

An Interview with Dr. V. G. Kokich

Lecture Title: *Maxillary Lateral Incisor Implants: Overcoming the Aesthetic Challenges*

Are solutions with implants advantageous over the new ways of closing spaces with high quality and aesthetically excellent adhesive techniques?

First of all, I think I would have to go back to basics. Basics meaning there are some patients where it is advantageous to close spaces and move canines into the lateral position. I have five keys that I look at to help determine if I have a patient that has those problems. And if they do have those five criteria, then it's much easier to close the space. And as you said, with the new techniques for changing the form or color of a canine—we can make a canine look like a lateral incisor. But if the orthodontist erupts the tooth down, that brings the gingival margin down, retrude the incisal edge off, we can put a porcelain veneer on a canine and it can look very much like a lateral incisor. But, there are many, many cases where one cannot do that, and it's just virtually almost impossible from a mechanical standpoint. So if one has to open the space, then there are really limited, long-term, predictable means of filling-in that space. The things that have been used for many years is a conventional bridge where the canine and central incisor have to be totally cut down and a pontic is placed in between. We just don't do that anymore. We thought for a while that resin bonded bridges was something we thought would last long term, but the best they can do is maybe ten or twelve years. So that's why implants are appealing because we know long-term that implants will last, that is not a problem. The dilemma is making that metal post that comes out through the gingiva have crown on it that will look like a natural tooth. And in my presentation here, that's what I tried to focus on: what the orthodontist can do to make that look as aesthetic as possible. So to go back to your question, does the implant have advantages over a canine for a lateral? I would say no. In the situation where you can substitute a canine for a lateral, I think it is probably easier with the new adhesive techniques using a veneer, to be able to make that canine look like a lateral on the more predictable basis for the average orthodontist by substitution. But in cases where you cannot do that, I think in the future, implants will probably be the area that most people will go to. I can tell you in the United States, from a private practitioner standpoint—and I think this will happen all over the world—the dentists are really aren't driving the implant revolution, its patients because many of these children who are missing lateral incisors have parents who have the same problem because it's hereditary. The parents have bridges in because they're of another generation. They maybe have had to have those bridges replaced a couple of times, so they want something better for their child. They hear implant and think, 'This must be high-tech and better, and that's what we want.' So many times parents will say, 'No, we want an implant.' That really takes the control out of the hands of the clinicians that are treating the patient. So which is better? I think for an average practitioner it's easier to make a substitution look better with a veneer, but there's just aren't many cases we can treat that way.

What are the advantages of implants in your opinion?

First of all, when implants were first proposed in dentistry, they were proposed as an absolute anchor in the bone. When they were developed, the recent new resurgence in implants were developed by the Swedes in the late 60s, throughout the 70s, and released on the world after their major publication in 1981. The reason the Swedes developed this was that they had a population of patients who had no teeth in the lower jaw, they had no bone to support a denture, so the feeling was if you could anchor something in the bone to be able to hold a denture in it would help these people. So they experimented with that throughout the 60s and 70s and came up with an implant system that they had a fifteen-year follow-up on. So when they released that on the world, the major emphasis of the Swedes was to use that for denture patients, to support dentures to have a rigid anchor in the bone—and implants are fantastic for

that. So if you were to ask me what their major advantage is in their present state, they are the absolute anchor in the bone. From an orthodontic perspective, they are wonderful to use to assist in orthodontic mechanics where we need extra anchorage. And just as an aside, at this meeting you saw several papers presented like that where implants are placed all over the place and used as anchors to help the orthodontist. I see that as the key advantage of an implant. It can also be a disadvantage in tooth replacement. This whole idea of taking an implant and replacing it for a missing tooth was something that developed after they were introduced as anchors in the bone. It's something that the Swedes never really intended to have an implant to be used for. And if you think about, it doesn't make a lot of sense to put an absolute anchor in the bone when the rest of the teeth are mobile and have this thing sitting there not being able to move at all where teeth can. But in an adult, whose teeth aren't erupting, if you put an implant in there like that it can survive next to teeth that are a bit movable, and it can last a lifetime in a person. So it is good for a single tooth. The problem is putting it in a young person whose teeth are erupting, it can result in differences in eruption and it can be a catastrophic problem in terms of aesthetics. So for the orthodontist who treats younger patients, the disadvantage of the implant is that it's immobile. On the other hand, the advantage of the implant is that it's immobile for the orthodontist for other purposes. My prediction is that in 25 years we will have implants that are movable. We will have implants that we will be able to put in the bone that will be able to develop a periodontal ligament around them just like a tooth. Then the orthodontists will have exactly what they need: an immobile anchor when they need it to move teeth, a mobile—we won't even call it an anchor anymore—a tooth replacement that can be placed in the bone and will have its own periodontal ligament. Those experiments have been done already. Periodontal ligament can develop around an implant, but you have to have cementum laid down on the implant first, before bone, and then you can develop a PDL. The problem is that there is not a lot of research being done there because most prosthodontists want an immobile anchor, orthodontists would rather see for single teeth, something that can move. Ultimately, the advantage of an implant is that it's immobile, but it's also a disadvantage in single tooth replacement. However, in an adult where teeth are not erupting, it's not a huge problem.

Are there any known disadvantages using implant techniques in young patients?

The problem is that it fuses to the bone and teeth erupt and move and the implant can't. So when the mandible is through growing, then the implant can be placed and stay in that position relative to the adjacent teeth predictably. Before that time it would be a disaster.

What kind of implant designs do you recommend for upper laterals with limited space?

The smallest possible, and the smallest today is 3.25 mm implant in width. And, as I said during my presentation, the minimum space that an orthodontist should leave is about 6 mm. And then the dental surgeon has over a millimeter of space on either side to play with. If they have less than a millimeter of space it affects the esthetics because the papilla—and that's really what outlines the tooth, it sort of frames the tooth—and if the papilla's short when a person looks at it, it doesn't look right and looks artificial. So width is a critical issue. Now there was an implant made in the mid-90s that was 3 mm wide, but it had to be taken off the market because there was a patent infringement on another implant system—and I won't mention any names—but that was a big problem for us. We used to have a 3.0 mm implant which was wonderful in the smaller areas. The reasons that manufacturers can't just make it narrower and narrower is that they still have to have what's called an anti-rotation mechanism so that when the abutment is placed in the implant it won't turn. So there has to be enough space and enough metal structure for strength and still be able to incorporate that anti-rotation system. Today, in the narrow spaces we are placing the narrowest implants, but as of June

2003 the narrowest is 3.25 mm. I think we will have a 3 mm implant as soon as the issue is taken care of.

How often do you use implants in your patients?

It's varied, but in my particular practice I treat a lot of adult patients. And many of those adults are missing multiple teeth. My practice differs from most orthodontists. If you treat a lot of adults and they're missing teeth, then you have to work more with prosthodontists and periodontists and they are the one that really dictate the number of implants. I think a problem that exists in the United States and a problem that perhaps exists in Europe,—although I don't practice here so I don't know that, but I sort of see that from the presentations I see here—is that there are orthodontists that are dictating the treatment plan of these adult patients that are missing many teeth. That never happens in my practice. The first question I always ask when a patient presents to me with missing teeth where implants may be a possibility, is that I ask the restorative dentist, 'What is the restorative plan? Are you planning on implants?' if they are, then I know that perhaps I can use them to my advantage for anchorage, and then I know where I need to make the space for them. I think many American orthodontists, and maybe perhaps some Europeans, don't work well with their colleagues. They get the patient and they think they have to create the treatment plan, which gets them into big trouble sometimes. My last comment, and I don't like to be provincial that American orthodontics or dentistry is different or better than Europe, but I know in the US that one of the things that allows dentists to grow past dental school, in the best way, is study clubs. Where there will be a group of clinicians that get together. They can all be from the same discipline or they could all be from different disciplines, and they learn from one another. In my practice, when patients come to me, I rely on my colleagues a great deal, to give me the information about what they are going to do restoratively. If that includes implants then that is a part of my plan. So to ask me the question if implants are a part of my practice, it really depends on the patient and what the restorative dentist is planning. I am simply a sub-contractor. I am the sub-contractor of the restorative dentist. Just like building a house. The restorative dentist has the vision of the blueprint of the house in his or her mind. If he needs to have the walls moved, he calls on the orthodontist to move the walls so that the windows can go in a different position, or so that we have the right size windows. And I simply moves the walls, the surgeon puts the implants in, and the restorative dentist puts whatever goes on top of it. And without that system working, of a sub-contractor working for the major contractor, it never works well. And so it has taken a long time, and it is continuing to take a long time for American orthodontists to realize that they try to run the show. And the reason is that they do run the show on all of their adolescent patients, they control everything, and when it comes to adults they try to do the same thing and that is a huge problem.

You gave a wonderful challenge for younger dentists at the end of your lecture and I wonder if you would repeat that for us here?

My epilogue—and I did this away from the podium, I came out more towards the audience because I wanted to be closer to them—I explained to that although people think I must have had extra training in esthetic dentistry or training in implants or training in periodontics because I lecture all over the world and they see me talking about these areas and they see the knowledge base that I have about these other areas of dentistry and how they relate to orthodontics. In fact, I have never had formal training in these areas, but in a way I have been formally trained because 20 years ago a group of us got together and formed an interdisciplinary study group in 1983. We got together two oral surgeons, two endodontists, two prosthodontists, a general dentist, a pediatric dentist, a periodontist, and myself as the orthodontist. We have have been meeting together on a regular basis for the last twenty years once a month, except for the two summer months when it's nice in Seattle—July and August.

And at our meetings we do three things. I didn't get to share all of this in my lecture but I'll share this with you because I think it is good for people to hear what a group like that can do. Once a month, on a regular basis each of us has to present something new about our area of dentistry that would elevate the knowledge base of the rest of the group about that aspect of dentistry. So once a year I have to present something on orthodontics to the rest of the group, but nine times a year I get a continuing education course in all the other areas. And these are from people who specialize in those areas and know the latest aspects. So if you multiply that by twenty years, I have had 180 mini courses on the other areas of dentistry. The second thing we do at each of our meetings is that one of us, on a schedule basis, has to present two articles from our literature that relate to interdisciplinary treatment and that would also upgrade the knowledge base of the rest of the group about my or their particular literature. The third thing we do, and we take about 45 minutes, is that one of us to present a long-term case that involved interdisciplinary treatment. And now that we've together for 20 years, these are cases we treated before. So we show the original records, and we all look those and talk about them. Then we show the final, how it was treated at that point in time and we discuss that. Then we show how it looks 5 years later. Then we talk about what we would do different today. What did we learn from what we did right or wrong on those cases? And that is a tremendous learning experience for any group of clinicians. We realize nobody's perfect. We're not perfect and we continue to grow out of that and learn what we can do better. Then the last hour is what we call, 'What do we do with this?' It's where all the members bring in cases that they may be treatment planning with other individuals outside the group, and perhaps they need help in terms of treatment planning. We show the records on the screen, we go around the room, we have all the specialists there and any questions we ask we have someone there who knows that area. And thus we can treatment plan, a total treatment plan for a patient, even if it's not being treated by one of the people in the group. Because of that, I have learned a tremendous amount about dentistry and how it relates to orthodontics and where the orthodontist's role is. So in my epilogue, my challenge was to the younger orthodontists who are graduating, to do that early. When they get into practice, gather around them a team of people they can trust of different disciplines and start meeting on a regular basis. And they can learn from one another and I closed by saying that there are three great things that will happen. Number one, they will educate the rest of the group as to what orthodontics can do for restorative dentistry, periodontics, surgery, implants, esthetics. Number two, they will learn a tremendous amount about how the other areas of dentistry relate to orthodontics. And that will help them in treatment planning. And finally, number three, the best, their patients will be the great benefactors because they will have the advantage of being able to access information from all dimensions of dentistry so that the final treatment plan will end up being at the highest level, and it will be twenty-first century. That's really where we should be. That's where orthodontics should be in dentistry. So my challenge was to start a study group that will make you continue to grow.

Dr. Kokich's Six Keys

1. Establish adequate implant space. How? Not always by occlusion, as is done in the US. You need 1 mm of space between an implant and an adjacent tooth. You need to reshape the tooth to get extra space. First, establish occlusion. Second, measure the space. Third, reshape the tooth.
2. Don't leave roots close together. Use orthodontics to move the roots. (An implant functions better when the roots are tipped back.)
3. Develop the implant site with orthodontics (flapless surgery and immediate restoration; replacement is placed on the day of treatment).

4. Preserve the papilla during space opening (Presented case examples of Atherton's Patch. Papilla shifts away in adolescents. Case examples showed improvement in Atherton's Patch via orthodontics.)
5. Sequence gingival surgery before implant placement.
6. Place implants after functional(?) growth is complete. Evaluate growth by looking at head films. If the patient has grown between the ages of 13.10 years and 15.11 years, you need to wait. (Case presented where Dr. Kokich waited until the patient was 17.11 years.)