



Werner Schupp

Digital orthodontics in the digital age

Since 2000 we have lived in the digital age. In digital dentistry – particularly in orthodontics – the first digital orthodontic treatment procedure included tooth movement with newly developed software techniques and the production of removable splints. Based on these techniques, the production of removable aligners began in the USA. Now, digital treatment has spread and these new aligner treatment techniques are used in orthodontics worldwide. Today, several companies offer a complete digital workflow, from scan via software-controlled tooth movement to robot-controlled aligner manufacturing. To date, precision has been constantly improving, and future developments, such as the print technology for aligner production, will inevitably lead to further improvements.

The diverse possibilities of digitisation, the global networking of information, data and knowledge determine today's economic developments and social structures, as well as the future of medicine, dentistry and orthodontics, a trend that individual orthodontists can shape, but cannot prevent.

The first Konradieff cycle from 1780 to 1830, named after a Russian economist, was determined by the invention of the steam engine. Now, until 2050, we are living in the sixth Konradieff cycle, in which globally economic and social attention is focused on data, information, biotechnology and health. We serve this healthcare market in orthodontics, and this, increasingly, with a digital workflow.

The development of orthodontics moving more and more into the field of aesthetics and cosmetics has a creeping danger, particularly with the background of this high

value in the health market. In some countries, cosmetic orthodontic treatment is already offered by several companies, without any examination, treatment planning or control by an orthodontist/dental doctor.

This tendency is alarming from a medical aspect, but can be counteracted by us as orthodontists. If we keep our dental field of expertise – the orthodontics and orofacial orthopedics – in medical-dental science, we show we can do more than just create beautiful smiles.

We live in an era of customised medicine, also termed precision medicine, a medical procedure that separates patients into different groups – with medical decisions, practices, interventions and/or products being tailored to the individual patient based on their predicted response or risk of disease.

While the tailoring of treatment to patients dates back at least to the time of Hippocrates, the term has risen in usage in recent years given the growth of new diagnostic and informative approaches that provide understanding of the molecular basis of disease, particularly genomics. Only if orthodontics goes back to its medical roots and if research is performed to increase our knowledge, especially in the field of genomics involved in malocclusions and orthodontic tooth movement, can the orthodontist face the new era without any fear of companies and businesses, and with the awareness of playing a determinant role in decision-making procedures related to patient health and wellbeing.

Algorithms might be getting better and better, but can they replace the human, the medical doctor and the dentist



in the context of humans, to the patient? The described cosmetic treatments of patients without surveillance by doctors seems a logical step to satisfy the financial interests of companies, but is it ethical, is it medically ethically enforceable? A return to older orthodontic techniques, however, does not seem to me the way to prevent this development.

Let us face the challenges and developments of the digital age, also as orthodontists. Let us, as medical doctors, influence the development of aligner orthodontics wherever we can.

Our newly founded Journal of Aligner Orthodontics has the objective to report on the entire range of digital aligner orthodontics, with its main attention on the medical aspect. As a

peer reviewed journal we would like to present the scientific aspects, as well as the practical relevance.

We are looking forward to interesting articles and some lively discussions.

Yours

A handwritten signature in black ink, appearing to read "Werner Schupp".

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