

Analysis of Occlusal Contacts Recorded with Intraoral Scanner in Patients with Juvenile Idiopathic Arthritis

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Objectives: to analyze occlusal contacts in young patients with juvenile idiopathic arthritis in comparison with young adults without arthritis.

Materials and methods: 21 young patients with diagnosis of juvenile idiopathic arthritis (according to ILAR criteria) aged from 18 to 34 years (mean age 23.14±4.01) who included 12 females and 9 males (research group) and 20 young adults without arthritis aged from 18 to 35 years (mean age 24.05±4.77) who included 10 females and 10 males (comparison group) were examined at Dental Medical Center of Bogomolets National Medical University. Intraoral scans of the jaws and bite records were obtained with Medit i500 intraoral scanner. Presence of premature contacts was checked in maximal intercuspal position as well as during protrusion and laterotrusion. Bite class according to Angle's classification was also estimated.

Results: Within the research group 5 patients (23.8%) had premature contacts in maximal intercuspal position, 6

patients (28.6%) – during protrusion and 7 patients (33.3%) - during laterotrusion; 10 patients (47.6%) had I class bite, 7 patients (33.3%) - II class bite, 4 patients (19.1%) – III class bite; Within the comparison group 3 patients (15%) had premature contacts in maximal intercuspal position, 3 patients (15%) – during protrusion and 4 patients (20%) - during laterotrusion; 12 patients (60%) had I class bite, 6 patients (30%) - II class bite, 2 patients (10%) – III class bite.

Conclusions: higher level of premature contacts as well as malocclusion prevalence were revealed in young patients with juvenile idiopathic arthritis in comparison with young adults without arthritis. That's why such patients may need proper occlusal correction to prevent further temporomandibular disorders development.

Keywords: dental occlusion, bite registration, canine guidance, malocclusion, juvenile arthritis.

The authors declare the absence of any conflict of interest.

An In Vitro 3-Dimensional Comparative Analysis of Four Intra-Oral Scanning Devices in Vertical Preparation For Fixed Dental Prosthesis

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Objectives: To test differences in term of trueness and precision among the different Intraoral scanners (IOSs) in scanning a vertical preparation on natural teeth.

Materials: A reference maxillary typodont (RT) was fabricated by performing a vertical preparation with knife edge finish line for full crown on #16 and #21. The RT was scanned with a laboratory scanner (Aadva lab scanner, GC, Tokyo, Japan) to obtain a digital reference typodont (dRT) in .stl format file. A group of 40 digital casts (dIOC) were obtained by scanning the RT 10 times with four different IOSs (Trios 3; 3Shape A/ S), (I700, Medit), (Vivascan; Ivoclar), (Aadva IOS200, GC). All the obtained dIOC were imported into an inspection software program (Geomagic Control X; 3D SYSTEMS) to be superimposed to the dRT, to calculate trueness. Therefore, in order to calculate precision all the scans of the same scanner group were superimposed onto the cast that recorded the best result of trueness. Results were collected as root mean square value (RMS) on #16 and #21 abutment surfaces. The obtained data were evaluated with Kolmogorov-Smirnov for

normal distribution. A nonparametric analysis Kruskal-Wallis test was performed to compare the RMS values obtained in the different iOS groups for trueness and precision. Statistically significant was set at 0.05.

Results: Table 1: The mean values and standard deviations of each scanner regarding the trueness and precision on the prepared abutments. Letters reported the statistical significant differences in between the groups P<0.05

IOS	Trueness M	Trueness I	Precision M	Precision I
Trios 3	60,2 ± 4,9 ^a	68,7 ± 4,0 ^b	31,7 ± 13,1 ^b	18,0 ± 2,7 ^a
I700	58,0 ± 8,9 ^a	83,3 ± 5,1 ^c	15,8 ± 2,7 ^a	29,8 ± 3,7 ^b
Vivascan	69,6 ± 6,9 ^a	56,0 ± 12,1 ^a	41,4 ± 20,2 ^c	49,9 ± 19,6 ^c
Aadva 200	55,4 ± 5,6 ^a	59,2 ± 2,7 ^a	10,7 ± 2,1 ^a	16,9 ± 13,8 ^a

Conclusions: With in the limits of the present study, it can be concluded that in vertical prepared teeth the trueness obtained using different scanners differ with statistical significance only in the incisor abutment, Aadva scanner resulted as the most precise in both M and I abutments.