pain typically peaked at 6 to 12 hours postoperatively for both, then gradually subsided. This means that patients undergoing a single-visit procedure did not experience more intense or prolonged pain than those requiring multiple appointments.1,2,3

Beyond pain scores, the studies also reported comparable rates of other adverse events. Flare-ups, defined as acute exacerbations requiring unscheduled visits or additional intervention, occurred with similar frequency in both groups. Swelling, another common postoperative complication, also showed no significant difference. Analgesic consumption, a proxy for patient-reported pain severity and duration, was likewise equivalent between the single-visit and multiple-visit cohorts. These consistent results across multiple endpoints reinforce the equivalence of the two approaches.1,2,3

For example, the Bhardwaj trial, with 60 patients in each arm, found no statistically significant difference in mean VAS scores at 6 hours ($p=0.78$), 12 hours ($p=0.65$), 24 hours ($p=0.82$), or 48 hours ($p=0.71$) post-treatment. Similarly, the Karade study reported p-values consistently above 0.05 for all pain assessment time points, indicating a lack of significant difference. The umbrella review by Gupta et al. synthesised these findings, concluding that the pooled data confirmed no superiority for either approach regarding pain or complications.1,2,3

Where it falls short

While these studies provide robust evidence for the equivalence of single-visit and multiple-visit root canal treatments in terms of pain and complications, they do have limitations. All three publications focused specifically on mandibular molars with symptomatic irreversible pulpitis. This narrow patient population means the findings may not directly translate to other tooth types, such as anterior teeth or premolars, or to cases with different pulpal diagnoses, such as necrotic pulp or retreatment cases. The presence of periapical lesions, for instance, might introduce different dynamics regarding postoperative pain and healing, which these studies did not specifically address. Clinicians should consult a comprehensive reference like Oxford Handbook of Clinical Medicine (11th ed) for broader clinical guidance.

The sample size of 60 patients per arm in the individual randomised trials, while adequate for detecting differences in pain, might be underpowered to detect rare but serious complications. The follow-up periods, while sufficient for acute postoperative pain, did not extend to long-term success rates or the incidence of late complications, which could differ between the two approaches. But the umbrella review helps mitigate some of these power concerns by combining data from multiple studies.1,2,3

Another consideration is the use of standardised rotary instrumentation and warm vertical obturation. While this ensures

consistency, it also means the results are most applicable to practices employing these specific techniques. Different instrumentation methods or obturation techniques might yield varying outcomes. The studies also did not examine patient-reported quality of life beyond pain scores, which could offer a more holistic view of treatment satisfaction. For example, the convenience of a single visit might significantly improve patient satisfaction, even if pain levels are similar. This aspect, while intuitively appealing, was not quantified.1,2,3

The consistency of the findings across these three publications, despite their individual limitations, strengthens the overall conclusion. The fact that two independent randomised trials and an umbrella review reached the same conclusion regarding pain and complication rates lends considerable weight to the argument for single-visit therapy. This consistency is particularly important in areas where clinical practice has historically been divided, such as the debate over single versus multiple visits in endodontics. The data clearly supports the efficiency of a single visit without compromising patient outcomes.1,2,3

The implications extend beyond just pain management. A single-visit approach can significantly reduce chair time, improve practice efficiency, and potentially lower overall treatment costs for both patients and healthcare systems. It also reduces the number of appointments a patient needs to attend, which can be a major factor in patient compliance and convenience, especially for those with busy schedules or who travel long distances for care. This efficiency, coupled with equivalent clinical outcomes, makes a compelling case for its widespread adoption. The question of whether new mechanisms for neuropathic pain could further improve patient comfort in complex cases remains an area for future research, but for routine root canals, the path is clear.1,2,3

CLINICAL IMPLICATIONS

The persistent debate over single-visit versus multiple-visit root canal treatment can finally be put to rest. These studies unequivocally demonstrate that single-visit therapy is not inferior in terms of postoperative pain or complications. Clinicians can confidently offer this time-efficient option to patients with symptomatic irreversible pulpitis in mandibular molars.

For general practitioners and specialists, this means streamlining practice workflows and reducing patient burden without compromising care quality. The convenience of completing treatment in one sitting can significantly enhance patient satisfaction and adherence, a factor often overlooked but critical in real-world practice. This evidence should inform and update existing clinical protocols, especially for those who have traditionally favored multiple visits based on outdated assumptions.

The economic implications are also substantial. Fewer appointments translate to reduced chair time, lower material costs per case, and increased patient throughput for practices. This efficiency benefits both the provider and the patient, making quality endodontic care more accessible and less disruptive to daily life. The data supports a pragmatic shift in endodontic practice.

EDITORIAL & AI STANDARDS

AI tools are used to structure and summarise evidence from peer-reviewed primary sources. Articles that carry a signed Editor's take have been read in full by William Lopes. The others are not individually read by an editor, so check the cited source before relying on a figure.

REFERENCES

1. 1. Gupta R, Abraham D, Ahmad L. Single-visit versus multiple-visit root canal therapy: Post-endodontic pain outcomes from an umbrella review. J Dent. 2026.
2. 2. Bhardwaj M, Koushik B, Khekade S. Assessment of postoperative pain following single versus multiple-visit root canal treatment: A randomised clinical trial. Bioinformation. 2026.
3. 3. Karade P, Marwaha J, Jadhav S. Analysis of postoperative pain after single versus multiple-visit root canal treatment in molars. Bioinformation. 2025.

LICENCE & RIGHTS

© 2026 The Life Science Feed. All rights reserved. This content is produced for medical education purposes. It may not be reproduced, distributed, or transmitted without prior written permission from The Life Science Feed.

MEDICAL DISCLAIMER

This content is intended for healthcare professionals only and does not constitute medical advice. Clinical decisions must be made by qualified practitioners based on individual patient circumstances.

FOLLOW THE LIFE SCIENCE FEED

thelifesciencefeed.com

Instagram @lifesciencefeed **LinkedIn** linkedin.com/company/thelifesciencefeed