Content available at: https://www.ipinnovative.com/open-access-journals

Journal of Advances in Oral Health

Journal homepage: https://www.jaoh.in/

Letter to Editor

Why postoperative care in third molar surgery remains a challenge despite extensive research

Swati Sharma[1]*

Dept. of Oral and Maxillofacial Surgery, Army College of Dental Sciences, Secunderabad, Telangana, India.

Abstract

Third molar impaction is one of the most studied topics in oral and maxillofacial surgery, with hundreds of research papers published annually. These studies aim to optimize surgical techniques, reduce complications, and improve postoperative outcomes. Despite this wealth of research, postoperative care for patients undergoing third molar extractions continues to present challenges. This article explores the reasons behind this conundrum, focusing on biological variability, procedural complexity, limitations in translating research into practice, and the multifaceted nature of patient care.

Keywords: Third molar surgery, Impaction, Post-operative care

Received: 04-05-2025; **Accepted:** 07-06-2025; **Available Online**: 28-06-2025

1. Biological and Anatomical Variability

One of the primary reasons for inconsistent postoperative outcomes lies in the inherent biological variability among patients.

1. **Anatomical differences**: The position, angulation, and depth of impaction vary widely among individuals, influencing surgical complexity and postoperative healing. Deep impactions, proximity to the inferior alveolar nerve, or sinus involvement significantly increase complication risks.
2. **Individual healing responses**: Healing is influenced by genetic factors, systemic conditions (e.g., diabetes, smoking), and individual immune responses, making it difficult to standardize postoperative care protocols.
3. **Pain perception and tolerance**: Pain is subjective and varies across patients, complicating the management of this critical postoperative concern.

2. Complexity of the Procedure and Surgical Variations

Third molar surgery ranges from straightforward extractions to highly complex cases.

2.1. Surgical techniques

Despite advancements, there is no one-size-fits-all approach. Techniques such as flap designs, bone removal, or use of piezoelectric surgery reduce complications in some cases but may not apply universally.

1. Flap designs: Use of Various types of soft tissue flaps such as triangular flap, envelope flap[1] and flapless incisions[2-3] show varying degrees of success.
2. Bone removal: Degree of bone removal,[4] use of surgical handpieces[5] (straight or contralateral), Irrigant temperature[6] and different solutions[7] have shown statistically different results in various studies.

Piezosurgery: Use of piezoelectric handpieces has shown improved results but only in deep seated third molar impactions.[8]

2.2. Skill of the operator

Outcomes are closely tied to the experience and technique of the surgeon. Novice surgeons often report higher rates of postoperative complications like swelling, pain, and infection. This could be attributed to increased surgical time,

*Corresponding author: Swati Sharma
Email: swati.sharma2296@gmail.com

https://doi.org/10.18231/j.jaoh.2025.009

Improper technique and improper postoperative instructions and followup.[9]

3. Challenges in Translating Research into Clinical Practice

Research findings often fail to be seamlessly integrated into everyday practice due to various factors:

1. **Diverse study designs**: Research studies often vary in methodologies, populations, and outcome measures, making it difficult to draw universal conclusions.
2. **Limited generalizability**: Many studies are conducted in controlled environments with ideal patient conditions. Real-world scenarios, however, involve patients with comorbidities, non-compliance, or suboptimal oral hygiene, limiting the applicability of research outcomes.
3. **Lack of standardized protocols**: Research findings are sometimes contradictory or do not result in clear consensus guidelines, leaving clinicians to rely on personal judgment or experience.

4. Multifactorial Nature of Postoperative Challenges

The postoperative phase involves managing a range of symptoms, which complicates care:

1. **Pain and inflammation**: The intensity and duration of postoperative pain and swelling vary widely. While NSAIDs, corticosteroids, and analgesics are commonly prescribed, their efficacy is not uniform. Studies have suggested using long-acting anaesthetics or pre-emptive analgesia, but patient responses remain inconsistent.[10]
2. **Infections**: Despite prophylactic antibiotics, postoperative infections like alveolar osteitis (dry socket) remain common, occurring in 1–5% of cases. Research on the role of antiseptic rinses[11] or medicated dressings shows promise but is not universally adopted.[12-13]
3. **Psychological factors**: Anxiety and fear about the procedure and recovery can amplify postoperative symptoms, complicating pain management and compliance with care instructions.[14]

5. Patient-Related Factors

Patient behaviour significantly affects postoperative recovery.

1. **Non-compliance**: Many patients fail to adhere to postoperative instructions, such as avoiding smoking, maintaining oral hygiene, or following dietary restrictions.
2. **Lifestyle factors**: Smoking, alcohol consumption, and poor nutritional habits delay healing, increasing the risk of complications.
3. **Patient education**: Research shows that well-informed patients experience better outcomes, yet gaps in patient education persist, impacting recovery.

6. Gaps in Research and Innovations

Despite extensive studies, certain gaps persist:

1. **Focus on short-term outcomes**: Most studies emphasize immediate postoperative results (e.g., pain and swelling), with limited focus on long-term complications such as nerve damage or TMJ issues.
2. **Underexplored therapies**: Emerging technologies such as stem cell therapy, advanced biomaterials, and bioactive dressings show potential but require further validation before clinical adoption.
3. **Inconsistent metrics**: Lack of standard metrics for evaluating outcomes (e.g., patient-reported outcomes vs. clinical parameters) creates inconsistencies in assessing the effectiveness of care strategies.

7. Proposed Directions for Improvement

To address these challenges, a multifaceted approach is essential:

1. **Personalized care protocols**: Leveraging predictive tools like AI and machine learning to tailor postoperative care to individual patient profiles, similar to systems developed by Zain et al, 2024.[15]
2. **Enhanced surgical training**: Ensuring that surgeons are proficient in advanced techniques to minimize complications. Jerjes et al, 2006, demonstrated that surgeons with greater experience have cases with lesser post-operative complications.[9]
3. **Standardized guidelines**: Developing and disseminating evidence-based guidelines that synthesize the best practices from current research.
4. **Patient education**: Emphasizing the importance of compliance through clear communication and resources. Phone calls have shown to improve patient compliance to post-operative instructions.[16]
5. **Future research focus**: Shifting towards real-world studies that include diverse populations and long-term outcomes to improve clinical applicability.

7. Conclusion

The inability to provide universally manageable postoperative care for third molar impaction patients stems from the complexity of the condition and the multifactorial nature of postoperative challenges. While research has provided valuable insights into surgical techniques and postoperative management, the inherent variability in patients and care environments limits the translation of these findings into consistent clinical success. Bridging the gap between research and practice requires a concerted effort to personalize care, enhance training, and focus on patient-centric approaches. Only then can we hope to improve outcomes for this common yet challenging procedure.

8. Source of Funding

None.

9. Conflict of Interest

None.

References

1. Zhu J, Yuan X, Yan L, Li T, Guang M, Zhang Y. Comparison of Postoperative Outcomes Between Envelope and Triangular Flaps After Mandibular Third Molar Surgery: A Systematic Review and Meta-Analysis. *J Oral Maxillofac Surg*. 2020;78(4):515-27.
2. Materni A, De Angelis N, Di Tullio N, Colombo E, Benedicenti S, Amaroli A. Flapless Surgical Approach to Extract Impacted Inferior Third Molars: A Retrospective Clinical Study. *J Clin Med*. 2021;10(4):593.
3. Materni A, Pasquale C, Signore A, Benedicenti S, Amaroli A. Comparison between the Flapless Surgical Approach and a Novel Single Incision Access in Terms of Recovery Time and Comfort after Extraction of Impacted Inferior Third Molars: A Randomised, Blinded, Split-Mouth Controlled Clinical Trial. *J Clin Med*. 2023;12(5):1995.
4. Sayed N, Bakathir A, Pasha M, Al-Sudairy S. Complications of Third Molar Extraction: A retrospective study from a tertiary healthcare centre in Oman. Sultan Qaboos *Univ Med J.* 2019;19(3):e230-5.
5. Ronsivalle V, Cicciù M, Fiorillo L. The Effects of a Cool Saline Solution Irrigation on Mandibular Third Molar Extraction Site: A Postoperative Split-Mouth Evaluation. *J Craniofac Surg*. 2024;35(4):1219-24.
6. Vijayakumar G, Sundaram GA, Kumar SP, Krishna VK, Krishnan M, Krishna VK. Comparison of the Effectiveness of Four Different Irrigation Solutions on Postoperative Sequelae in Patients Undergoing Lower Third Molar Surgery: A Prospective Study. *Cureus*. 2023;15(12):e50816.
7. Mistry FK, Hegde ND, Hegde MN. Postsurgical consequences in lower third molar surgical extraction using micromotor and piezosurgery. *Ann Maxillofac Surg.* 2016;6(2):251-9.
8. Jerjes W, El-Maaytah M, Swinson B, Banu B, Upile T, D'Sa S. Experience versus complication rate in third molar surgery. *Head Face Med*. 2006;2(4):1-7.
9. Nazeer J, Kumari S, Haidry N, Kulkarni P, Gautam A, Gupta P. Comparison of efficacy of lignocaine, ropivacaine, and bupivacaine in pain control during extraction of mandibular posterior teeth. *Nat J Maxillofac Surg*. 2021;12(2):238-43.
10. Garrido L, Lyra P, Rodrigues J, Viana J, Mendes JJ, Barroso H. Revisiting oral antiseptics, microorganism targets and effectiveness. *J Pers Med*. 2023;13(9):1332.
11. Romero-Olid MD, Bucataru E, Ramos-Garcia P, González-Moles MÁ. Efficacy of chlorhexidine after oral surgery procedures on wound healing: systematic review and meta-analysis. *Antibiotics.* 2023;12(10):1552.
12. Arteagoitia I, Sánchez FR, Figueras A, Arroyo-Lamas N. Is clindamycin effective in preventing infectious complications after oral surgery? Systematic review and meta-analysis of randomized controlled trials. *Clin Oral Invest*. 2022;26(6):4467-78.
13. Onwuka CI, Udeabor SE, Al-Hunaif AM, Al-Shehri WA, Al-Sahman LA. Does preoperative dental anxiety play a role in postoperative pain perception after third molar surgery?. *Ann Afr Med.* 2020;19(4):269-73.
14. Zain Z, Almadhoun MK, Alsadoun L, Bokhari SF, Almadhoun MK. Leveraging artificial intelligence and machine learning to optimize enhanced recovery after surgery (ERAS) protocols. *Cureus*. 2024;16(3):56668.
15. Aloy-Prósper A, Pellicer-Chover H, Balaguer-Martínez J, Llamas-Monteagudo O, Peñarrocha-Diago M. Patient compliance to postoperative instructions after third molar surgery comparing traditional verbally and written form versus the effect of a postoperative phone call follow-up a: a randomized clinical study. *J Clin Experimen Dent*. 2020;12(10):e909-15.
16. Ramalingam S, Alotaibi O, Alqudairy Z, Alnutaifi A, Alotaibi A, Ramalingam S, Effectiveness of phone call follow-ups in improving patient compliance to post-extraction instructions: A cross-sectional study. *Cureus*. 2022;14(11).31499.

Cite this article: Swati Sharma. Why postoperative care in third molar surgery remains a challenge despite extensive research. *Journal Advances in Oral Health* 2025;2(1):37–393