

Rate of Force Decay for Different Types of Extra-Oral Elastics

(A Comparative in Vitro Study)

***A Thesis
Submitted to the
College of Dentistry, University of Baghdad
In partial Fulfillments of the Requirements
For the Degree of Master of Science
In Orthodontics***

By

***Anas K. Al-Qasim
B.D.S***

***Supervised by
Prof. Dr. Nidhal H. Ghaib
B.D.S,M.Sc.***

Baghdad -Iraq

July- 2006 A.D

Gamada Al-Thani 1427 A.H

Abstract

The extra oral elastics are considered an important part of extra oral appliance (head gear, reverse head gear, and chin cap) which is use in applied forces either to move the teeth , or to reinforce the anchorage, and to produce orthopedic changes to alter or restrain the craniofacial bony growth.

This study was carried out to measure the rate of percentage of force decay for the extra oral elastics of three different companies in dry condition at room temperature.

Sixty extra oral elastics were taken, 20 samples from each company (Rocky Mountain Orthodontics, ORMCO, Ortho organizer). All the elastic were tested by an instron testing machine to measure the force exerted by the elastic over a constant extension at different time intervals (zero time,3 hours, 24 hours, 72 hours, 168 hours, 216 hours). The results showed the following :

The percentage of force decay for all the tested elastics of three companies show that there is a continuous decay throughout the experimental period, and the maximum level of force decay for ORMCO company at 24 hours, while for both ortho organizer and Rocky Mountain Orthodontics companies at 3 hours .

The total percentage of force decay for ORMCO , Ortho organizer,and Rocky Mountain Orthodontics are 26.4 % ,27.4 % ,27.8 % respectively.

Also the mean decay percentage of the three companies at 24 hours are 16.6 % ,18.9 % ,21.8 % for ortho organizer ,ORMCO, and Rocky Mountain Orthodontics respectively which are about 1/2 or more than 1/2 of the total percentage of force decay for each company ,during the whole period of this study.

We can conclude that the patient have to change the extra oral elastics every day to maintain the same level of force during the treatment period. as these elastic loss about 16-21% of its initial force during the first 24 hours.