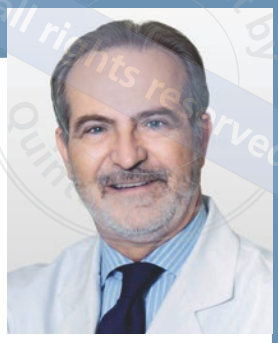
The present and future of aligners



Enrique Solano Reina

We have all witnessed the growth of aligner treatment and the increasingly frequent use of aligners in the orthodontic treatment of malocclusions. This is partly due to the qualities that manufacturers highlight in their products: they are removable, comfortable and aesthetically acceptable. All these qualities can be appreciated by patients from the very beginning of treatment. As clinicians, however, we must consider two other reasons: their efficiency and efficacy. These factors are only perceived by patients once their treatment is completed or when they are shown images of other successful cases. The question, however, is what new developments can we expect with aligners? Will aligner treatment of malocclusion end up becoming mainstream, and are traditional methods doomed to disappear?

We are experiencing extraordinary developments in the application of digital technology in orthodontics. The combination of technologies, services and digital workflows offers global solutions with an interdisciplinary approach, and this has enabled us to reach a further milestone by increasing effectiveness and predictability when treating more complex cases. All of this is possible thanks to the application of sophisticated algorithms from large databases of cases successfully treated by renowned professionals.

This digital technology has not come unaccompanied, however. New clinical and technological procedures have enabled us to see what differentiates conventional orthodontics from aligner-based treatments; the latter can now be used extensively and prove equally efficient even in more complex cases. The acceleration of tooth movement by means of vibrating devices, photobiomodulation, lasers and selective alveolar decortication has made it possible to treat cases with prior extractions and to accurately predict their final occlusions. If this is combined with specific biomechanical protocols with high predictability of movement and the possibility of monitoring patients online, it would be reasonable to expect growing demand for this kind of treatment. It has a weakness, however: like any fledgling science during the early stages of its development, this technology is still relatively young, thus there is a lack of scientific studies providing evidence of its effects, from positive impacts to adverse reactions, such as root resorption, gingival behaviour and movement stability. Great efforts have been made to present evidence from a clinical point of view, but more scientific studies with randomised samples and well-designed methodologies are required.

Lastly, I would like to offer some food for thought regarding what the industry and professionals must do together along the way. We must all understand each other. Just as the industry calls upon the most qualified clinicians to develop materials, enhance communication and promote digital workflows, we, as professionals, must be highly trained and able to use these resources, apply them to any kind of malocclusion and to diagnose using all the available digital technology (3D), employing clinical procedures that range from the most basic, such as biomechanics, to those that involve bone anchorage, corticotomies and orthognathic surgery. Problems may arise when the industry wants to play this role itself by offering turnkey solutions,

or when underqualified professionals, or worse still, patients, perform the treatment.

There is only one correct way to proceed, and that is to ensure that these treatments are only carried out by highly qualified orthodontic specialists and by those who train others at centres or institutions that can guarantee treatment of the utmost quality, not by the industry itself. Conventional orthodontics has its limitations, of which we are all aware; however, the new industry-led approach and its ease of use have resulted in abusive and unethical practices that have had a negative impact on patients and orthodontists. Just because a tumour can be removed by a robot, I do not believe this should be done by the person who made the robot rather than by a specialist.

Prof Enrique Solano Reina
Professor of Orthodontics, University of Seville, Seville, Spain.
Director of the Master in Orthodontics and Dentofacial Orthopaedics, Network of Erasmus-Based European Orthodontic Programmes (NEBEOP).