Université de Montréal

EFFECT OF OSTEOGENESIS IMPERFECTA ON ORTHODONTIC TOOTH MOVEMENT IN A MOUSE MODEL

Dr. Jean Rizkallah, University of Montreal

Introduction: Osteogenesis imperfecta (OI) is a heritable bone disorder that affects collagen type I production and bone remodeling. Orthodontic tooth movement (OTM) involves the underlying process of alveolar bone remodeling. The objective of this study is to evaluate OTM in a mouse model of OI.

Methods: Twenty four, 10 week-old female mice were divided into 4 groups: 1- OI treated with zoledronate, 2- OI untreated, 3- Wild-type (WT) treated with zoledronate and 4- WT untreated. A nickel-titanium closed coil spring (10 g) was attached between the incisors and the right maxillary 1st molar. The contralateral side was used as control. Zoledronate (0.05mg/kg) was administered sub-cutaneously 1 day prior to surgery. Seven days after the procedure, the distance between 1st – 2nd molars was measured by micro-CT.

Results: OI mice presented significantly more OTM than WT mice when comparing within untreated groups ($p<0.05$). Zoledronate treatment had no significant effect on OTM within OI and WT groups.

Conclusions: These results suggest increased OTM in mice with OI. The dose of zoledronate administrated 1 day prior to surgery had no significant effect on OTM.

Keywords: *osteogenesis imperfecta, orthodontic tooth movement, mice, bisphosphonates, micro-CT.*

Being presented as part of the "Latest Advances in Canadian Orthodontic Research", Saturday, September 6th.