

Evidence or else

Concerning trends and the legal risks of unsubstantiated orthodontic-surgical practices

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ABSTRACT

Background. Over the past decade, orthodontics has advanced markedly with digital methods, cutting-edge biomechanics, and 3-dimensional diagnostics. However, the rapid adoption of these innovations without rigorous evaluation of their evidential support has led to new unsubstantiated orthodontic-surgical indications.

Methods. This article explores emerging orthodontic practices, focusing on the interpretation of orthodontic principles and the reliance on imaging-based diagnoses.

Results. Strict adherence to mechanistic orthodontic principles and reliance on imaging findings can result in overzealous treatment protocols. It also emphasizes the state of knowledge regarding temporomandibular disorders (TMDs) and the lack of consensus and evidence-based guidelines.

Conclusions. There is an urgent need for the profession to integrate TMD knowledge, adopt evidence-based practices, and critically evaluate new methods before implementation.

Practical Implications. Orthodontists should move away from outdated mechanistic beliefs and integrate clinical knowledge from TMD research into their practices. Increased awareness and potential legal repercussions may drive a necessary reevaluation and stronger adherence to evidence-based methods.

Key Words. Anterior disk displacement; temporomandibular disorders; orthodontics; preventive discopexy.

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Over the past decade, orthodontics has advanced substantially with the advent of digital methods, cutting-edge biomechanics, and 3-dimensional diagnostics. However, as the field embraces these innovations, there is a growing concern regarding their evidential support. Amid rapid adoption, there is a pressing need for the profession to evaluate these new methods rigorously through peer-reviewed research and deliberate their true value against any potential risks.

This issue is exacerbated when systems claiming to offer advanced 3-dimensional diagnostic methods and biomechanics are based on outdated philosophies, leading to an increase in unjustified clinical procedures. Misinterpreting essential orthodontic principles, such as occlusion, function, esthetics, and musculoskeletal health, as primary objectives, specifically to prevent conditions like temporomandibular disorders (TMDs) or future dentofacial deformities, substantially raises the risk of overtreatment.¹

It is counterintuitive to suppose that orthodontic treatment can be pivotal for establishing new homeostasis in the inherently malleable craniofacial system, known for adapting to major dento-facial changes, such as those from orthognathic surgery.² Orthodontic and surgical treatments induce allostatic processes requiring adaptation. Suggesting these procedures are instrumental for maintaining balance in a highly dynamic biological craniofacial system may be overly ambitious and unrealistic.

In addition, relying solely on imaging-based diagnosis (ie, magnetic resonance imaging or cone-beam computed tomography) as the cornerstone of the orthodontic diagnostic armamentarium can lead to overzealous treatment protocols.¹ Strict adherence to imaging findings, such as disk displacement or condylar asymmetries, may dictate interventions regardless of symptom presence.³

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Consequently, patients might be guided toward unnecessary temporomandibular joint (TMJ) surgeries, including preventative discopexy, to restore a healthy state or prevent future deformities. This trend is not hypothetical but a real concern I frequently encounter in clinical practice.

In the ongoing discourse over orthodontic best practices, especially regarding TMD treatments, it is crucial to assess critically the underlying principles of new systems. Clinicians are obliged to examine the foundations on which these principles stand.⁴ In light of scientific scrutiny and patient-focused care, it is essential to evaluate critically these new orthodontic-surgical practices before implementation.⁵⁻⁷ Yet as of 2024, despite robust evidence and expert recommendations challenging the role of condylar positioning, occlusal schemes, jaw growth methods, and positioning techniques in TMD prevention and management, these outdated practices still remain in orthodontic-surgical planning.⁸

To understand why these discredited practices should be withdrawn, key issues need thorough consideration.

- TMD frequently remits spontaneously. Treatment success often is due to natural pain variations, symptom mildness, or self-limiting nature.⁹
- The Orofacial Pain: Prospective Evaluation and Risk Assessment study found a 3.9% annual rate of new painful TMD cases, with approximately one-half resolving without intervention. Most patients described their pain symptoms as mild or slightly annoying.¹⁰
- Anterior disk displacement (ADD) of the TMJ is common, accounting for 41% of TMD clinical diagnoses, with 33% occurring in patients who are asymptomatic.¹¹
- ADD is observed frequently in magnetic resonance imaging diagnoses among patients who are asymptomatic.¹²
- There is no clinical test, diagnostic method, or measurement that can predict accurately whether a person will develop TMD.³
- A substantial body of evidence-based research, including major prospective studies, suggests that orthodontic treatments are unlikely to produce, modify, or cure TMD.^{4,13}
- Epidemiologically, malocclusion prevalence is consistent whether or not patients have pain-related TMDs. There is a high prevalence of TMDs among patients who are asymptomatic, including those with untreated malocclusions.¹⁴
- Therapeutic condylar positioning in the glenoid fossa, aimed at aligning centric occlusion with maximum intercuspation, is flawed, lacking consistency and precision in transferring measurements to instrumental devices.²
- Discrepancies between centric occlusion and maximum intercuspation are not causative for TMDs. The idea that the TMJ needs to be in a centric relation position to be considered healthy or to achieve homeostasis is unfounded.¹⁵
- TMD encompasses diverse musculoskeletal conditions within a complex neuroanatomic network. It is influenced by a variety of structural, functional, and pathophysiological characteristics shaped by individual factors like genetics, sex, and social context as well as overlapping pain disorders and medical or psychiatric comorbidities, all contributing to persistent pain and dysfunction.⁵
- Evidence-based guidelines for TMD care are scarce, and many treatments are based on poor-quality evidence, making the choice of effective strategies and patient stratification both challenging and unclear.⁹
- The lack of epidemiologic data and insights into the etiology of TMD, alongside many open research questions, underscores the field's complexity. Our partial understanding necessitates caution and avoiding oversimplification, favoring reversible, conservative treatments as the initial approach in TMD management.⁸

At the same time, the endorsement of preventive TMJ discopexy for favorable jaw positioning or symmetrical condylar growth is questionable, given the several issues that arise on examining the supporting evidence.

- Studies supporting preventive discopexy often fail to consider crucial factors beyond disk positioning, such as jaw functional limitations, pain assessment and disability, and contributing physical, emotional, and social aspects of patient well-being, all of which are vital for understanding the patient's overall daily functioning and quality of life.¹⁶
- The lack of research, coupled with a notable absence of extensive data and concerns regarding the robustness of study designs, raises questions about the strength of the evidence backing this treatment strategy.¹⁷

ABBREVIATION KEY

- ADD:** Anterior disk displacement.
- TMD:** Temporomandibular disorder.
- TMJ:** Temporomandibular joint.

- Most studies primarily focus on short-term outcomes, lacking long-term follow-up data for assessing stability and effectiveness.^{16,17}
- Affirming that bone regenerates soon after surgery¹⁸ overlooks that growth is a time-dependent process and any observed changes may be merely postsurgical short-term adaptations.
- Research has indicated that variations in condylar volume and morphology between the left and right sides of a patient are common and may not necessarily indicate pathology or dysfunction.¹⁹
- Moreover, the presence of ADD on 1 side potentially could accentuate any preexisting asymmetry, making it more noticeable and possibly leading to erroneous conclusions about the degree of pathologic changes, especially if the unaffected side is presumed to be perfectly symmetrical.¹⁹
- The function of the TMJ disk may be more important than its position relative to the condyle.²⁰

These key points are not meant to undermine the validity of maxillomandibular positioning or TMJ surgical interventions such as discopexy when they are appropriately indicated. Indeed, from a pragmatic standpoint, maxillomandibular positioning using centric relation can be a useful reference in the context of extensive rehabilitation, edentulism, or integrated surgical-orthodontic treatments.¹⁵ Furthermore, TMJ surgical interventions are a valuable option when multiple conservative therapies have proven to be unsuccessful. Nonetheless, the primary focus of this article is to emphasize the importance of evidence-based practice and to caution against premature surgical interventions that are justified by outdated principles or in the absence of substantial long-term data.

CONCLUSIONS

As with any surgical intervention, the risk of complications must be weighed carefully against the potential benefits, particularly given the uncertainties surrounding long-term outcomes. It is imperative for practitioners to integrate clinical knowledge from TMD research into their practices, moving away from outdated mechanistic beliefs. Emphasizing evidence-based practices is crucial to ensuring patient safety and improving treatment outcomes. If scientific validation alone does not suffice to deter unsupported practices, the increasing awareness and potential legal repercussions may necessitate a reevaluation and stricter adherence to scientifically validated practices.⁴ ■

DISCLOSURE

Dr. Skármeta did not report any disclosures.

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