Title: **Effect of Autologous Platelet-Rich Plasma on Distraction Osteogenesis of the Mandible in Rabbits.**

Distraction osteogenesis of the jaws is a common practice in the treatment of pediatric craniofacial deformities whereby, successful clinical outcome depends on a coordinated multidisciplinary treatment. Autologous platelet rich plasma (PRP) has been used to increase the healing potential of long bones in humans during distraction osteogenesis. This research aims to study the effect of PRP on bone healing after mandibular distraction in rabbits.

Right mandibular distraction was performed in 10 rabbits divided into 2 groups of 5 each. PRP and physiological saline were injected, according to a defined protocol, in the callus following distraction in the experimental and control groups respectively. The rabbits were sacrificed after a consolidation period of 45 days and the mandibles were surgically removed. Bone mineral density, radiographic analysis, mechanical properties and histological features of the lengthened bones were assessed using radiographic examination, dual X-ray absorptiometry, biomechanical testing and histology.

Results showed that the regenerate bone density, the amount of trabeculation in addition to the bone mineral density and mineral content, as measured by absorptiometry, were not significantly different between groups. However, the biomechanical test depicted a maximal load in the experimental group almost twice the control. Furthermore, the histological studies exhibited more ossification and less connective tissue fibers in the experimental treated with PRP rabbits.

In conclusion, this research showed that PRP accelerated healing of mandibles in rabbits following distraction and improved their biomechanical properties. These findings are of great value since the mandible as a bone cannot be immobilized like other bones for a long period of time.

**Keywords:** Mandibular Distraction, Platelet-Rich Plasma, Mandible osteogenesis.