

## 9 SUMMARY

The purpose of this study was to determine the overall quality and duration of orthodontic treatment with fixed lingual Appliances as well as to identify factors affecting the quality of treatment outcome and the duration of the treatment. The treatment records of 50 consecutively finished patients were evaluated retrospectively.

The **Peer Assessment Rating (PAR)** Index was used to score pre- and post-treatment dental casts. The individual scores for various dental and occlusal components were weighted and summed. A PAR score of zero indicates good alignment, and higher scores indicate higher levels of irregularity.

- Kruskal-Wallis H test and the Mann-Whitney U test were used to compare the results. Statistical significance was set at  $p \leq 0.05$ .
- The sample comprised of more female patients (68%) and a lesser percentage of male patients. The average age at the start of treatment was 27.8 years (14 - 56.3 years). Most of the patients who started treatment were between 21 and 30 years old, 8 patients were younger than 18 years. At the start of treatment, 16 patients (32%) had an *Angle* Class II,1, 13 patients (26%) an *Angle* Class I, 11 patients (22%) had an *Angle* Class II,2 and 8 patients (16%) an *Angle* Class III.
- The treatment involved fixed lingual appliances using ormco 7<sup>th</sup> generation brackets. 12 patients (24%) were treated with modified *Hiro*-technique, 38 patients (76%) were treated in combination with Bending Art System (BAS). 6 patients (12%) received combined orthodontic treatment and orthognatic surgery. 27 patients (54%) had space closure as part of their treatment. This was needed because of extractions or congenitally missed teeth.
- To assess treatment standards, the PAR score difference between pre-treatment and post-treatment study casts is not appropriate due to a high correlation between PAR difference and the initial PAR score. The post-treatment PAR score is more favourable.
- The examined orthodontic department (Institut für Kieferorthopädie, Orthodontie und Kinderzahnheilkunde des CharitéCentrums für Zahn-, Mund- und Kieferheilkunde) seemingly produced a high standard of orthodontic care. The average pre- and post-treatment PAR scores were 22.0 and 2.0 respectively. The mean percentage reduction in PAR score was 88.5 percent. Post-treatment, 42 patients fell into the score group  $\leq 5$ , and 7 patients had a PAR score of  $> 5 \leq 10$ . 12 patients scored 0 at

the end of treatment. According to the categories of improvement 21 fell into the category “greatly improved”, 29 into the group “improved” and no patient ranked “worse or no different”.

- When treatment quality was analysed, of all the factors examined (type of therapy, extractions/agenesis, *Angle Class*) only *Angle Class* I and II,1 differed significantly.
- The mean active treatment duration was 24.6 months (6 - 48 months).
- When treatment duration was analysed, with all the factors examined (pre- and post-treatment PAR score, type of therapy, extractions/agenesis, *Angle Class*) only extractions/agenesis had a significant impact on treatment duration. The treatment duration was in the group of extractions/agenesis was significant longer than in non-extraction cases. Between the pre-treatment PAR score and the treatment duration a moderate positive correlation was found.