Stimulation of Rabbit Condyle Growth By Using Pulsed Therapeutic Ultrasound

(A radiographical and Histological Experimental Study)

A Thesis

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Abstract

Many difficulties faced the orthodontic clinician during treatment of class II malocclusion cases in the preadolescence period, these difficulties are due to the poor cooperation of the patients with the myofunctional appliances.

In Orthopedic treatment, Low intensity Pulsed Ultrasound has many effects on acceleration of bone fracture healing due to its Physical effect and Piezo-electral effects.

The present research was carried out to evaluate the effect of Low Intensity Pulsed Ultrasound application on mandibular condyle radiographically and histologically to evaluate the use of low intensity pulsed ultrasound in condyle growth modification in the treatment of skeletal class II malocclusions in the growth period.

The sample was 15 New Zealand male rabbits in which Therapeutic Ultrasound was applied to the left condyle (treated group) for 28 days while the right condyle was without ultrasound application (controlled group), After animal sacrifying , the rabbit mandibles were dissected into two hemi mandible, left (treated) and right (control), radiographic image for each hemimandible was done and three linear measurements were made, (Ramus height, condylar height and mandibular height). Then these hemi mandibles examined histologically including calculating chondrocyte number, osteocyte number, cartilage area calculation and subchondral bone area measurements.

The results showed:

- The increasing of all linear measurements as a result of enhancement of chondrocytes, osteocytes ,increase of cartilage area and bone area in the treated group.
- There is significant correlation between all linear measurements andchondrocyte and cartilage area.

Concluding that low intensity pulsed ultrasound can accelerate condyle cartilage growth.

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