

ortho

international magazine of orthodontics

2²⁰¹⁷



technique

Tongue star 2 (TS2) –
System for rapid open bite closure

case report

Use of diode laser in the treatment of gingival
enlargement during orthodontic treatment

industry report

Sensorimotor training with RehaBite
during orthodontic treatment



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Techniques in Daily Practice*



FARINA, Achille - Italy
*Six Keys to Successful
Treatments with Orthocaps®*



FERNANDEZ, Enrique - Spain
*My Experience with
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KALIA, Sonil - United Kingdom
*Bio-mechanical Principles with
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ROLLET, Daniel - France
*Functional Occlusion
and Aligners, Why Orthocaps®?*



SOREL, Olivier - France
*Smile Design & Stripping
Essentials*



WILMES, Benedict - Germany
*Expanding the Horizons of
Aligner Therapy with TADs*

Dear readers,

When I began working in the field of orthodontics (in the Middle Ages!), it was very different from what I encounter today in my daily practice. This is normal: with the progression of research on biology, biomechanics and biomaterials, as well as with the development of the technology, results have increasingly been improving, as have treatment times, aesthetics and patient comfort.

There is another important aspect too that has completely changed our way of working: orthodontics has finally come out of its isolation to perfectly interact with other fields of dentistry. In this sense, this issue of the **ortho** magazine fully interprets this new age by presenting, beyond papers, new and original orthodontic appliances and techniques that also make a contribution in different fields of dentistry applied to orthodontics, such as CAD/CAM technology, whitening and laser-assisted surgery.

I congratulate the editor for the choice of this new approach and wish you all a good read.

Yours faithfully,

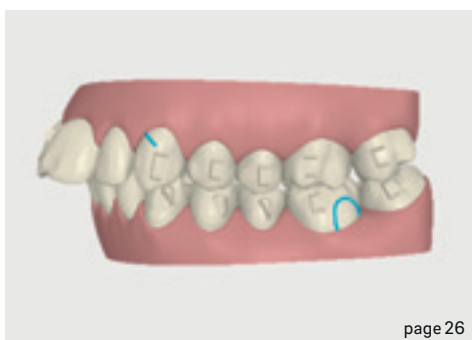


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Prof. Carlo Fornaini



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Virtual reality and orthodontics: A new patient experience

Author: Dr Yassine Harichane, Canada

Imagine the following scenario: your patient arrives, both relaxed and calm, at your practice. Although the patient is visiting the practice for the first time, he is familiar with it and knows its interior well. Without further introduction, the patient takes a seat in the dental chair, and the orthodontic procedure is performed quickly and comfortably with patient compliance. There are no complications or tension, and the treatment is easily achieved. Imagine such a soothing and comfortable environment in which to treat patients. Now imagine this very same scenario through the eyes of the patient. One can see that it could actually be a comfortable experience. This is not some hypothetical futuristic utopia; this is actually happening now, and the aforementioned points are some of the many benefits of virtual reality (VR).

VR is a process that entails immersing the viewer in a 360° environment. By turning his head left, right, up or down, the patient can visualise a real or an artificial environment. The spectator could be immersed in the Caribbean Sea surrounded by corals or in a Canadian forest (**Fig. 1**). The operation is simple: the participant wears a lightweight and comfortable headset in which a smartphone is inserted (**Fig. 2**). Owing to the gyroscopic sensors, the smartphone will project a matching image corresponding to the movements. If the patient raises his head, he will see the sky or the ceiling, and if he lowers his head he will see his feet. This technique is made possible by a 360° shot using a dedicated camera (**Fig. 3**) and simple editing software (**Fig. 4**). The result is simply astonishing as we find ourselves projected into a place that may vary from actual tourist sites to virtual scenarios as in video games.

The applications in orthodontics are numerous and at present we are exploiting only a tiny part of its potential functions. The possibilities might be endless. Hence, it might become possible for the patient to visit the dental office from his home, where he can visualise the front desk, admire the treatment rooms or view the cleanliness of the sterilisation room (**Fig. 5**). The aim is to offer a virtual visit of the practice to allow the patient to choose a quality clinic, as well as familiarise himself with the space before his first appointment. Once physically seated in the chair, the patient can wear the VR headset during the treatment and visualise a restful environment of his choosing. From here on, it is solely a matter of preference, as the patient might enjoy the beach, a VR video of Honolulu, or maybe even climbing a mountain. Any VR video is acceptable, as long as it achieves its purpose: calming the patient during a treatment session. Thus, everything becomes less tense, and the patient is relaxed. This might also be convenient for the dentist, as he can then execute whatever treatment is necessary as quickly and efficiently as possible.

Convincing the patient to undertake an orthodontic treatment is one thing, convincing him to follow the relevant recommendations is another. Obtaining patient compliance is not easy, especially in the case of younger patients. Furthermore, dentists have an unfortunate notorious association with pain and suffering, which might induce anxiety in a patient. Again, VR can be applied here to divert the attention of the most dynamic patients. Another aspect worthy of mention regarding the benefits is the intellectual retention of instructions on hygiene procedures, for example, which might be dependent on sup-

**Fig. 1**

Canadian forest in VR.

**Fig. 2****Fig. 3**

port. It is plausible to assume that verbal instructions on hygiene may be forgotten once the patient has left the clinic. Most orthodontic practices provide only leaflets, but few patients retain these or follow their recommendations. A VR video featuring the practitioner or team members might have a much greater impact on follow-up care at home. The message could be pre-recorded and viewed on demand by the patient. The aims of this format is that it can provide different intellectual integration between information, which is connected to a stream of visual and auditory stimuli. The clinician might wish to promote the patient retaining the provided information in an easier way to achieve greater clinical success. For example, youngsters might remember their favourite movie line by heart, as opposed to information provided by their dentist. This is because it demands less of youngsters to remember words that are connected with pictures.

For the health practitioner, VR may yield an unexpected, but welcome, advantage in terms

of professional education (**Fig. 6**). Many of us have not been able to attend a conference on the other side of the world for logistical reasons. In the near future, it will be possible to attend an orthodontic congress and listen to international speakers while sitting comfortably at home. Similarly, the demonstration of a new therapeutic technique will be easier with a VR video rather than plunging into a detailed explanation in an article without any illustration. The trainer can record his or her procedures with a 360° camera to allow the student to learn through immersion the technical movements and ergonomics of the technique being taught.

It would be an understatement to claim that VR provides an alternative to conventional styles of learning. Although it is far from perfect, it allows a wider spread of knowledge and a totally immersive pedagogy. VR is changing the way we work, learn and treat our patients. We have seen over time an evolution of orthodontic care by improving patient comfort. We are not just dealing

Fig. 4

Nikon KeyMission Utility.

Fig. 5

Operatory room in VR.

**Fig. 4****Fig. 5****Fig. 6**

Scan this QR code for a VR lecture.

with a set of teeth fixed into a bone mass appended to a skull, but with a person whose positive experience will inevitably lead to clinical success. Similarly, orthodontic education has evolved over

time, since the transmission of knowledge is no longer done with a Kodak Carousel slide projector, but with sophisticated presentation software, incorporating photographs and clinical videos. VR is paving the way to a higher degree of evolution regarding how to understand our environment, whether it is an environment of care or work. As with tourism or cinema, VR offers many opportunities in the field of health. Orthodontics is entering into a 360° revolution focused on the patient experience.

about



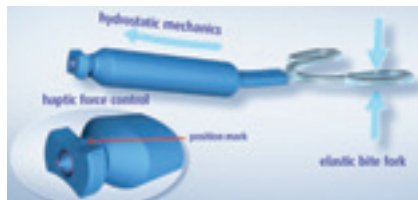
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Hydrostatic Splint Appliances for instant TMD Treatment



- **physiotherapeutic TMD training tool**
- **coordinative training of muscles with biofeedback**
- **relieves pain of masticatory muscles**
- **long lasting pain reduction**
- **dissolution of pain-related relieving postures**
- **activation of self-healing capacities**
- **clinically proven**
- **can substitute regular splints in some cases**

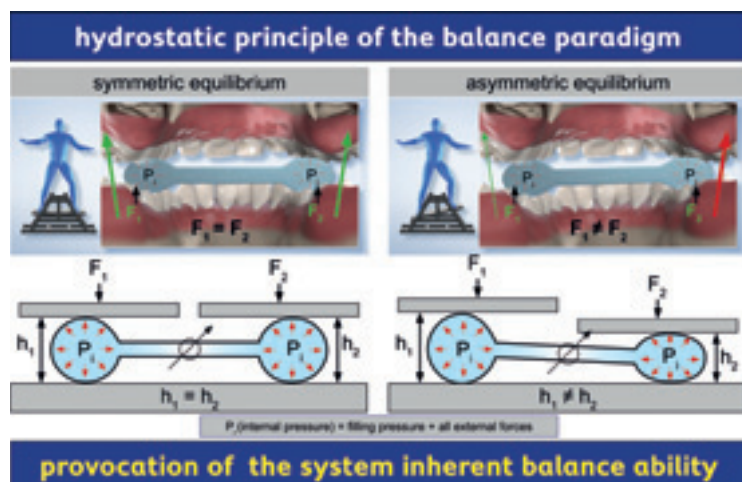


The Aquaizer's fluid system creates perfect bite balance and stability through a minimally invasive approach to TMD treatment. It works by allowing the muscles themselves to automatically reposition the jaw to where it naturally works best. For TMD pain relief, restoring this balance is essential.

Unlike other available dental splints, the Aquaizer self-adjusting oral splint is a TMD treatment which allows the body to unravel bite distortions and establish optimal systemic function and balance. The Aquaizer takes the uncertainty out of TMD diagnosis and treatment. While other dental splints and TMD treatment options can distort the jaw, causing TMD pain, the Aquaizer facilitates relief through ideal occlusion automatically and naturally. The Aquaizer is also a perfect supplement in other medical disciplines besides dentistry. Today this device is integrated into physical therapy, osteopathy, orthodontic treatment, orthopedics and many other medical disciplines.

- **anatomically shaped design for comfortable use**
- **ready to use**
- **selfadjusting splint within 30 seconds**
- **proven for more than 25 years**
- **moves mandible into a physiologic position**
- **different sizes**
- **different vertical dimension**

Every restoration, extraction, prosthetic and orthodontic treatment changes the occlusion in static and dynamic. Small occlusal interferences of just a few microns, are disruptive for the proprioceptors of the stomatological system. Patients are trying to compensate occlusal interference by adapting the mandible into a new habitual relieving position, with consequences for the attached tissue structures.



The first hydrostatic splint Aquaizer has been invented in the 1979 from Prof. Martin Lerman at the University of Illinois (TMJ Research Center). Since then Aquaizer has been used from countless patients as an instant drug free pain reliever. Latest clinical researches have proofed the therapeutic effect of hydrostatic self balancing splints. Reestablishing of a pain free neuromuscular position of the mandible after orthodontic treatment is essential for a long lasting therapeutic success. Hydrostatic Splints are valuable tools especially during the process of orthodontic treatment

