

## **ABSTRACT**

### **Aims and objectives:**

This invivo study aims to assess skeletal maturity by measuring salivary IGF-1 levels. The objectives were i) to assess whether salivary IGF-1 levels can be used as a skeletal maturity indicator; ii) to compare the mean IGF -1 levels at different stages of skeletal maturity using MP3 staging.

### **Materials and method:**

MP3 radiographs and saliva samples of 30 patients divided into 3 Groups (10 in each group) between the age range 7-18 yrs were collected. Saliva would be aspirated from the floor of mouth using a 3ml micropipette by use of gentle suction and then it would be transferred to individual centrifugable collector. Saliva samples from each patient would be collected and transferred in a standard thermal box with icepacks maintained at temperatures between 2°-8° C to the Biogenix Research centre, Trivandrum on the collection day itself. Before the assay, thawed saliva would be centrifuged for 10minutes at 3000rpm at 4° C and a clear, non-viscous sample would be analyzed. The samples would then be analyzed by human IGF-1 Enzyme-Linked Immunosorbent Assay kits (ELISA) specific for salivary IGF-1 protein structure. The absolute concentration of IGF-1 in unit sample (pg/ml) would be found out and recorded.

For capturing the digital radiographic image, the subjects would be instructed to place his/her left hand with palm downward on a flat table, marked for placing the middle finger. The middle finger was centered on a 31 x 41 mm periapical dental x-ray film parallel with the long axis of film. The cone of the dental

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radiograph machine was positioned in slight contact with the middle phalanx of the third finger, perpendicular to the IOPA film. All MP3 radiographs would be classified according to Modified MP3 staging criteria by R. Rajagopal, Sudhanshu Kansal by two independent blindfolded examiners.

**Result**

The study showed that the mean of IGF-1 values of pubertal group was significantly higher than that of post pubertal and prepubertal group. Also Post HOC test values showed that the comparison between prepubertal and pubertal group showed statistically significant higher mean of pubertal group as compared to prepubertal group. Comparison between prepubertal and post pubertal group showed statistically significant higher mean of postpubertal group as compared to prepubertal group. But when comparing pubertal and postpubertal group no statistically significant difference between the two groups was found.

**Conclusion**

In the present study the salivary IGF-1 levels follow the same pattern of a sharp acceleration to a peak in puberty and a more gradual fall thereafter. The levels obtained in prepubertal stage was lowest, and in pubertal group was highest. Whereas the levels at post pubertal stages showed almost same value as pubertal. Longitudinal data are necessary to confirm the usefulness of this technique in predicting the timing, intensity, and the end of growth spurt.

**Keywords:**

Insulin- like growth factor 1, Saliva, MP3 radiographs.

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