

# 특강 III

11월 6일(토) 9:00-10:30

Coex 3층 오디토리움

## Open Bite: Stability of Surgical vs. Non-Surgical Treatment

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In this presentation I will review the available scientific literature regarding the stability of open bite treatment treated non-surgically and surgically. The main issue to be addressed is whether the stability of open bite treatment is a significant clinical problem. In a recently published review paper on the stability of open bite treatment, Huang searched the English language literature for papers with reasonable methodologies, sample sizes and follow-up periods. He found six papers that evaluated open bite stability in non-surgical patients and 15 papers that evaluated the same in orthognathic surgical patients. Obviously, there are relatively few scientific studies that have evaluated stability of open bite treatment.

Lopez-Gavito et al evaluated the cephalometric radiographs of 41 patients (29 females, 12 males) pre-treatment, immediately post-treatment and ten years postretention. These patients were adolescents in the permanent dentition who had Class I or II malocclusions. All patients had open bites of at least 3 mm. The patients were treated conventionally with fixed appliances, headgears and elastics. Long-term 35% of the patients had an open bite of 3mm or more; 65% of the patients had relatively stable result. In 1990 Zuroff (3) evaluated open bite patients who had an average open bite of -2.23 mm. Ten years postretention 60% of the open bite subjects did not have incisor contact. As with Lopez-Gavito's study, analysis of pre-treatment records did not allow prediction of stability or instability of the treatment result.

To give some perspective to the stability of open bite treatment in patients treated by conventional orthodontic means, it is helpful to compare that to the stability seen in non-growing open bite patients treated surgically. Denison et al evaluated 28 patients with open bite who had Le Fort I osteotomies for the purpose of decreasing facial height. Long-term 43% of the open bite sample had a statistically and clinically significant increase in facial height, decrease in overbite and eruption of maxillary molars. Twenty-

Twenty-one percent of the open bite sample relapsed to having no overlap. In a recently published study, Proffit et al evaluated the long term stability of open bite patients treated with Le Fort I osteotomy. In 75% of the subjects who showed a post-treatment increase in anterior facial height, further eruption of the incisors maintained the overbite. The authors speculated that in the other 25% incomplete adaptation of tongue posture may have led to a lack of incisor eruption and a tendency for return of the open bite.

As would be expected, the etiology of open bite malocclusion varies with individual patients, but a number of factors have been generally associated with the problem: growth pattern, digit sucking, abnormal tongue function, nasal airway obstruction, mouth breathing, and abnormal mandibular or head posture. While an excessive amount of vertical growth may be associated with anterior open bite, there are many patients who have long faces and deep overbites. Also there are patients with normal skeletal patterns who have persistent open bites. Digit sucking, as with any physical interference with tooth eruption, can be a cause of anterior open bite. Partial nasal airway obstruction, caused by any number of problems, may be related to anterior open bite, but there are many patients who have those problems who do not have open bites. Many therapies have been advocated to increase stability of open bite correction, including crib therapy, myofunctional therapy, and partial glossectomy. While there are a number of case reports that show good short-term results, there are no long-term data to support these treatments.

Other non-surgical therapies have been used to treat open bites. They include multiloop edgewise arch wires, chin cups, functional appliances of various designs, and bite blocks with and without magnets. While there are many case reports showing excellent management of vertical facial height and anterior open bites, there are no studies that show long-term stability of open bite treatment with any of these methods.

In summary, let us return to the original questions about the stability of orthodontic correction of anterior open bite malocclusion. Is stability of open bite a clinical problem? Yes, in that Huang reported that 20% to 25% of open bite patients do not have incisal overlap long-term. There are many possible explanations for this instability, but most evidence would point to the non-adaptation of the tongue. Understanding the etiology of the open bite in individual patients may help us to improve the long-term stability of their correction, but scientific research to test these theories is necessary.