Georg Watzek

With over 30 years of experience in osseointegration, more than 200 published articles, Professor Dr. Georg Watzek is divided — with remarkable skill — between university life, politics and his private clinic, proving to move comfortably and with great expertise from the scientific knowledge to clinical results, as shown in this interview to the Dental Press Implantology journal.

Committed researcher and professional acting since early 80's, the carrier of Professor Georg Watzek is intertwined with the history of European Implantology. It features a large and experienced view of the entire universe involving osseointegration as a science.

Head of the Department of Oral Surgery of the University of Viena, the renowned professor is dedicated to multiple activities, closely related to the deep study of osseointegration and its applications.

Currently, he is a member of the scientific research committee of the Osteology Foundation in Switzerland, coeditor of the International Journal of Oral & Maxillofacial Implants, member of the Nobel Biocare directors board (Sweden), besides caring his private practice, in Viena.

Invited to lecture at the III International Congress of Implantology, he demonstrated the large experience he gained over the decades as an implantologist, where he discussed several issues related to his presentation, as well as other interesting issues that were a rich source of information to compose this interview.

Submitted: November 07, 2012
Revised and accepted: November 11, 2012

How to cite this section: Watzek G. Interview. Georg Watzek. Dental Press Implantol. 2012 Oct-Dec;6(4):10-20.

Looking at your curriculum, I realized that, as soon as you graduated in medicine in 1970, you started to specialize in dentistry. Had you chosen dentistry before attending medical school or did you choose to be a dentist while you were there? Why did you choose to be a dentist?

Initially, I studied general medicine for becoming a general surgeon. However, towards the end of my studies I decided for maxillofacial surgery. Immediately following the completion of my studies of general medicine I started practical surgical and internistic training at a public hospital in Vienna. Only after having completed this training I began my education and training for dentistry. I only did this because it was also the prerequisite for an employment at the Clinic of Maxillofacial Surgery.

I then started working at the University Clinic of Maxillofacial Surgery in Vienna and in 1982 I was given the offer to establish a Department of Oral Surgery at the School of Dentistry. I accepted this offer and changed to the School of Dentistry of the University of Vienna, where I have remained ever since.

During my time at the Clinic of Maxillofacial Surgery, I also completed various training sojourns at national and international hospital sites, among others at the Clinic of Otorhinolaryngology and the Department of Neurosurgery in Vienna, at the Department of Plastic Surgery of New York University and at the Clinic of Otorhinolaryngology at Columbia University in New York.

In Austria, as in some other countries in Europe, dentistry is a medical specialty. Do you see that as an advantage or a disadvantage? Please explain your point of view.

I am absolutely and definitely in favor of keeping dentistry within the scope of general medicine. If we do not pay adequate attention, dentistry may turn into nothing more than a pure handicraft. I consider general medical knowledge and experience as being essential also for a dentist.

In Brazil, the universities which are most productive in terms of science require researchers to work full time. A university professor is not allowed to have a private practice. Many times, this distance from clinical activities isolates the researcher from the clinical applications of the research. You balance private practice and academic activity and continue to be scientifically productive. How do you divide your time? What is the secret for being so productive? Can you give us an example of a disadvantage of having private practice and academic activities at the same time?

When I joined the School of Dentistry in 1982, hardly anyone ran a private practice adjunctly. During the years of the rise of the Department of Oral Surgery in Vienna, I invariably had assistants who also had a private practice. Retrospectively I can say that I find this very important. When you are only at the clinic you will gradually lose the know-how and the insight into what is happening in private practices. Apart from that, running a private practice after having been active at the university until 16:00 everyday ensured that "my team" gained much more clinical experience than physicians being only at the clinic. They had certainly been motivated to do so by the fact that after obtaining their PhD they would earn better money in their private practices.

Personally, I had always split my time at the clinic and at my private practice in a manner that I spent about two thirds of my working time at the clinic and one third at my private practice. However, I must emphasize that this usually meant a working day of at least 12 hours and that I had frequently also been occupied with scientific problems at the weekends.

The scientific and research work of our team during the last decades was certainly based on the outstanding motivation of my team members. Principally, I consider it as important that the selection of new staff should always be focused on whether they will fit into the team, while their professional qualifications should only be a secondary criterion for selection. A wrong decision or selection in this respect may disrupt the complete team. Personally, I cannot recognize or see any drawbacks for the combination of academic activities and work in a private practice. Physicians relying on this combination will show much more clinical experience as a result of the prolonged daily contact with patients. Naturally, the necessary prerequisite will be appropriate willingness and adequate enthusiasm and zeal for accepting a workload of 12 hours or more, day in and day out.

Once you became a dentist in 1973, you dedicated your life to an academic career. You became a Doctor of Dental Surgery in 1979 and head of the Oral Surgery department in 1982. Finally, in 1983 you became chairman of the Society of Oral and Implant Surgeons. This happened one year after the famous Toronto Conference of 1982. Were you motivated to study implantology by the Toronto Conference? How did you learn about osseointegration?

In 1982, I met Prof. Brånemark for the first time in Gothenburg and I was seriously impressed from the very first moment. The implant he had created was completely different from those being customary at that time. It was scientifically well-founded and consequently also showed a much higher success rate.

Osseointegration is more than 45 years old and you have been involved in this area for 30 years. Please, compare the situation at the beginning of the 80s, and now, in the second decade of this century. How did you describe an implant to a patient at that time and how do you describe it today?

If I try to describe to a patient the possibility of an implantation today, there is hardly any difference to what I said back then.

Today, I still do not promise the patient 100 percent success and, naturally, I advise him/her of possible failures and, in particular, I emphasize that he/she himself/herself will be co-responsible for the success. Naturally, the information provided to the patient is much more detailed and thorough than 30 years ago. This is also due to the legal requirements which have also changed accordingly.

In your experience,how long does a normal student take to learn to install implants? How many implants do you think is a good number to qualify a professional in this branch of dentistry?

Principally, I consider training in implantology for students only important to the extent that they can provide adequate information on implants for patients. During professional dentistry training at the University of Vienna students will be given the opportunity to place implants in the jaws of sheep using appropriate drilling devices.However, they will

not be permitted to insert implants also in human subjects. Generally, this will be reserved for the time of postgraduate training.

Generally, I believe that — as in other fields of specialization — only those things we frequently do will also be done well by us. I would propose to say that the insertion of at least 100 implants per year will be the absolute minimum to gain adequate experience for placing implants in simple cases. Complicated cases should always be reserved for specialized dental surgeons or clinics.

Treated implant surfaces are now one of the most important points of differentiation for the industry. Do you think a treated surface can be considered a revolution in implantology? In private practice, do you apply reduced osseointegration time, as prescribed by the manufacturers?

"Surface" certainly is a topic frequently being discussed by all implant manufacturers and much money is being invested into appropriate research. I cannot imagine this research will ultimately yield any revolutionary findings. However, improvements will certainly be possible and are also to be expected in special cases. Today, the general success rate in implantology is very high, so that there is hardly any margin for significant improvements. However, if we could manage creating surfaces that could keep unchanged bone level at the top of the implant during lifetime, that would certainly constitute a major progress and advance.

Personally, I have successively reduced the healing time of implants. Currently, we have arrived at a time of about 6 weeks for mandibular and 12 to 16 weeks for maxillary implants here in Vienna.

However, these numbers only indicate a certain pattern. There are a number of general disorders that may be forcing us to wait even for 6 to 8 months. For example, this would apply for diabetic patients, very old patients or in post-augmentation patients.

From your experience, what would you say is more important: A treated surface, implant macro design or surgical technique?

In my opinion, surgical experience certainly is of essential importance, followed by implant design and implant surface, both of which can only be secondary complements of an ideal surgical procedure following appropriate prosthetic planning.

Where are we headed? What do you believe will be the next revolution in dentistry?

The next revolution to come in dentistry, which has partly already been implemented, would certainly be the complete disappearance of virtually any impression procedure using impression trays. Today, appropriate scanners may already achieve perfect results and it certainly will only be a question of time until the technique of impression procedures with impression materials will completely disappear. I am also convinced that exclusively virtual planning of surgery and of the subsequent prosthetic procedures will gain additional ground. In this respect, Nobel Biocare must certainly be considered as the worldwide leader. The completely flapless insertion procedure for implants has already become a routine approach.

I see from Nobel Biocare's website that you have been a member of the company's board of directors since the beginning of 2012. This year, Nobel changed its marketing policy. Can you explain Nobel's objectives in Brazil?

As a member of the Board of Directors I will only have influence on long-term strategic planning, but I cannot influence any action of the company's management — and this is certainly also not my intention. Thus, any possible change in the marketing policy in Brazil will exclusively be a decision of the company management and I will have nothing to do with any such decision. Naturally, it must be the goal to increase the market share of Nobel Biocare in Brazil.

What novelties can we expect from Nobel Biocare in the coming years?

Research has always been one of the particular strengths of Nobel Biocare and it has also essentially intensified research efforts in all fields. This research focuses on implant design, implant surface, improvements in the prosthetic field and, in particular, virtual planning options. In all these fields major progress is to be expected for the years to come.

Brazil is considered a world leader in dentistry. How do European professionals see Brazilian dentistry? What do you think is the Brazilian dentistry's main strength? What is European dentistry's main strength?

The rate at which research efforts and research results of Brazilian dental science have increased over the past years is certainly impressive. Brazilian universities are just about to close up with the top schools of dentistry in the world. From a European perspective, I can only give a judgment of the research results of Brazilian dentistry, but not of its clinical level and quality. However, I am convinced that the quality is on a very high level and should today be comparable to that of the previous top quality level in Europe. The strength of European dentistry is certainly based on its clinical quality in actually all fields of dentistry. However, as regards basic research European dentistry has definitely lost ground versus the USA, China and increasingly also Brazil.

As osseointegration was only introduced to Brazil ten years after the Toronto Conference, we don't have many implants which have been in function for decades. Could you share your experience of osseointegration maintenance and follow-up with us?

Today, we are certainly in a position to maintain the osseointegration of implants for decades. However, this should not be interpreted to mean that there will be no unexpected failures.

If a patient asks me how long an implant offered can be preserved and maintained, I will frequently answer "between 1 and 40 years" and will then add that failure — even after a short time — can never be fully excluded, but that the chances and prospects of maintaining the implant for decades will certainly be within a range of more than 90%. However, I also make the patient understand that preservation of the implant will also essentially depend on the patient's cleaning and living habits.

Keratinized peri-implantary tissue has an important role in peri-implantary bone protection. Is it essential? If so, how can we be sure to have this specialized tissue around implants? If not, do we have to treat non-keratinized peri-implantary mucosa differently?

The question for the need of keratinized peri-implant tissue is almost as old as modern implantology itself. Certainly peri-implant keratinized tissue will be positive and essential for the long-term prognosis of an implant. All the more so, as this fixed gingiva will essentially facilitate oral hygiene.

However, the fact that this keratinized peri-implant tissue is not necessarily needed is also substantiated by the high success rate with implant-supported, highly atrophic mandibles which hardly ever show any keratinized peri-implant tissue and where it can neither be achieved by surgical means in the long run nor be maintained and preserved.

Peri-implantary disease can be partially understood as periodontal disease. The presence of biofilm, non-keratinized mucosa and malocclusion are factors which may be present in both peri-implantitis and periodontal disease. Is there any predictable treatment for peri-implantitis? Can you describe it?

I do not believe that the presence of a biofilm, a keratinized mucosa or a malocclusion are primary factors inducing development of peri-implantitis. However, they may very well contribute to the aggravation of a pre-existing peri-mucositis or peri-implantitis.

Do you consider marginal bone loss to be a pathological or physiological event? Please explain your point of view.

Generally I consider bone loss around implants, but also around teeth — though to a very limited extent — as a completely physiological event. It is well known that under physiological conditions bone around teeth will be subject to successive reduction as from the age of about 20 years. Therefore, this can also be accepted as still being physiological for implants after the first year — to an extent of up to 0.1 mm annually. It would be a fundamental mistake confusing bone loss of such limited extent with a diagnosis of peri-implantitis.

Some maxillary sinuses have a greater buco-lingual aspect. Others present anatomical variations and septa. What is the influence of maxillary sinus anatomy on the success of sinus augmentation? Is there any kind of maxillary sinus that is easier to treat? Is there any kind of maxillary sinus that is impossible to fill?

Familiarity with the anatomy of the maxillary sinus must be considered as an essential factor for the success of a sinus lift procedure. Therefore, the absolute prerequisite is appropriate diagnostic evaluation. The treating physician must be familiar with the anatomical structures to be treated and, in particular, what the condition of the sinus floor will be like.

Principally, the rule must be observed that the longer the tooth loss dates back, the easier the sinus lift procedure will be, because the flatter and smoother the sinus floor will be. A sinus lift procedure immediately following the removal of a molar will invariably be associated with an increased risk of perforation of the sinus mucosa because of the unevenness of the sinus floor as a result of the roots. This also holds to a similar extent for a single tooth gap which may require a sinus lift. In such cases the mucosa in the vicinity of the gap must be detached from its support and the neighboring sinus floor may be highly uneven in many cases and prove extremely resistant to surgical detachment of the mucosa. Naturally it will probably be possible to perform a sinus lift in virtually all of the cases, even if, just to give an example, root tips covered with only a thin bone layer protrude into the sinus lumen. However, such cases will require the highest surgical skills on the part of the treating dentist.

It belongs to one of my basic principles to emphasize that implants will always be feasible, but the amount of additional measures and also the risks involved may be extremely variable.

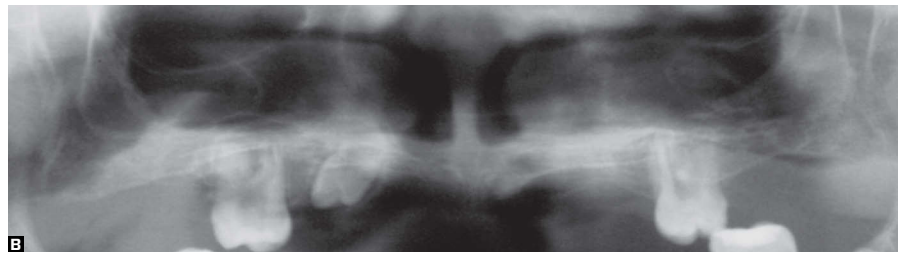
Is there any relation between maxillary atrophy and the thickness of the Schneiderian membrane?

To my knowledge, there is no correlation between a maxillary atrophy and the thickness of the Schneiderian membrane. The thickness of this mucous membrane will only vary as a consequence of previous inflammatory processes. Naturally, a Schneiderian membrane slightly thickened as a result of a chronic inflammatory process will be ideal for a beginner. However, a physiological membrane is extremely thin with only 30 μm. This makes it by far thinner than the skin of a raw egg, which is frequently used for training of the sinus lift procedure, but also thinner than the sinus mucosa of any known experimental animals.

You gave a very interesting presentation about ectodermal dysplasia in children. The initial treatment phase used prostheses supported by palatal onplants. Please explain the development of this specific kind of implant. Are they produced commercially or only to order?

The so-called onplants were propagated by Michael Block from the USA many years ago as support for maxillo-surgical procedures. However, they have never really gained essential importance.

We have been inserting these implants for many years in children, if there is no other possibility for improving or ensuring adequate prosthetic retention in edentulous or nearly edentulous children. This onplant technique is complemented by an appropriate drill making the palatal surface even to ensure optimum contact between these onplants and bone. They are currently manufactured by Nobel Biocare only upon our special request and can no longer be purchased commercially.



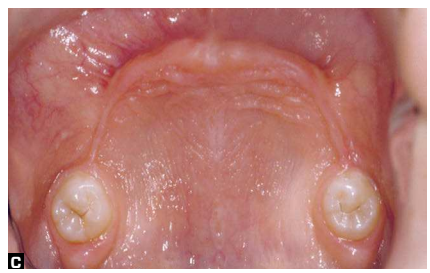


Figure 1 - A seven-year old patient with severe oligodontia. In the maxilla only the first two molars have been developed. The patient also shows a subtotal aplasia of deciduous teeth.

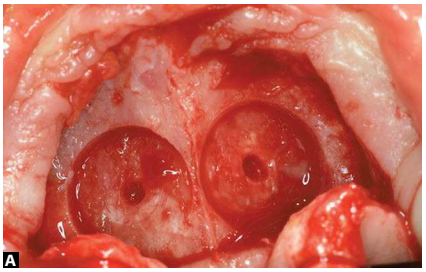
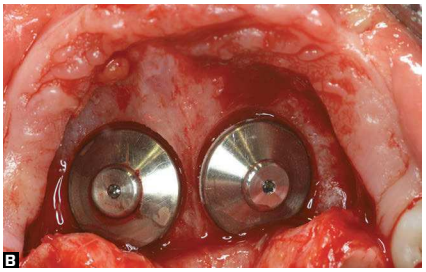
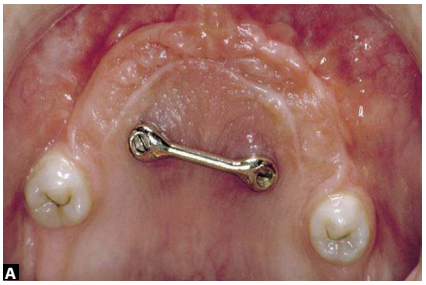
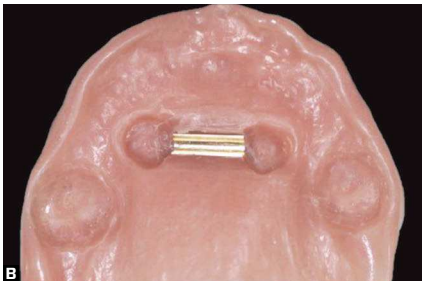


Figure 2 - **A**) Flattened contact area for seating of onplants. **B**) Placement of two onplants on the hard palate. **C**) Postoperative radiograph.







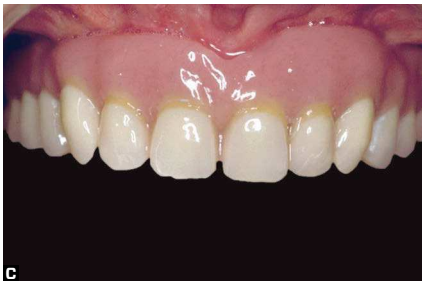
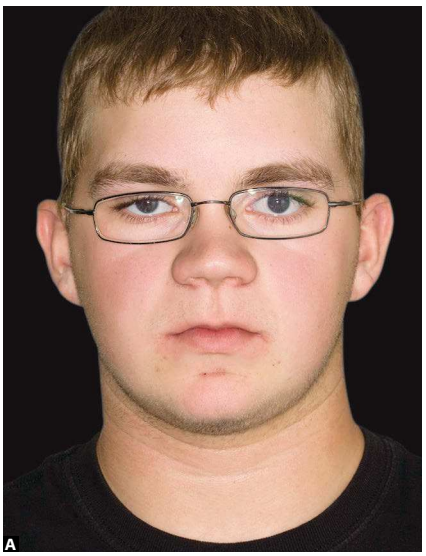
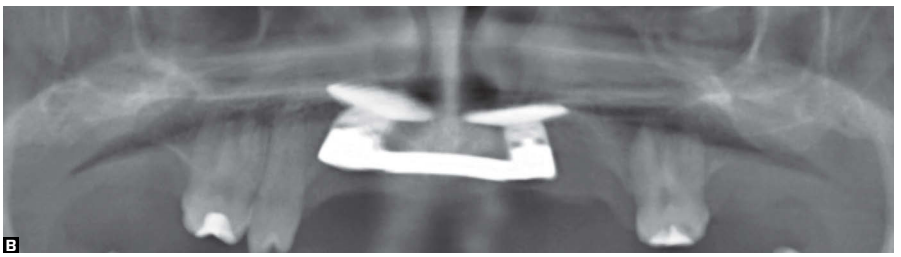


Figure 3 - Status post-fixation of a bar structure for fastening a full denture. For avoiding any growth disturbances of the palatal suture the bar has been divided.





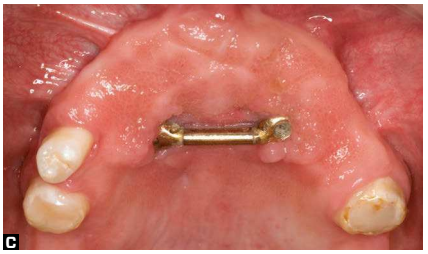


Figure 4 - Situation 11 years later. Unchanged findings apart from a fibromatous tissue around the bar support. The patient currently refuses removal of the onplants and regular augmentation of the maxilla with iliac crest grafts.

By now, we have not seen any losses with these onplants over a follow-up time of up to 15 years. The only problem seen over the years is a fibrous growth mostly around the bar, though this has never yet led to a loss of the implants affected.

What is the psychological impact of ectodermal dysplasia on a child?

I consider the psychological burden for a child with ectodermal dysplasia and a corresponding lack or absence of several, or in frequent cases all teeth, as extremely high. It is well known that without appropriate treatment a disorder of the development of the complete stomatognathic system will be encountered severely affecting the appearance of the children, and later of the adolescents, and this will also be associated with speaking difficulties.

Naturally, social acceptance of such children will also be seriously affected. Therefore, I consider any measures putting the disturbed development of the complete jaw region and the psychological development of such children into the correct pathways as being of essential importance.

In your lecture you also showed a case of dental transplant where premolars were extracted and put in the position of central incisors. The transplant was carried out on a very young child. Implants installed in young patients usually maintain their position while the bone keeps growing. This leads to a palatal position of the implants. Does the same thing happen with transplanted teeth?

We have never seen any subsequent malpositioning of transplanted teeth following primarily regular healing and we can say so looking back at experience in more than 100 patients. Once the transplanted tooth has been integrated it will grow to the same extent as the other teeth. If a malposition should be encountered, it will be orthodontically treated in the same manner as the other permanent teeth. When using the regular standard approach we have never observed the problem of ankylosis of such teeth.

What are the advantages and disadvantages of transplanting teeth instead of using implants?

A major advantage of transplanted teeth versus implants involves the fact that they ultimately will show the same behavior as the own natural teeth and will not represent any obstacle to growth, unless they have become ankylosed after all. Thus, upon regular standard treatment their retention time in the jaw will be equivalent to that of the own natural teeth.

You published an article in Clinical Oral Implant Research journal in 2009 with the title: Are culture-expanded autogenous bone cells a clinically reliable option for sinus grafting? My question is: Are culture-expanded autogenous bone cells a reliable option in private practice?

In my opinion, culture-expanded autogenous bone cells are no option for sinus grafting in a private practice. Generally, I consider this procedure as currently being without clinical relevance, because clinical experience invariably shows that conventional bone substitute materials with their osteoconductive potency will usually be adequate with some notable exceptions in extreme cases. The advantages of culture-expanded autogenous bone cells versus conventional procedures are rather small and the expenses extremely high.

Finally, it would be nice if you could finish with an inspirational message for Latin American dentists.

It is beyond doubt that successful implantation may only be done in a mouth having been fully rehabilitated periodontally. This is a basic requirement for long-term success. As oral surgeon I personally work partly together with dentists, who are hardly involved in periodontal work, while others are intensely occupied with such work. In periodontologists' patients I hardly ever see any failures or cases of peri-implantitis, while this is definitely the case in patients being referred by dentists showing only little additional care for the periodontal condition of the patient. Thus, prevention of peri-implantitis certainly is an initially critical factor. Conservative treatment methods for a peri-implant mucositis will certainly be successful in many cases, while any surgical procedures for treatment of peri-implantitis currently known or used will only show limited chances of success.

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