

**Republic of Iraq
Ministry of Higher Education
And Scientific Research
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College of Dentistry**



**Oral Health Status among Group of Patients
Treated with Fixed Orthodontic Appliance at
Different Time Intervals in Relation to White
Spot Lesions
(Follow-up Study)**

A Thesis

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Abstract

Background: - Initial caries development (white spot lesions) is serious negative effect of fixed orthodontic treatment, particularly associated with oral hygiene status. Orthodontic patients had developed a risk for caries and gingivitis that lead to poor aesthetics, patient complaint and legal problems.

Aims of study:- To assess oral hygiene, gingival health condition, caries experience and white spot lesions among patients with fixed orthodontic treatment at four time intervals and to assess the relation between white spot lesions with oral hygiene, gingival health condition, caries experience.

Materials and Methods: - An observational follow- up study had been carried out in Specialist Health Centre for orthodontic and prosthodontics in Bab Al-Muadham\ Baghdad City among group of patients with fixed orthodontic appliances. Study sample consisted of thirty two patients underwent a clinical evaluation of oral hygiene, gingival health condition and caries experience using plaque index (Silness and Loe, 1964), calculus index (Green and Vermillion, 1960), gingival index (Loe and Silness, 1963) and DMFS index (WHO, 1987) before placement of orthodontic appliance and in the follow- up visits. In addition, enamel decalcification index by (Banks and Richmond, 1994) also used to assess white spot lesions in four time intervals after orthodontic appliance insertion.

Results: - The results revealed that the mean values of plaque, calculus and gingival indices at the beginning of treatment were 0.46 ± 0.21 , 0.00 ± 0.00 and 1.00 ± 0.24 respectively and they increased with high significant difference during four time intervals to reach 0.82 ± 0.26 , 0.49 ± 0.46 and 1.63 ± 0.39 respectively after six months of treatment.

Development of new carious teeth occurred after four months of orthodontic treatment. There was a high significant difference in the mean value of DMFS during orthodontic treatment which was at the end of the study 10.53 ± 7.15 compared to base line visit 8.66 ± 7.00 .

White spot lesions developed after 2-3 weeks after appliance insertion with mean value 2.22 ± 3.81 and the teeth affected were 1.75 ± 2.95 , then a sharp increase revealed in the follow up visits that reached 24.59 ± 13.34 and the teeth affected were 12.00 ± 4.08 at the end of study.

White spot lesions developed in maxillary arch more than in mandibular arch with a significant difference found in the third visit and a high significant difference found in the fourth visit, white spot lesions mostly found developed in the left side more than right side but no significant difference recorded in all visits.

The most affected teeth were maxillary second premolar and mandibular canine teeth, while the least affected teeth were the maxillary and mandibular central incisors. It was found that gingival area in the upper and lower arches was the most affected area with white spot lesions around bracket.

A direct correlation was revealed between white spot lesions and dental plaque, gingival health and dental caries which were highly significant with plaque, significant with gingival health in the third visit and not significant with dental caries. There was also a reversed not significant correlation between calculus formation and white spot lesions.

Conclusions:-Fixed orthodontic appliances convinced a certain risk for the development of initial and even cavitated carious lesions. A correlation between plaque formations, gingival health with white spot lesions development appeared to be existing.