

# A new prefabricated full adaptable occlusal splint for the treatment of temporomandibular joint disorders – results of a patient's questioning

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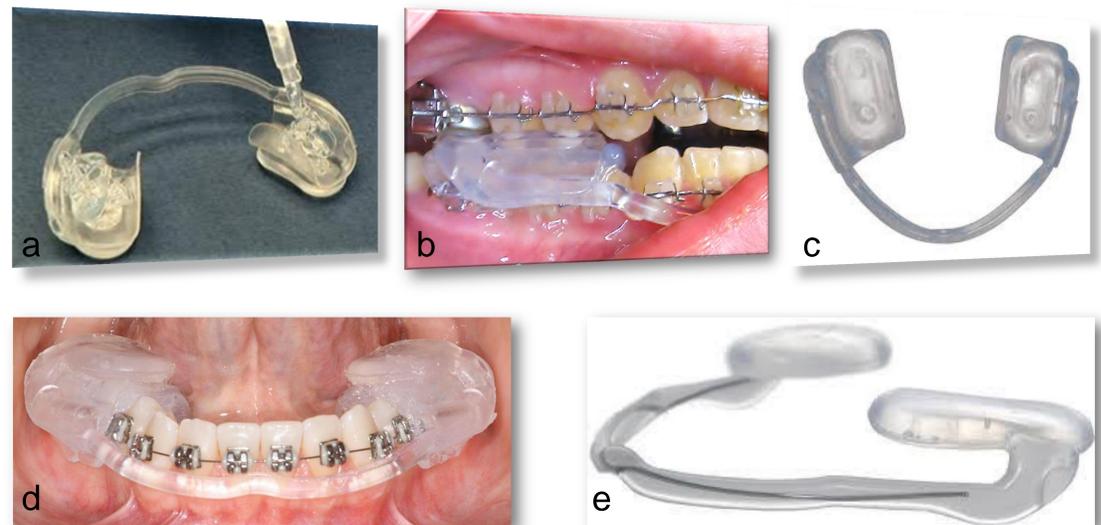
## Introduction

Occlusal interference can cause an imbalance of the muscle function affecting the stomatognathic system up to painful temporomandibular joint disorders (TMD) and joint compression. The most common symptomatic treatment is an occlusal splint therapy. By the reason of the difficulty to clinically capture the true relaxed jaw position, its fabrication and application often is misunderstood and splint therapy is still a subject of debate. To handle this source of error an occlusal adaptable splint could be a very helpful instrument to give the lower jaw the freedom to float in steady occlusion<sup>1</sup>.

AquaSplint is a pre-fabricated chair-side customizable self-adjusting splint, which consists of two water filled pads connected with a tube for hydrostatic balance (e). The water pads are provided with an acrylic saddle, which can be relined with a long-term silicone material for individualization (a-c). This process guarantees an immediate optimum fit and stability without any laboratory process even during orthodontic treatment (d). Occlusal interferences are switched off immediately and a pain relief is also to be expected in a contemporary way<sup>2</sup>.

## Aim of the current study

was to investigate patient's perception after the treatment with a new prefabricated chair-side customized, water based full adaptable occlusal splint (AquaSplint) in connection with temporomandibular joint disorders (TMD).



a-c) Intraoral adaptation and individualisation of AquaSplint by application of silicon lining  
d) Individualized AquaSplint during orthodontic treatment  
e) prefabricated AquaSplint demonstrating the design of the water filled pads connected with a tube for hydrostatic balance

## Materials and Methods

After conclusion of AquaSplint treatment, patients (n=100) were questioned by means of a standardized questionnaire, including the following questions:

- ✓ **Wearing period** (total wearing time, daytime, nighttime)
- ✓ **TMD** (pain relief, improvement of joint clicking or other diseases such as reduced mouth opening, headache, cervicale spine syndrome, tinnitus, vertigo; extend of improvement and beginning of relief in days)
- ✓ **Stability and wearing comfort** (stability of lining, presence and amount of pressure points, loss of water and in case, beginning in days, comfort in comparison to other splints)
- ✓ **Recommendation** (if pronounced, how strongly)

Every question was valued separately and results were given in percent.

## Results

In the majority of cases (82%) wearing period averaged 4, 5 and more weeks with 8h nighttime (48%) and 0 up to 1-2h (30% respectively) daytime. 73% reported an improvement of TMD symptoms, thereof 24% around up to 60%, and 18% up to 30% or up to 90%, respectively. 47% reported an improvement of joint clicking. In most cases TMD and pain relief appeared in the first (32.87%), second (23.29%) or in the third week or later (17.8%). 33% had additional disease, thereof 66.67% one, and 27.27% two, but no clear pattern of improvement could be registered.

The stability of the lining got lost in only 13% of all cases. The pads were firm and in 65% remained unchanged until the end of the therapy. In 29% of all cases the pads lost water but in the majority of cases (52%) only after 3 and more than 3 weeks.

However, there were hardly or no pressure points after AquaSplint application and most of the patients rated the AquaSplint as even more better (19%) and better (24%) than conventional splints. 47% of the patients would recommend an Aquasplint treatment very much.

## Conclusion

With TMD caused pain, AquaSplint is an excellent therapeutic for quick pain relief also during orthodontic rehabilitation.

## Literature

<sup>1</sup>Wright E., North S., „Management and Treatment of Temporomandibular Disorders: A Clinical Perspective“ J Man Manip Ther. 2009; 17(4): 247–254.

<sup>2</sup>Sabbagh A., Mahony D. „Functional Diagnostics & Aquasplint Therapy“, Australasian Dentist 2011, (40), 36-38