



## Editorial

# Bridging evidence and practice: Reflections on Orthodontic Research in 2025

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## 1. Integrating Digital Innovation, Biological Insights, and Clinical Excellence

The past year has been an extraordinary journey for the Indian Journal of Orthodontics and Dentofacial Orthopaedics (IJODO), both in terms of scientific contributions and the breadth of clinical relevance. As an editorial team, our commitment has been to provide a platform that not only showcases original and impactful research but also nurtures discussion, collaboration, and integration between academic inquiry and everyday orthodontic practice. The year 2025 has reaffirmed the importance of orthodontics as a discipline that is simultaneously evidence-driven, biologically grounded, and patient-centered.

In this editorial reflection, I will highlight the major themes, trends, and emerging directions that defined the journal during the year. Each publication has been a step towards strengthening our scientific base, refining our clinical armamentarium, and shaping the future of orthodontic and dentofacial orthopaedic care in India and globally.

## 2. Digital Orthodontics: From Promise to Practical Integration

One of the most visible trends of 2025 has been the consolidation of digital technologies within orthodontic workflows. Several articles investigated digital planning tools, aligner therapy, intraoral scanning, and three-dimensional imaging modalities. Unlike earlier reports which often emphasized the novelty of such technologies, the focus this year shifted towards validation, accuracy, reproducibility, and clinical impact.

Studies examined how digital tools support diagnosis, treatment planning, and appliance design, while simultaneously exploring their limitations in diverse patient populations. For example, reports highlighted how digital setups can predict occlusal outcomes, yet also underscored that biological variability and operator experience remain central to successful treatment.

By positioning technology as an adjunct rather than a replacement for clinical judgment, these contributions advanced a balanced narrative. As editors, we recognize that digital orthodontics is no longer peripheral—it has become mainstream. However, the responsibility lies in ensuring that clinical decision-making remains evidence-driven and patient-specific.

## 3. Biomechanics, Biology, and Skeletal Maturity Indicators

Another strong thread across the 2025 volumes was the intersection of **mechanics and biology**. Articles explored strategies for vertical control, correction of deep bite, and optimization of force systems. A consistent theme was the careful balance between biomechanical efficiency and the biological response of tissues.

Several studies revisited skeletal maturity indicators, third-molar development, and their relevance for treatment timing. The year's contributions emphasized the need for **population-specific data**, especially for Indian cohorts, where growth patterns may differ from international references. Such work not only informs orthodontic decisions

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but also carries medico-legal implications in forensic and age estimation contexts.

Importantly, authors reported with methodological clarity, defining age cut-points, imaging protocols, and observer reliability. This attention to precision strengthens the reliability of findings and enhances their translational utility in day-to-day orthodontic care.

#### **4. Transverse Discrepancies and Expansion Protocols**

Transverse problems of the maxilla remained a central area of scholarly inquiry. Research on Rapid Maxillary Expansion (RME) in mixed dentition reaffirmed its efficacy, particularly when initiated at growth stages where skeletal responsiveness is optimal. In contrast, adult patients with maxillary constriction brought to focus the evolving role of Miniscrew-assisted Rapid Palatal Expansion (MARPE) and Surgically Assisted Rapid Palatal Expansion (SARPE).

Articles emphasized decision-making frameworks, outlining when conventional approaches suffice and when surgical or skeletal anchorage-based protocols become necessary. Such discussions are critical, as transverse discrepancies influence not only occlusion but also airway dynamics, esthetics, and long-term stability.

By juxtaposing outcomes across age groups, 2025 publications enabled clinicians to tailor treatment strategies, avoiding overtreatment in younger patients while ensuring effectiveness in mature cases. This body of evidence enriches clinical protocols and strengthens our ability to individualize care.

#### **5. Eruption Disturbances, Impactions, and Occlusal Complexity**

Eruption disturbances and impacted teeth, particularly maxillary canines, continued to be a recurring subject of interest. Case reports and clinical series illustrated diagnostic challenges, imaging-based assessments, and innovative mechanics for traction and alignment. Authors underscored that early diagnosis and interceptive strategies remain critical for preventing complications such as root resorption, loss of arch space, or esthetic compromise.

The journal also featured rare occlusal presentations such as Brodie bite. These case-based manuscripts provided clinicians with creative appliance designs and sequenced protocols that are adaptable to clinical reality. Such detailed documentation ensures that even uncommon problems are discussed and addressed, preventing them from being overlooked in routine orthodontic training.

#### **6. Interdisciplinary Collaboration: Orthodontics and Periodontics**

A defining feature of orthodontics in recent years has been its increasing collaboration with periodontics, and this was well-reflected in IJODO during 2025. Articles explored how periodontal phenotype, gingival recession risk, and

bone morphology influence orthodontic tooth movement. Clinical reports demonstrated the value of staging soft tissue augmentation in coordination with orthodontic alignment to improve long-term stability.

These contributions remind us that orthodontic care does not occur in isolation. Rather, the future lies in multidisciplinary planning where occlusion, esthetics, and periodontal health are considered together. The 2025 publications advanced this vision, offering practical pathways for collaboration that directly benefit patient care.

#### **7. Perceptions, Education, and Service Delivery**

Beyond clinical techniques, the journal also featured work on professional perceptions and education. Survey-based studies investigated how orthodontists, pedodontists, and general practitioners perceive treatment needs, priorities, and referral patterns.

Findings suggested variability in diagnostic thresholds, highlighting the need for calibration across specialties. Such insights are not merely academic—they directly impact service delivery and patient outcomes, especially in resource-limited contexts where early referral and collaborative diagnosis are vital.

The inclusion of such studies underscores the journal's broader mandate: to not only publish bench-to-chairside research but also engage with the human and systemic dimensions of orthodontic practice.

#### **8. Methodological Advances and Research Quality**

One of the most encouraging observations of 2025 was the rise in methodological rigor. Authors displayed greater clarity in defining inclusion and exclusion criteria, specifying primary outcomes, and employing standardized imaging protocols. Statistical analyses were more transparent, with explicit reporting of effect sizes, confidence intervals, and error margins.

However, challenges remain. As a community, we must continue to encourage adequately powered randomized controlled trials, long-term follow-ups, and incorporation of patient-reported outcomes such as treatment comfort, esthetic satisfaction, and quality of life.

Another priority is the validation of digital and AI-enabled tools. While innovative applications are increasingly submitted, their generalizability and external validity require careful study before widespread clinical adoption. Journals such as IJODO serve as critical gatekeepers in ensuring that innovation is accompanied by accountability.

#### **9. Looking Ahead: Strategic Priorities for 2026**

As we move forward, IJODO remains committed to fostering research that is both rigorous and clinically meaningful. For 2026, we particularly invite contributions in the following priority areas:

1. **Airway and sleep-related orthodontics**, with robust phenotyping, outcome measures, and long-term stability data.
2. **Adult transverse discrepancy management**, clarifying clinical thresholds for conventional, miniscrew-assisted, and surgically assisted expansion.
3. **Digital quality assurance**, focusing on accuracy, reproducibility, and ethical aspects of digital workflows.

We also encourage work on cleft and craniofacial orthodontics, TMJ-focused occlusal rehabilitation, biomechanics of retention, and strategies for equitable orthodontic service delivery across diverse populations.

## 10. Acknowledgement and Gratitude

The success of 2025 would not have been possible without the dedication of our **authors**, who entrusted us with their scientific work, and our **reviewers**, who provided rigorous, timely, and constructive feedback. Their efforts ensured that each article published was strengthened through critical dialogue and peer input.

I also extend gratitude to our readers, who engage deeply with the journal and translate its findings into clinical reality. Every citation, download, and clinical application of our

published work is a testimony to the shared goal of advancing orthodontic care.

## 11. Concluding Reflection

The year 2025 has reaffirmed that orthodontics in India is not only keeping pace with global developments but is also shaping unique perspectives grounded in our clinical realities. By balancing digital innovation with biological understanding, and by embracing interdisciplinary collaboration, the journal has helped chart pathways that bring us closer to patient-centered, evidence-based care.

As Associate Editor, it is my privilege to witness and contribute to this journey. Together—with the continued energy of researchers, the diligence of reviewers, and the curiosity of readers—I am confident that IJODO will remain a beacon of orthodontic scholarship, bridging the gap between research evidence and clinical excellence.

## 12. Conflict of Interest

None.

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