

# EVALUATION OF NASO-MAXILLARY COMPLEX CHANGES INDUCED BY RAPID PALATAL EXPANSION, USING THREE-DIMENSIONAL CONE BEAM COMPUTED TOMOGRAPHY.

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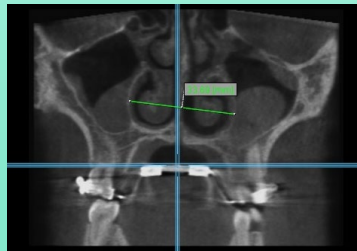
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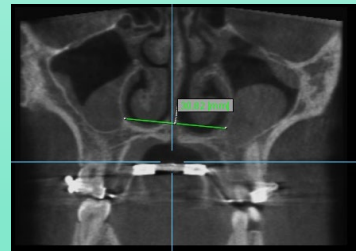
**Introduction:** Rapid palatal expansion (RPE) is a commonly used orthodontic procedure for correcting maxillary transverse deficiency. When it is performed during patient's growth period, RPE has also an impact on nasomaxillary development.

**Aim:** Aim of this prospective clinical trial was to investigate the naso-maxillary complex changes after RPE using cone beam computed tomography (CBCT).

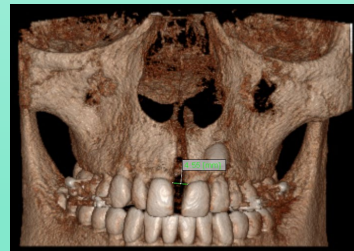
**Method:** The study group consisted of 11 patients (4 boys, 7 girls; mean age 11.18 years) with posterior crossbite who underwent RPE with a Hyrax-type device as part of their comprehensive treatment. CBCT scans were obtained before RPE (T1), after the end of expansion (T2) and 6 months post-expansion (T3). 11 measurements were used to evaluate the dimensions of nasal width (6 different slices on CBCT), nasal floor (3 different slices on CBCT) and aperture of midpalatal suture (2 different slices on CBCT). Differences between all variables at the three-time intervals was performed using the paired Wilcoxon signed-rank test which helps to compare the statistically significant differences ( $p < 0.05$ ) of the measurements.



Nasal width



Nasal floor



Aperture of midpalatal suture

**Results:** Rapid maxillary expansion induced statistically significant increase of the naso-maxillary complex dimensions in nasal width, nasal floor and aperture of the mid-palatal suture at all three-time intervals. No statistically significant differences were found at the maximum distance between the inner right and inner left surface of nasal cavity with nasal septum respectively, on coronal slice through the center of mesial buccal root of first premolar between T1-T3 and T2-T3. All differences are cited in the table below.

Measurement	Differences	P value	P signif	Measurement	Differences	P value	P signif
Nasal Width 1	T2-T1= 2.120	0.003	**	Nasal Floor 7	T2-T1= 2.295	0.003	**
	T3-T1= 1.217	0.003	**		T3-T1= 1.528	0.003	**
	T3-T2= -0.903	0.012	*		T3-T2= -0.767	0.021	*
Nasal Width 2	T2-T1= 2.083	0.003	**	Nasal Floor 8	T2-T1= 2.199	0.003	**
	T3-T1= 1.188	0.003	**		T3-T1= 1.273	0.012	*
	T3-T2= -0.895	0.021	*		T3-T2= -0.926	0.006	**
Nasal Width 3	T2-T1= 2.870	0.003	**	Nasal Floor 9	T2-T1= 3.143	0.012	*
	T3-T1= 1.730	0.003	**		T3-T1= 1.480	0.003	**
	T3-T2= -1.140	0.029	*		T3-T2= -1.663	0.041	*
Nasal Width 4	T2-T1= 1.142	0.015	*	Aperture of Midpalatal suture 10	T2-T1= 2.104	0.012	*
	T3-T1= 0.382	0.525	ns		T3-T1= 1.240	0.012	*
	T3-T2= -0.760	0.097	ns		T3-T2= -0.774	0.012	*
Nasal Width 5	T2-T1= 1.342	0.006	**	Aperture of Midpalatal suture 11	T2-T1= 4.596	0.012	*
	T3-T1= 0.728	0.151	ns		T3-T1= 1.869	0.011	*
	T3-T2= -0.614	0.744	ns		T3-T2= -2.727	0.012	*
Nasal Width 6	T2-T1= 2.682	0.003	**				
	T3-T1= 1.294	0.003	**				
	T3-T2= -1.388	0.003	**				

**Conclusion:** RPE significantly increased the naso-maxillary complex dimensions in the short term, contributing to a decrease in airway resistance and to proper growth and development of the craniofacial complex.

## References

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**Declaration:** There is no conflict of interest in this poster