

Mandibular bone growth in relation to long-term chronological age in syndromic patients subjected to osteogenic distraction

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Introduction

The study of growth and development is a period of great activity in which each child and adolescent has their own growth rate. Because growth is not uniform among syndromic individuals, chronological age does not allow us to check the periods in which growth is accelerated, slowed or stopped. Different physiological parameters have been evaluated over time to assess growth and development and thus achieve an estimate of biological age, including: chronological age, dental development, weight, bone development estimated from the bones of the hand and cervical vertebrae. Normally the dental age and the chronological age coincide, however, in patients with mandibular hypoplasia it may not be fulfilled. The evaluation of bone development from the cervical vertebrae is a method that has been proven to be reliable and does not require additional radiographic exposure, since the lateral cephalic radiography is necessary for the diagnosis, planning the placement of osteogenic distractors, as well as the control during distraction and after withdrawal.

Objective

The purpose of this study is to corroborate mandibular bone growth with regard to dental age and vertebral bone maturation stages, in relation to long-term chronological age in syndromic patients subjected to osteogenic distraction

Result

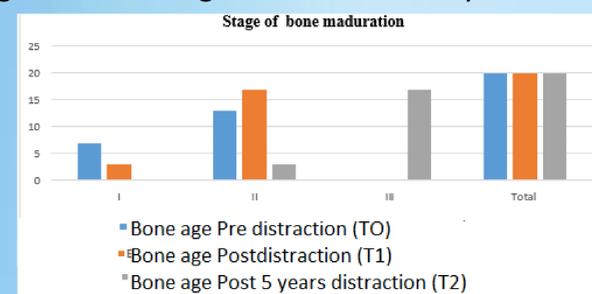
20 patients between 10 and 13 years old were studied, who attended the postoperative control in the company of their representatives in the Oral and Service of Maxillofacial Surgery of "Dr. Ángel Larralde" Carabobo-Vzla, after performing a mandibular osteogenic distraction. Patients undergoing intraoral osteogenic distraction are evaluated by quantifying changes in position, dental stage, and cervical maturation stage.



Age		%
10	10	50
11	7	35
12	2	10
13	1	5
$\bar{X} \pm Es$	10,7 ± 0,86	
Gender		%
Women	7	50
Males	11	50
Clinical Dx	f	%
Hemifacial Microsomy	6	30
Pierre Robin sequence	14	70
Total	20	100

The mean chronological age of the patients after 5 years of distraction was 10.25 ± 0.97 years, while the mean dental age corresponded to 6.86 ± 1.51 years, which increased with respect to at T1 reporting 4.54 ± 1.14 .

The cases according to the stages of vertebral bone maturation, it was observed that 85% of the children stage III, followed by 15.5% who are in stage II. An increase in the values was appreciated as chronological age and dental age increased. Therefore, for stage II, the average chronological age was 10.3 years; and for stage III the average increased 10.24 years.



Different elements are used to measure the patient, such as: lateral cephalic X-ray where the stage of bone maturation according to Baccetti was evaluated, as well as the dental age was determined by means of the Dermejian stage in the orthopantomography, cone beam computed tomography, facial photographs and studies of models in 3 phases: pre-surgical (T0), after removal of osteogenic distractors (T1) and late postoperative period of 5 years (T2) of each of the treated patients.

Conclusion

It is important to note that research confirms that chronological age does not allow an exact determination of bone maturation, much less estimate the maximum peak of pubertal maturation, in the study by reviewing the relationship between chronological age and cervical maturation stages of In the children studied, it is found that in the maturation stages there is an increasing trend as the chronological age increases. Regarding dental age, there was an underestimation with respect to chronological age.

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