

University of Baghdad

College Name	College of dentistry		
Department	Basic sciences		
Full Name as written in Passport	Noor Raouf AL-Hasani		
e-mail	hareer83@yahoo.com		
Career	<input checked="" type="radio"/> Assistant Lecturer	<input type="radio"/> Lecturer	<input type="radio"/> Assistant Professor
	<input checked="" type="radio"/> Master	<input type="radio"/> PhD	
Thesis Title	<i>Clinical Significance of Calcitriol Local Injection in Orthodontic Tooth Movement</i>		
Year	2011		
Abstract	<p>Orthodontics plays an important role in treating different kinds of dental and/or skeletal malocclusions and, hence, improving esthetics, function, and psychology. Orthodontic treatment has two major problems: being lengthy and costly procedure. The present study was designed to verify the clinical efficiency of locally injected vitamin D₃ (calcitriol) in accelerating orthodontic teeth movement (OTM) and its effectiveness in reducing treatment time and cost for the first time in humans, and consequent changes related to such intervention. The study was performed on 15 Iraqi adult orthodontic patients within the age range 17-28 years, who have been randomly ranked into three groups, each of five patients. Three concentrations of vitamin D₃ (calcitriol), diluted with dimethylsulfoxide (DMSO), have been used are 15 pg/0.2ml, 25 pg/0.2ml, and 40 pg/0.2ml, respectively. The maxillary arch of every patient has been divided into control (right) and experimental (left) sides in which, in addition to force application, the right canine received 0.2 ml DMSO injections while the left canine received the calcitriol injections. The follow up period for every patient included five visits at one week intervals through which every patient received two injections three times. Every patient has been subjected to the following evaluations: In addition to measurement of OTM and GCF, blood investigations performed to evaluate the effects of calcitriol on calcium and phosphate homeostasis, renal and liver functions, and monitoring of gingival inflammation. The results showed mild and statistically non</p>		

significant systemic influence of calcitriol on blood levels of alkaline phosphatase (ALP), calcium (Ca) and phosphate (PO_4), renal and liver function parameters. Statistically non significant differences have been found between control and experimental sides, and among the three groups concerning the rate of canine movement. However, on clinical efficacy basis, the concentration of 25 pg/0.2 ml calcitriol produced about 51% faster rate of experimental canine movement compared to control, while each of the 15 pg/0.2 ml and 40 pg/0.2 ml concentrations resulted in about 10% accelerated OTM. Furthermore, both of the control and experimental sides showed higher rates of OTM when compared to the normally known OTM rate (with a double rate by the experimental side). The periapical radiographs showed no any damaging effect of calcitriol to the surrounding tissues. In conclusion, for the first time we reported that locally injected calcitriol can be used as a valuable clinical adjunct to the orthodontic force to accelerate OTM rate and, hence, reducing the orthodontic treatment time and cost.