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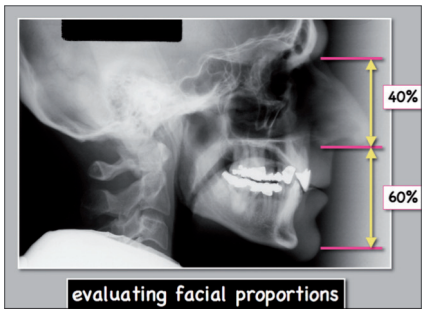
Interview with Vincent KOKICH

Conducted by and translated by Sophie ROZENCWEIG



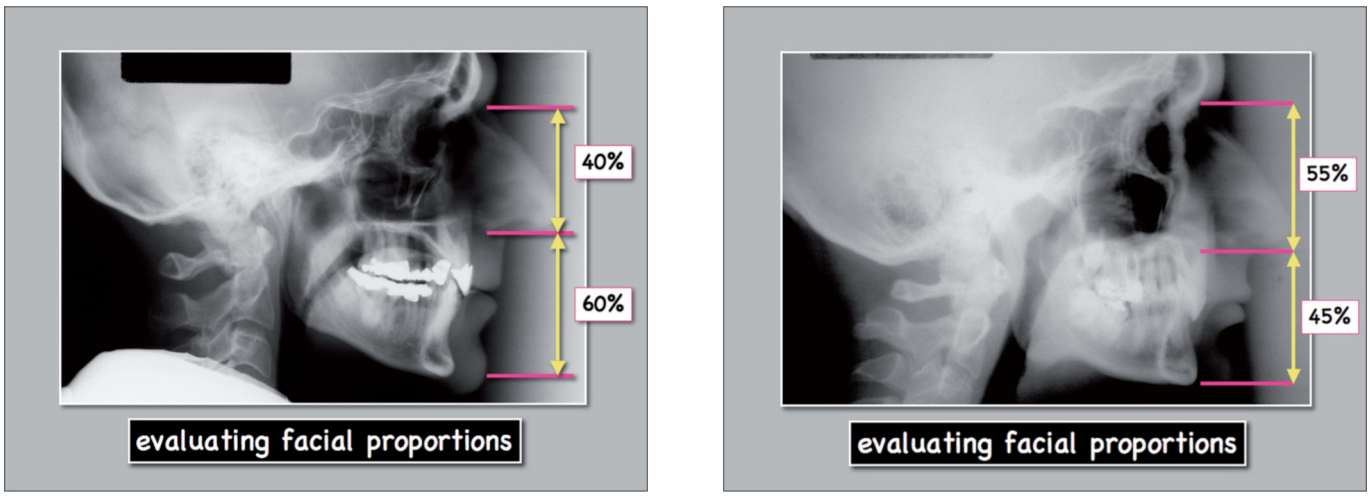
Dr. Kokich, it has always been a pleasure to read your articles and to listen to your lectures, especially those you gave during your farewell appearance in Dubrovnik in September 2009. All of your presentations and your publications have given us much food for thought as well as practical suggestions we could use in our daily practices. This interview affords me the opportunity to thank you for your immense contributions to orthodontics.

Dr. Rozencweig: **What diagnostic tools do you utilize to analyze facial proportions when you are treating patients with altered vertical dimension, especially "long-faced" individuals?**

Dr. Kokich: First of all, I utilize lateral cephalometric radiographs to help me determine facial proportions. Although recognition of facial proportions is not necessary in the vast majority of our orthodontic patients, since most individuals have reasonably proportioned faces, there are a few patients with either excessive or diminished lower facial height. I divide the face vertically into upper and lower portions. The upper portion is demarcated by Nasion to Anterior Nasal Spine, and the lower portion is demarcated by Anterior Nasal Spine to Menton. An average facial proportion should be about 44% upper facial height and 56% lower facial height. If the lower facial height is excessive then I must determine whether the problem is due to excessive maxillary vertical development or excessive mandibular growth.

In order to insure that the outcome of my treatment of this vertical disproportion will provide optimal esthetics, I then evaluate the position of the maxillary incisor to the upper lip at rest. A 30 year old patient should show 3-4 mm of maxillary incisor with the lip at rest. Researchers have shown that this amount diminishes with age, so that a 60 year old would show virtually no incisal edge at rest.

Address for correspondence:
V. G. KOKICH
Kokich Orthodontics,
1950 South Cedar
Tacoma, WA 98405.
vgkokich@u.washington.edu
S. ROZENCWEIG,
1 rue Thiers
38000 Grenoble.



a b

Figures 1 a and b

Evaluating facial proportions is helpful in determining how and where to alter tooth position in the patient with disproportionate facial proportions. The normal upper to lower proportions of the face should be roughly 40-45% upper facial height to 55-60% lower facial height in the Caucasian face (a). If the upper portion of the face is greater than the lower, these percentages can be altered significantly (b). This particular patient will require orthodontics to position the teeth appropriately followed by orthognathic surgery to increase the lower facial height and provide improved facial proportions.

If the patient shows an excessive amount of incisal edge, and the patient has an upper lip of normal length, then I know the problem is in the maxilla and will probably require either maxillary incisor intrusion or surgical maxillary impaction to correct the vertical disproportion.

If, however, the maxillary incisor to upper lip is normal, and the occlusal plane is relatively flat, the vertical problem will probably need to be solved with either maxillary molar intrusion or mandibular surgery to rotate the mandible superiorly. The key to the diagnosis is the resting upper lip length to the maxillary incisal edge.

S.R: **In the past you have emphasized the importance of working in a study group. What other dental or medical specialists are necessary for treating patients with disproportionately long facial height?**

V.K: I believe that the orthodontist and oral and maxillofacial surgeon are the two key members of the team necessary to treat patients with long facial height. Although some of these individuals have oral habits such as tongue posture problems that precipitate and exacerbate the disproportionate facial height, I do not often include a speech therapist on my team. I have not had success with speech therapists at trying to help a patient develop better tongue posture if there is a persistent anterior openbite. So, in summary, I believe that in most situations, I would rely on my judgment along with the help of the oral and maxillofacial surgeon to diagnose and treat disproportionately long facial height.

S.R: **When does the otolaryngologist surgically ''cleanout'' the upper airway? Is this procedure performed often in the United States?**

V.K: Surgical intervention into the nasal cavity to debride the mucosal lining is typically limited to the patient who has either an infection of the nasal lining or a patient with significant swelling of the nasal mucosa due to allergies. However, in the United States, debridement of the nasal cavity is not a strategic approach for improving the stability of orthodontic treatment for patients with disproportionately long facial height. There is simply no good data to suggest that such surgery has any long-term affect at improving the treatment and management of patients with long facial height.

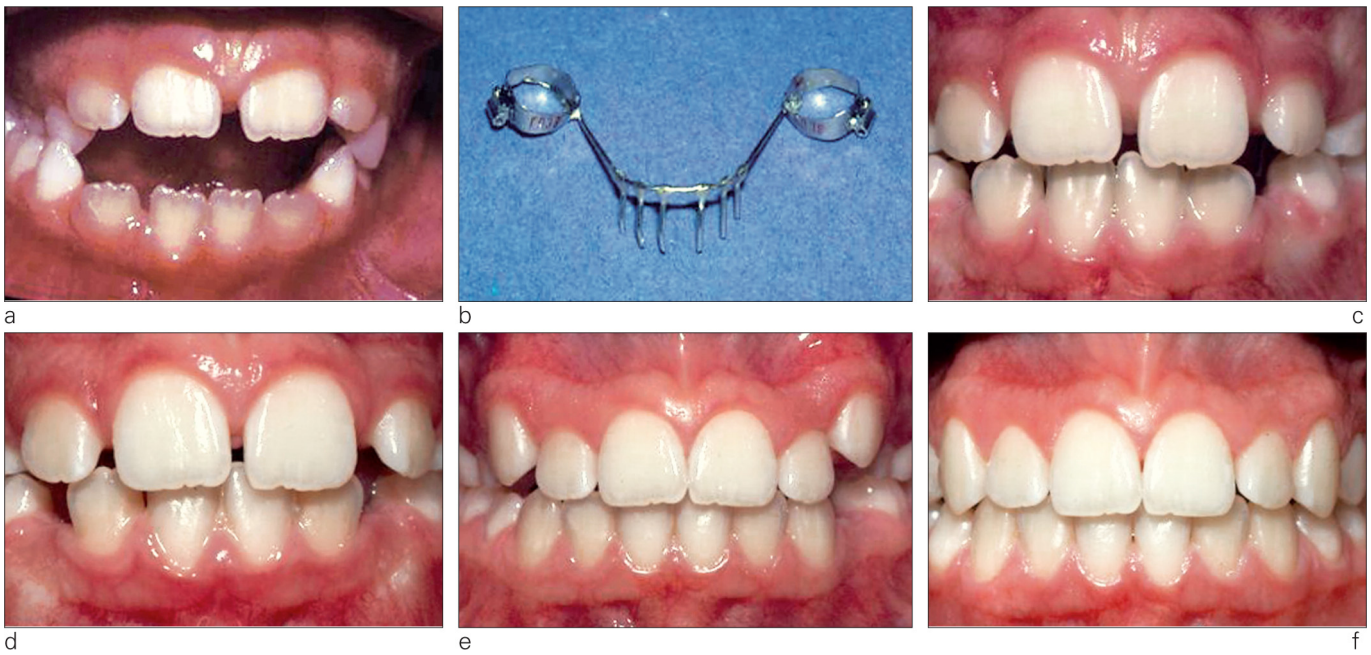
S.R: **Do you often try to close open bites in teenage patients? When do you start treatment? What appliances and mechanics do you utilize? How do you set the limits of nonsurgical orthodontics?**

V.K: Yes, I often try to close open bites in my adolescent patients. The method of treatment would depend again on the location and identification of the problem. If the open bite is due to lack of eruption of the maxillary and/or mandibular incisors in a patient with normal vertical facial proportions, then the choice of treatment would be to erupt the incisors. I can verify whether or not this is reasonable by evaluating the maxillary incisal edge relative to the upper lip at rest. In an adolescent, there should be about 4 mm of incisal edge showing with the lip at rest. If the amount were less than normal, then incisor eruption would be appropriate. Then I try to determine the etiology of the lack of incisor eruption. If the problem were due to abnormal tongue posture, then my choice would be to block the tongue using a tongue-restraining appliance. Our research shows that this type of treatment results in the greatest stability of maintaining open bite correction long-term.

If, however, the incisal edge is in a normal position relative to the upper lip, then the choice of treatment must be molar intrusion. Probably the most effective way to accomplish this correction in a growing individual is with the use of miniscrews to restrict eruption of the maxillary and mandibular molars and allow the incisors to erupt as the face continues to grow. Unfortunately, we do not have long-term data on whether or not this approach is stable, but at least it is attacking the problem in the correct location. I believe that the limit of nonsurgical orthodontics depends on the individual's skeletal/facial proportions. I do not believe that I can reduce the vertical facial height of a growing person substantially with nonsurgical treatment. But, on the other hand, in growing individuals, we have just started using skeletal anchorage to modify posterior and anterior tooth eruption, so perhaps when we look at these individuals in studies a few years from now, we will have a better perspective of our success rates.

S.R: **Do you think closing the bite in adults with miniscrews can have as stable outcomes as surgical treatment?**

V.K: When it comes to using skeletal anchorage in adults, we are facing a completely different situation.



Figures 2 a to f

If a patient has an anterior openbite with normal lip competence, and the maxillary incisors are positioned above the level of the upper lip (a), then the choice of treatment is to allow the maxillary teeth to erupt into a more esthetic vertical position relative to the upper lip at rest. In this patient, a maxillary tongue crib (b) was used to block the tongue from being postured forward. In six months (c), the openbite was nearly corrected. At 12 months (d), the crib was removed. One year after crib removal (e), the openbite correction had remained stable. There was sufficient space for all teeth to erupt, so no other orthodontic treatment was ever performed. Five years later (f), the remaining teeth had erupted into a reasonable position and the openbite correction had remained stable.

First of all, surgery to reduce facial height is not stable in all individuals. We showed that in a study that we published in 1989. Bill Proffit and coworkers verified what we found in a study published in 2000. Both studies evaluated vertical facial proportion in adults who had their facial height shortened using maxillary impaction surgery. In both samples, there was a significant portion of the subjects who had increases in facial height two and three years after orthodontic treatment.

Why should this happen? We believe that it may be due to our inability to alter the muscle function after surgery in adults. Adults have muscles of mastication function at a certain muscle fiber length. We have known for years that attempts to surgically lengthen faces with maxillary down-fracture surgery is totally unstable, because of muscle fiber length. Why should it be any more stable to shorten a person's facial length? It is probably not and these two studies have shown this trend.

So, in answer to your question, I believe that skeletal anchorage used to reduce facial height by intruding maxillary and mandibular molars in adults will probably result in the same instability as the surgical patients that

we have studied in the past. In addition, tooth intrusion has another built-in instability. When teeth are intruded, the principle fibers of the periodontium change their orientation and become oblique. With considerable time, this orientation will adjust or accommodate to the new vertical position. If molars are intruded and they are not held in position for at least six months, there can be instability and tooth re-eruption simply due to the oblique orientation of the principle fibers of the periodontal ligament.

S.R: **Thus, in adult patients for whom the treatment requires a combined orthodontic-surgical approach, do you solely rely on skeletal surgery, or also on soft tissue surgery? Have you ever closed a skeletal openbite with mandibular surgery instead of maxillary surgery?**

V.K: In some adults, liposuction is used to modify the soft tissues following jaw surgery. However, I leave that decision up to the oral and maxillofacial surgeon. As far as your other question, we have been relying on mandibular surgery to close open bites for many years. For example, if the position of the maxillary incisal edge is appropriate relative to the upper lip at rest, and the occlusal plane is oriented properly, and we want to reduce the patient's facial proportions, then it only makes sense that the surgery should be performed in the mandible. Our data show that this type of surgery can be very stable. Others have also performed this type of surgery to correct disproportionate facial height and reported similar favorable results. The key to selecting the appropriate surgical technique is determining where the problem in facial vertical proportion is specifically located.

S.R: **Sometimes adults are totally against maxillofacial surgery, but favorable to an interdisciplinary approach. How do you manage to treat such adult patients if they have a skeletal open bite, and gummy smile?**

V.K: It would be difficult for me to generalize when answering this question. However, I will say that I do not allow a patient to dictate the treatment plan, especially when the problem is a disproportionately long facial height. If a patient's treatment requires jaw surgery in order to be successful esthetically, I will not compromise the treatment goals and objectives to avoid the surgery. I would simply tell the patient that I cannot achieve their goals without jaw surgery, and if they want a nonsurgical approach, that I am not comfortable treating them and would tell them to seek out another orthodontist. As orthodontists, I believe that we must realize that we cannot please every patient. However, we must be able to live with ourselves when we look at the final results of our treatment.

S.R.: Thank you very much, Dr. Kokich.