

# APOS Trends in Orthodontics

## Editorial

# The emperor's new clothes!

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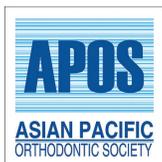
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The collision of the physical and digital worlds has affected every dimension of society, commerce, enterprises, and individuals.<sup>[1]</sup> The millennial professional landscape has undergone tremendous metamorphosis! Since the year 2000, 52% of the companies in the Fortune 500 have devolved and ceased to exist or have been consolidated due to digital evolution. Many companies have refused to recognize the impact of computer automation; orthodontics is no exception to this collision of two worlds!

Too many orthodontic colleagues refuse to acknowledge the impact of this sure but steady shifting paradigm of digital evolution. The future of orthodontics rests on “a thin line between irrelevance and obsolescence,”<sup>[2]</sup> and understanding this phenomenon is imperative for the future of our beloved profession!<sup>[3-5]</sup> I've described the “Nokia” story in an editorial for the *Seminars in Orthodontics*, last year.<sup>[5]</sup> While the “I Phones” and “Samsungs” of the world changed the definition of the human-technology-communication interface, what is that one phenomenon that has impacted or raised pertinent questions regarding an impending threat to the “Nokia-ization of Orthodontic care?” Customized appliances created by algorithms and artificial intelligence generally, and clear aligners in particular. Aligners... undoubtedly are “*The Emperor's New Clothes*” on the orthodontic appliance terrain. As in the Hans Christian Andersen tale, are the aligners forced on the profession by commercial interests; simply a con-job for the hopelessly stupid? Is the profession only pretending to see the reality of aligners' treatment? Moreover, do we continue to march ahead in the procession with just “no clothes”?

Aligners have probably been the most debated infusion of artificial intelligence and technology into orthodontics and currently, account for 15% of the orthodontic appliance market with close to two billion in global sales. What was probably an alternative appliance, in the beginning, has today become a formidable and comprehensive treatment solution. If we were to delink the commercial advertising and the marketing chutzpah around aligner therapy and focus on the science alone, its been a long journey that will undoubtedly be indelible in the pages of orthodontic history.<sup>[6-8]</sup> One of the best reference literature that I've read on the topic is a recent book by Dr. Sandra Tai who makes a very pertinent point. She states, “It is important to understand that clear aligner treatment is a technique, not a product. There is a common misconception that clear aligners are a ‘compromise’ orthodontic appliance that is only capable of minor tooth movement.”<sup>[9]</sup> Her's is a very insightful perspective as a master of the technique, especially when the profession questions the protagonists of the aligner brigade who refer to the product/appliance as being the “future of orthodontics.”

Is aligner therapy really the future? Mark Wertheimer asks, “if we are to accept that any treatment modality, for example, “aligner therapy,” is the future, does it not follow that the standard of the results achieved with it should at least be as good, if not better than conventional fixed appliances? If the standard of results achieved is lower, then how can it be regarded as “the future?” Are we to believe that just because a different appliance is being used that the parameters have changed? We perhaps believe that the plastic speaks a special language to the biological environment in which we work?”<sup>[10]</sup> Current scholarly aligner literature<sup>[11-13]</sup> is

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posing pertinent questions and finding answers that support the application of this appliance into orthodontic practice protocols. At this point, even though there are more questions than answers, the number of patients seeking aligner therapy and specialists providing it are exponentially on the rise! This perception is our current reality!

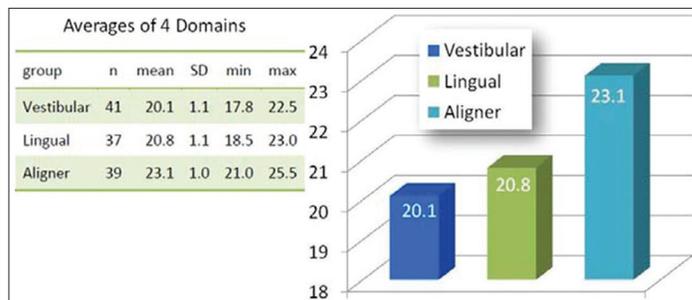
This exponential expansion implies at least two things. First, that it is a responsibility that we collectively have as clinicians and researchers to analyze treatment effects from an evidence-based, non-biased perspective, and publish the results so that answers to questions that improve the technique and subsequently patient outcomes can be found. APOS trends will look forward to original research that focuses on the clinical performance of aligners as a technique.

Second, it is important to understand the rationale behind why “aligners” are becoming a preferred modality for care seekers? Analyzing patient perceptions and sociological factors that might chart the future of our specialty is critical. Patients and clinicians alike want great orthodontic treatment but for different reasons. We have known since the advent of orthodontics that there is often a dynamic tension or a “gap” between *patient ease and convenience goals* and *clinician quality outcome goals*. This “gap” is the seed that germinates into businesses that are disruptive in nature! This “gap” is the very mechanism that facilitates an opportunity to change and develop aligner therapy by narrowing the gap between patient and clinician goals while improving treatment quality.

In marketing lexicons, “*Perception is reality!*” We can rant about commercial agendas that force change by disrupting the status quo; however, the truth about millennials seeking treatment that is more convenient and less paternalistic is what the future portends! Patient autonomy has been widely accepted as one of the four principles of medical ethics together with the principles of beneficence, non-maleficence, and justice.<sup>[14]</sup>

Peer-reviewed published literature has, in fact, evaluated how this very “*gap or tension,*” influences patient choices, opinions, feedback, referral patterns, and subsequently recommendation of orthodontics as a therapy.<sup>[15]</sup> Pain-perception, discomfort, and social media opinions on orthodontic experiences with aligners have been evaluated and form an important reason for an “autonomous choice” made by patients in favor of this orthodontic appliance.<sup>[16,17]</sup> In a graduate dissertation at European University College, Dubai Healthcare City in 2018, Alsereidi *et al.* assessed quality of life (QoL) in three orthodontic appliance groups, i.e., vestibular, lingual, and aligner, during the initial stages of treatment in 117 consecutively treated patients. Patients undergoing aligner therapy reported the highest QoL scores, followed by the lingual and vestibular groups [Figure 1] when evaluated using the WHOQOL-BREF questionnaire.

Hence, what does this current landscape augur for the future of appliances and the specialty of orthodontics! Will “*The Emperor's New Clothes*” be just a symbolic fabric that clothes assembly-line



**Figure 1:** The average total quality of life scores evaluated using the WHOQOL-BREF questionnaire in the initial stages of orthodontic treatment.<sup>[18]</sup>

orthodontics, succumbing to market demands? Or will aligners be an opportunity for expanding the orthodontic scope and our knowledge of efficient and creative biomechanics? In delivering the prestigious Salzmann lecture at the Annual Session of the American Association of Orthodontists in San Diego (2017), Peter Greco stated that it was necessary to “*Combine the new economy with the old morality.*” Profound words indeed! Technological advancements and their infusions into any profession are always going to be constant. How open we are to catalyzing these applications will define how we chart our future!

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