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# CRANIOFACIAL ABNORMALITIES



It is well documented that mouth-breathing children grow longer faces. A paper by Tourne entitled *The long face syndrome and impairment of the nasopharyngeal airway*, recognised that “the switch from a nasal to an oronasal (mouth and nose combined) breathing pattern induces functional adaptations that include an increase in total anterior face height and vertical development of the lower anterior face.”<sup>17</sup>

In another paper, Dr Carl Schreiner comments that “Long-standing nasal obstruction appears to affect craniofacial morphology during periods of rapid facial growth in genetically susceptible children with narrow facial pattern.”<sup>18</sup>

In a paper entitled, *Care of nasal airway to prevent*

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*orthodontic problems in children*, “a mouth breather lowers the tongue position to facilitate the flow of air in to the expanding lungs. The resultant effect is maldevelopment of the jaw in particular and deformity of the face in general. Setting of the teeth on the jaw is also affected. All these make the face look negative. So, to prevent orthodontic problem in children, it is necessary to detect the nasopharyngeal obstruction and treat the same accordingly.”<sup>19</sup>

In a study of 47 children between the ages of 6 to 15 years that was done to determine the correlation between breathing mode and craniofacial morphology, “findings demonstrated a significant predominance of mouth breathing compared to nasal breathing in the vertical growth patterns studied.” The paper concluded that, “results show a correlation between obstructed nasal breathing, large adenoids and vertical growth pattern.”<sup>20</sup>

Another study involving 73 children between the ages of 3 to 6 years that was done to determine the influence of mouth breathing on dentofacial growth and development concluded that “mouth breathing can influence craniofacial and occlusal development early in childhood.”<sup>21</sup>

In a paper entitled “Malocclusion and upper airway obstruction,” 49 children with confirmed nasal obstruction were studied. The paper noted that “the main characteristics of the respiratory obstruction syndrome

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(blocked nose) are presence of hypertrophied tonsils or adenoids, mouth breathing, open bite, cross bite, excessive anterior face height, incompetent lip posture, excessive appearance of maxillary anterior teeth, narrow external nares, V-shaped maxillary arch (top jaw).”<sup>15</sup>

When the tongue is not resting in the roof of the mouth, the jaws are impeded from growing forward and are instead set back from their ideal position. This contracts the airways, contributing to breathing difficulties and sleep apnoea. In addition, the nose will seem larger, similar to that of a roman nose. The “nose is more pronounced in an ideal occlusion (straight teeth) but in the various malocclusions (crooked teeth) where the maxilla (top jaw) is underdeveloped it appears larger, although in fact it is smaller.”<sup>1</sup>

“Lack of growth affects the whole face and is associated with flat cheeks, unattractive lips, large noses, tired eyes, double chin, receding chins and sloping forehead, features that will be readily recognised when there is a pronounced crowding of teeth.”<sup>22</sup>

Given the extent of information available, it is surprising that few dentists seem to be aware of the craniofacial effects from mouth breathing. The journal *General Dentist* noted that “the vast majority of health care professionals are unaware of the negative impact of upper airway obstruction (mouth breathing) on normal facial growth and physiologic health. Children

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whose mouth breathing is untreated may develop long, narrow faces, narrow mouths, high palatal vaults, dental malocclusion (crooked teeth), gummy smiles and many other unattractive facial features. These children do not sleep well at night due to obstructed airways; this lack of sleep can adversely affect their growth and academic performance. Many of these children are misdiagnosed with attention deficit disorder (ADD) and hyperactivity.” The paper further states that “if mouth breathing is treated early, its negative effect on facial and dental development and the medical and social problems associated with it can be reduced or averted.”<sup>23</sup>

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# REVERSIBLE AT AN EARLY AGE

Learning correct breathing and swallowing before the age of eight years often corrects facial development without the need for any orthodontic treatment. As the lower jaws are still developing until the age of eighteen, teenagers can also derive considerable benefit.

Furthermore, the success of any orthodontic treatment depends on the application of correct breathing and swallowing. Estimates in the field are that up to 90% of orthodontic work relapses unless poor oral habits such as mouth breathing are addressed.<sup>5</sup>

In a paper entitled, Nasal obstruction in children and secondary dental deformities, “Effective orthodontic therapy may require the elimination of the nasal obstruction to allow for normalization of the facial musculature surrounding the dentition.”<sup>9</sup> In other words, for orthodontic treatment to be effective, patients must be taught how to unblock their noses, breathe through their noses and swallow correctly.

During the 70s and 80s, Linder-Aronsen consistently noted the relationship between nasal obstruction and craniofacial changes, including longer faces, open bite and cross bite. More importantly, significant craniofacial changes toward normal were observed to take place after patients returned to nasal breathing.<sup>24,25,26,27</sup>

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In another study of 26 children, Kerr showed how development of the lower jaws began to normalise after they switched from mouth to nasal breathing.<sup>28</sup>

Finally, “Evidence of reversibility is also strongly supported by studies of monozygotic twins in which one developed nasal obstruction due to trauma. The obstructed twin developed characteristics of the long face syndrome which partially normalized following correction of the (nasal) obstruction.”<sup>9</sup>