

## José Scarso Filho

April, 1996, Campinas, São Paulo. The first specialization course on Implantodontics took place in Brazil under the coordination of Profs. Vicente de Souza and Carlos Alberto Dotto. The class was made up of students coming from all over the country, all of which were overjoyed for being approved in a selection process involving more than 80 applicants applying for 12 vacancies. All of us shared a common objective: Solve the mysteries of the new specialty. At that time, osseointegration surgery had not met the principles of prosthetic planning, and alveolar bone augmentation was a remote procedure. The literature was germinal and incipient, forcing us to conceive the “Clinical decision making and treatment planning in osseointegration” (Engelman MJ, 1996) as the international best-seller. This group had a special guest: José Scarso Filho. And he was indeed special: discreet and polite, he seemed to understand the feelings of anxiety and insecurity shared by his colleagues. He was young, but behaved as an experienced man. He would rather not be in the spotlight, perhaps for being shy, but he could not help it. He was charismatic and intelligent, and had extraordinary manual dexterity. At that time, he was an accurate and experienced oral and maxillofacial surgeon who enjoyed talking about composite resin and prosthetic preparation. He was eager to acquire high-quality surgical instruments and made no savings when doing so. In fact, as soon as he was introduced to an innovation, be it in photography, information technology or Dentistry, he was keen to use it. He had a thirst for knowledge and had no limits in learning. A self-taught person, he humbly seemed to know everything. The end result was that, in no time, he became the leader of our group, a scientific reference to the group of which he was considered a student-professor. A few years later, Prof. Scarso (also known as Tuca) rose as one of the greatest promises in the field of Implantodontics. He contributed to the development of the new specialty all over Brazil, and left a valuable legacy of love and dedication to Dentistry and teaching, as well as great care for his patients.

Mauricio Barreto



Your formal education is based on oral and maxillofacial surgery. When did you become interested in osseointegrated implants? Tell us about your formal education until these days.

I concluded the first phase of my academic training in 1986, when I earned a degree in Dentistry at the School of Dentistry of Araraquara-UNESP (FOAr). After a year of residence with Dr. Elcio Marcantonio, I was hired as an Assistant Professor to teach oral and maxillofacial surgery and traumatology (OMFST) at the Department of Diagnosis and Surgery. Between 1991 and 1992, I earned a Master's degree in OMFST from the Catholic University of Rio Grande do Sul (PUC-RS). When I returned to Araraquara, Osseointegrated Implantodontics was taking its first steps and I began to gain some sense of the specialty. Together with Dr. Oscar Sarnachiaro and in partnership with the Department of Histology at FoAr, coordinated by Prof. Lizete Toledo de Oliveira Ramalho, I engaged in research on implants at the Primate Research Institute (PRI), in Argentina. This partnership resulted in international recognition, particularly when our research on osteogen, presented during the International Congress of Oral Implantologists in 1991, received the Eloy Borgo Research Award. At that time, courses on implant systems had training divided into two stages: surgery, performed by a periodontist and/or an oral and maxillofacial surgeon; and the prosthetic phase conducted by a prosthetist. In view of such a context, in 1994, Prof. Dr. Francisco de Assis Mollo Júnior and I sought accreditation with Drs. Carlos Eduardo Francischone and Laércio Vasconcelos. This opportunity allowed me to carry out reconstructive surgeries together with Dr. Laércio, in which

case the experience I had acquired on orthognathic and reconstructive surgery with Dr. Elcio Marcantonio was paramount. In 1996, aware of the need to deepen my knowledge, I went on to broaden my experience with implants by attending refresher (1996 - 98, School of Dentistry of São Paulo) and specialization courses (1997 - 99, Catholic University of Campinas) in Implantodontics. That was when I also had the chance to attend, together with other 23 renowned professionals, the first Specialization Course in Implantodontics. Today all these colleagues of mine are the coordinators of specialization courses in Implantodontics. During this course, I was thankfully and completely satisfied to meet Prof. Antonio Vicente de Souza Pinto and his wife Midori de Souza Pinto. He had taken the responsibility for coordinating a course of such magnitude and definitively had the greatest influence in changing the academic concept in the field. Within three years, Prof. Vicente transformed a student into a professor; a surgeon into an implant dentist and a technician into a thinker, all of which are the main reasons that encourage me to keep on improving treatment techniques and planning as well as respect for patients. By 1998, I was assisting Prof. Vicente in the courses he coordinated in Campinas. Meanwhile, I also took coordination of two refresher and one specialization course. One of the refresher courses was held in Araraquara and had Profs. Alberto Fedeli Junior and Nestor Urbaninho Curti in the team. The course syllabus included improvements in the implant placement technique. The other one was held in Campinas at the Association of Dental Surgeons and had Profs. Wilson Marques, Marcia Maria Dal Molin de Carvalho, Carmen Terezinha Moreira Rodrigues and Amaury Favoretto in the team.

The course syllabus focused on bone reconstruction procedures. This partnership was established in 1999 in Araraquara and led to the development of Advanced Courses in Implantodontics which aimed at devising and teaching advanced techniques for treatment planning including implants. The same city held a study group which remained active until 2001 with Profs. Marcia Maria Dal Molin de Carvalho, Carmen Terezinha Moreira

Rodrigues, Amaury Favoretto and Nestor Urbaninho Curti as members (Figs 1 and 2). The specialization course was taught at the Brazilian Dental Association of Bahia (ABO-BA) together with Profs. Maurício Andrade Barreto, Urbino da Rocha Tunes, Fabio José Bezerra, Paulo Vicente Barbosa da Rocha and Luciano de Castellucci Barbosa (Fig 3).

This partnership resulted in a book which, for us members of the ABO-BA, was



**Figure 1.** Profs. Marcia Maria Dal Molin de Carvalho, Nestor Urbaninho Curti, Carmen Terezinha Moreira Rodrigues and Amaury Favoretto.



**Figure 2.** Attendees of the 1<sup>st</sup> Advanced Course in Implantodontics developed to design and teach advanced techniques of treatment planning with implants.



**Figure 3.** Professors and students of the 1<sup>st</sup> Class of the Specialization course in Implantodontics at the Brazilian Dental Association of Bahia.

the guideline of how to teach Implantodontics at specialization courses at that time. Later on, together with Profs. Alberto Fedeli Junior, Aurélio Belas Lustosa and José Antonio Rios, I was engaged in laying the foundations for Implantodontics at the Brazilian Dental Association of Brasília (ABO-BR). By the end of this period, I was given the chance to enter a Doctorate program in Implantodontics. For this reason, I had to slow down my activities in Bahia and Brasília to devote myself to the Doctorate program at the Federal University of Santa Catarina in Florianópolis between 2001 and 2002, having Prof. Ricardo de Souza Magini and Prof. Antonio Carlos Cardoso as my advisers. During this period, I felt an urgent need to deepen my knowledge in Prosthesis and Esthetics. That was when I went on to attend immersion courses with Profs. Newton Fahl Junior, Dario Adolphi and Paulo Kano with a view to relating the concepts of those specialties with Implantodontics. As soon as I earned my Doctorate degree in 2002, I offered, together with

the study group which now included Profs. Luis Paulo Restife de Carvalho and Edmilson Bersani, a specialization course in Implantodontics at the Dental Association of Ribeirão Preto (AORP) in 2003/04. In 2007, I was invited by Dr. José Silvestre to coordinate the Specialization Course in Implantodontics at the Brazilian Dental Association of São Paulo (ABO-SP) during 2007/09 and 2010/12, when we also counted on Profs. Alice Kano, Marina Clemente conde and Marco Antonio Paupério Georgetti. In the meantime, in 2008, I took over as chairman of the Brazilian Dental Association of Araraquara (ABOA) and concentrated all my educational activities in my city. With the help of some members of the team (Profs. Amaury Favoretto, Marcia Dal Molin and Carmen Moreira) we took responsibility for setting up the School of Dentistry of ABOA. These activities also counted on the help of Profs. Isis Carvalho Encarnação and Rodrigo de Paula Pereira. ABOA has currently offered two courses: an specialization and a refresher course in Implantodontics.



**Figure 4.** Brazilian Dental Association of Araraquara.

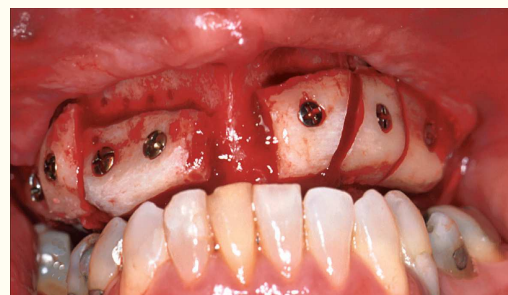
Particularly with regard to autograft, we are aware that you were the one person responsible for introducing the technique of autogenous monocortical bone blocks harvested from the mandible in Brazil, as advocated by Prof. Carl Misch. When did you take up working with the technique? What is the current condition in terms of bone resorption of cases followed-up for the last 10 years?

In 1994, I was taking my first steps in Implantodontics and basically performed reconstructive surgery for several clinicians. Due to having most of my formal education based on orthognatic surgery, I saw the retromolar region as a potential source of bone tissue, which was necessary for the procedures I carried out at that time. By the time I took up the course in Campinas (1996), the concept of an intraoral donor site was already well-grounded, and, at that time, I performed numerous surgeries to demonstrate it. During the same year, Misch published his renowned technique, and for a decade or so, the mandible was the donor site most used around the world. After a 20-year follow-up of my first cases, I can assert the versatility and reliability of the method considered the gold standard of bone grafting. In cases requiring extensive grafting

sites, removing body, ramus and coronoid process from a single segment resulted in a 60 to 70-mm donor site, which allowed significant reconstructions to be carried out at that time (Fig 5). This technique favored the development of refresher courses in advanced reconstructive procedures which were taught for three years. Later on, a study group was set up to treat potential complications arising from the use of implants. Importantly, I would like to highlight that Prof. Waldyr Antonio Janson was one of the attendees of the course. A visionary man, he is and always will be a true example of devotion to Dentistry and a model I have followed in my academic career (Fig 6).

How does bone autograft remodeling occur after undergoing progressive masticatory load? Are there any differences between remodeling with bone harvested from intraoral and extraoral donor sites?

When in function, bone autograft remodeling follows the principle of “function makes form”. Based on my own experience, I can assert that the volume of grafting does not incur significant alterations. This claim is well-grounded on the cases I have dealt with since 1994. Even though I have not



**Figure 5.** Cortical grafting involving mandible body, ramus and coronoid process used for complete reconstruction of atrophic maxilla (Course of Advanced Surgery, EPO/Campinas, 20<sup>th</sup> of April, 2010).

always yielded fantastic results, they have been modified overtime as a result of improving the technique. Each course I offered on the technique provided me with valuable learning, as they allowed me to identify the difficulties each student had in performing the technique and, as a result, which changes were rendered necessary to improve it. Thus, it took me years of teaching to gather knowledge from these lessons and from my students' experience and arrive at the best teaching method. In 2002, after numerous reviews, the core of the technique was finally designed. The improvements made eliminated the process of resorption and allowed us to work only with what was necessary for reconstruction, thereby rendering

the technique more predictable and reliable in terms of esthetics. As for bone harvested from extraoral donor sites, I have noticed greater resorption due to fast revascularization of the graft, which hinders its predictability. Nevertheless, I am no authority on that matter, as I have less experience in extraoral donor sites in comparison to intraoral ones.

You have also contributed to the development of PRP (platelet-rich plasma). What can you tell us about this technique 16 years after Brazilian dentists have been employing it in their patients? Within the same line of reasoning, what are the differences between platelet-rich plasma and fibrin-rich plasma (FRP) ?



**Figure 6.** Study group at the P-I Brånemark Institute in Bauru, 2007.

What are the therapeutic advantages of both techniques? And why should them be employed in Implantodontics?

That was the theme of my doctorate dissertation at the Federal University of Santa Catarina (UFSC). Fourteen years ago, when I entered the Doctorate program, I had considerable doubts about PRP, particularly due to the significant difference found among my patients' clinical outcomes. Thus, with the help of my advisers Antônio Carlos Cardoso and Ricardo Magini, I conducted laboratory studies with a view to quantifying and qualifying the growth factors present in samples applied *in vitro*, and undergoing cellular growth, and *in vivo*, in patients subjected to maxillary sinus grafting combined with autograft and PRP. Results revealed no relationship among *in vitro* cellular growth, as well as quantitative and qualitative growth of growth factors found in platelet alpha-granule. Later on, I was able to cross these laboratory results with the clinical response of the ten patients comprising the sample. Divergence occurs as a result of individual factors and a pull of growth factors with different potential to stimulate cellular signaling. After recombinant proteins were developed, the concentrations are much more accurate, which improves clinical outcomes. This process resulted in the commercialization of BMP-2, a bone growth protein. FRP is the new generation of platelet concentrates obtained without adding external agents such as anticoagulants, EDTA, bovine thrombin, etc. While it is obtained, other cells, such as leukocytes, are activated to regulate the inflammatory process and, as a result, promote angiogenesis. This process results in assisted tissue engineering carried out near the patient and which enhances bone and soft tissues repair.

This question is routinely asked to surgeons and researchers interviewed by Dental Press Implantology. Thus, we also would like to know from you: What is your opinion about the most recent studies on the use of recombinant human bone morphogenetic protein-2 (rhBMP2) and stem cells as adjuncts of dental surgical procedures?

Recombinant human bone morphogenetic protein-2 establishes correct signaling for the development of bone tissue. It is used as a vehicle of collagen which is deposited at the site of bone reconstruction where the process of tissue repair is triggered by induction and subsequent conduction. It is an extremely reliable method and imposes little requirements on the organism receiving it. As for stem cells, we are at the early stages of learning. Future assisted research shall determine their applicability.

IDR (immediate dentoalveolar restoration) has also been increasingly employed. In your clinical and surgical practice, have you ever performed bone grafting for reconstructive purposes with the tuberosity as the donor site?

Yes, I have. As I have previously mentioned, I have used the tuberosity as a donor site since 1996. Nevertheless, Azzi et al<sup>1</sup> were the first ones to publish about it in 2001, when referring to its use for papillae reconstruction. In 2002, Nozawa et al<sup>2</sup> used the tuberosity when covering exposed roots. A mixed graft (soft and hard tissues) was harvested from the tuberosity and fixed by means of a titanium screw. In 2007, Rebaudi et al<sup>3</sup> used it to treat soft and hard tissue defects found on the side of implants with esthetics failure (Fig 7).



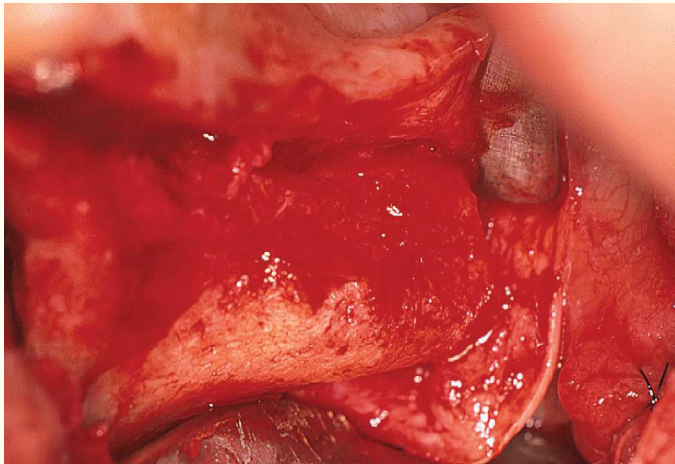
How do you see IDR used as a therapeutic alternative? How about the biological and esthetic results of this technique which has been increasingly divulged in the literature?

I consider treatment of alveolar bone defects carried out by means of filling of the tuberosity bone as an excellent therapeutic alternative with extremely favorable biological results and significant esthetic predictability.

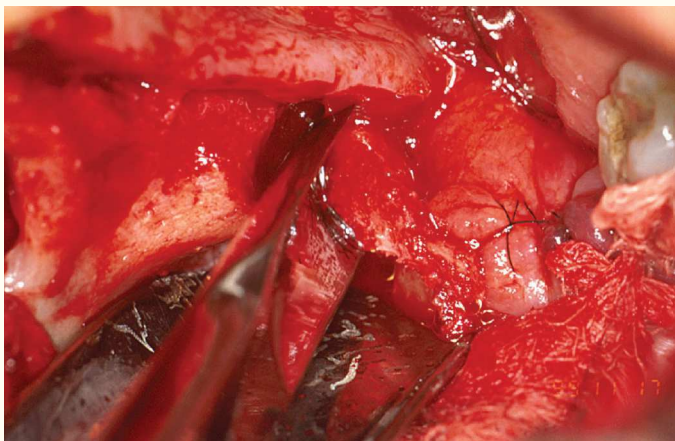
Alveolar bone reconstruction currently involves a great deal of biomaterial instead of autograft. Is bone remodeling by means

of synthetic material different from bone repair by means of autogenous bone?

Biomaterial, or biocompatible filling material, behaves as an implant-conductor of blood tissue; it is incorporated to the material at the receptive site and which allows bone growth to occur by means of replacement. After a long time, this implant is replaced by bone tissue during the ongoing process of remodeling that occurs within an organism. Bone tissue repair occurs by conduction and sometimes by induction of bone tissue.



**Figure 7.** Maxillary sinus grafting with the tuberosity as donor site and using a Lexel chisel. The procedure was carried out by Drs. Waldyr Antonio Janson and Dante Roberto Brescianini Júnior during the course of Advanced Surgery held in Araraquara on the 17<sup>th</sup> of November, 1999.



How does xenogenic material behave in bone reconstruction? Is it reasonable to assert that it is a reliable type of material?

For a long time, xenogenic material was considered an alternative for procedures in which autogenous bone tissue could not be harvested. There were so many issues of contamination, exposure and lack of incorporation that bone tissue could hardly be promoted in patients. The technological advances in obtaining this type of material associated with other reconstruction techniques, such as membranes, allowed a complicated alternative to become an efficient treatment option with less morbidity. Today it is possible to obtain a filling material of excellent incorporation, low replacement properties, gradual remodeling and high surgical reliability.

Based on the fact that xenograft is a therapeutic alternative that offers less morbidity to patients, what is your experience in application and use of this type of bone substitute?

Up to 2010, I was completely aloof from using xenograft. However, faced with the need of treating a number of patients requiring this type of procedure, particularly because they rejected undergoing a second surgical procedure necessary at the donor site, I began to use it. Surprisingly, my initial idea of xenograft changed. Since my academic training involved bone reconstruction, for a long time, I treated complications arising from grafting procedures. I always had to remove and subsequently reconstruct the implant site. Nevertheless, the positive responses I received later on and the fact that this type of material, worldwide renowned in the literature, proved reliable,

made me believe and use it. Today this type of reconstructive procedure is widely employed in my daily practice.

Do you believe xenogenic bone substitutes offered by the Brazilian industry yield similar results in comparison to imports widely renowned in worldwide literature?

I am no authority to speak of Brazilian biomaterial due to lack of experience and use. Nevertheless, it is worth highlighting that I have followed the researches and the effort made by the Brazilian industry with a view to producing substantial improvements. Thus, I do believe we will soon yield the same results of international biomaterial.

In your opinion, in esthetic alveolar bone reconstruction, is it worth opting for biomaterial instead of autogenous bone? How about extraoral grafting? What is its place in the present context of Implantodontics?

In cases involving loss of a single tooth associated with hard and soft tissue defects, to my view, it is preferable to use autograft combined with hard and soft tissue graft harvested from the tuberosity. My experience of more than 15 years with this donor site allowed me to enhance the technique (Fig 8). Thus, cases with significant bone loss, which were initially solved by planning and performing a number of surgeries throughout a year, are currently solved by a single intervention that corrects hard and soft tissues around loaded immediate implants. As for extraoral grafting, the quantitative requirements of anterior esthetic zones is less significant, thereby eliminating the need for extraoral sites.

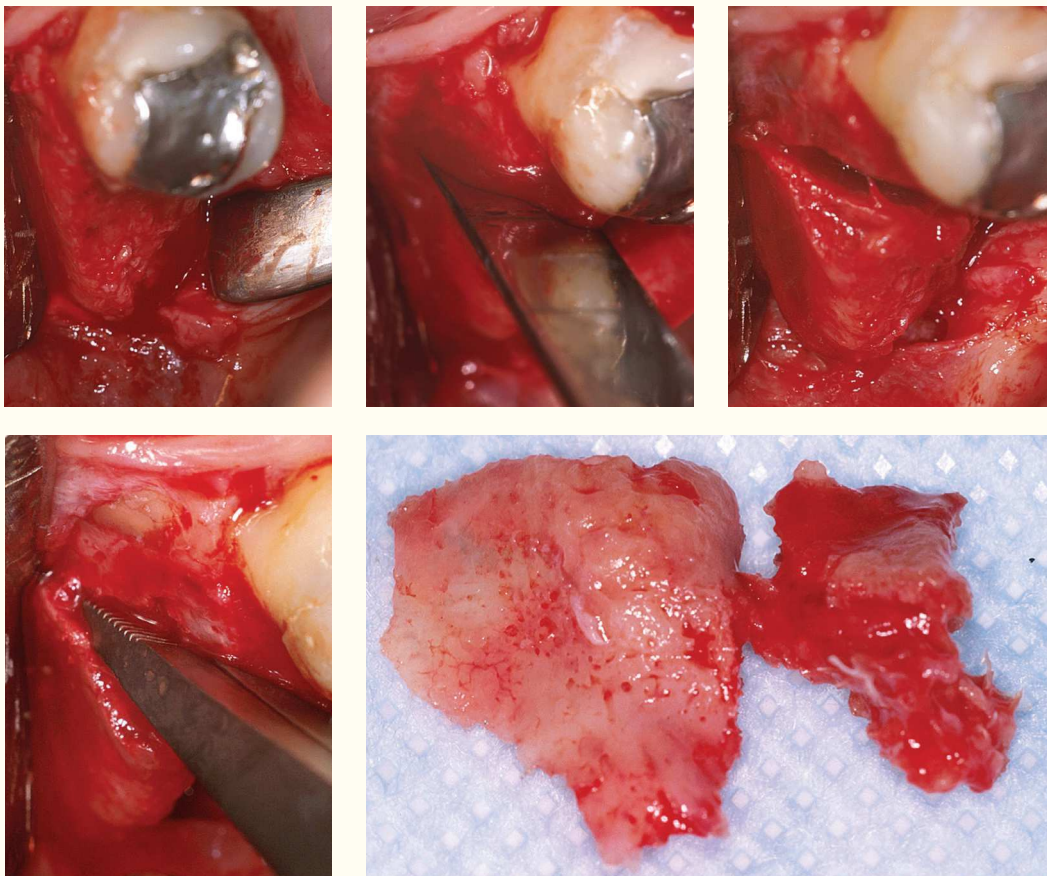
What can you tell us about implant connections? In your opinion, do elder external hexagon implants have an unsatisfactory biomechanical behavior in comparison to Morse taper or internal-connection implants?

I would not say elder, as they continue to be increasingly sold in the Brazilian market. I would say they have been studied much more often. These studies have evinced that the strength of single or multiple prostheses was limited to the thin metal edge of the implant-supported platform or the abutment of prostheses with the use of intermediate abutments. In comparison to

other types of connection, such as the internal and Morse taper ones, the area of interlock was rendered much greater, thereby significantly improving the mechanical behavior of this type of connection. Personally, I have ceased to use external connections for more than 10 years.

What is your opinion about the concept of platform switching? Is it beneficial? Does it contribute towards controlling or minimizing marginal bone loss?

The concept of platform switching is not recent. Brånemark did it himself when



**Figure 8.** Technique of harvesting graft bone from the tuberosity by means of a Lexer chisel. The procedure was carried out by Heloisa Helena Paula P. Prata during the course of Advanced Surgery held in Araraquara on the 26<sup>th</sup> of October, 2000.

conducting experimental trials with dogs in which external hexagon implants 5 mm wide and prosthetic abutments 4 mm in diameter were used. Results revealed that, in this case, platform switching proved of clinical importance. Nevertheless, when the scientific community focused on such a mechanical technique, a number of adaptations were published. Some of them were successful, while others sought a different type of connection, thereby turning toward Morse taper. The concept of platform switching began to be increasingly studied.

What do you believe is most important to preserve crestal bone: the type of prosthetic connection or the platform switching effect?

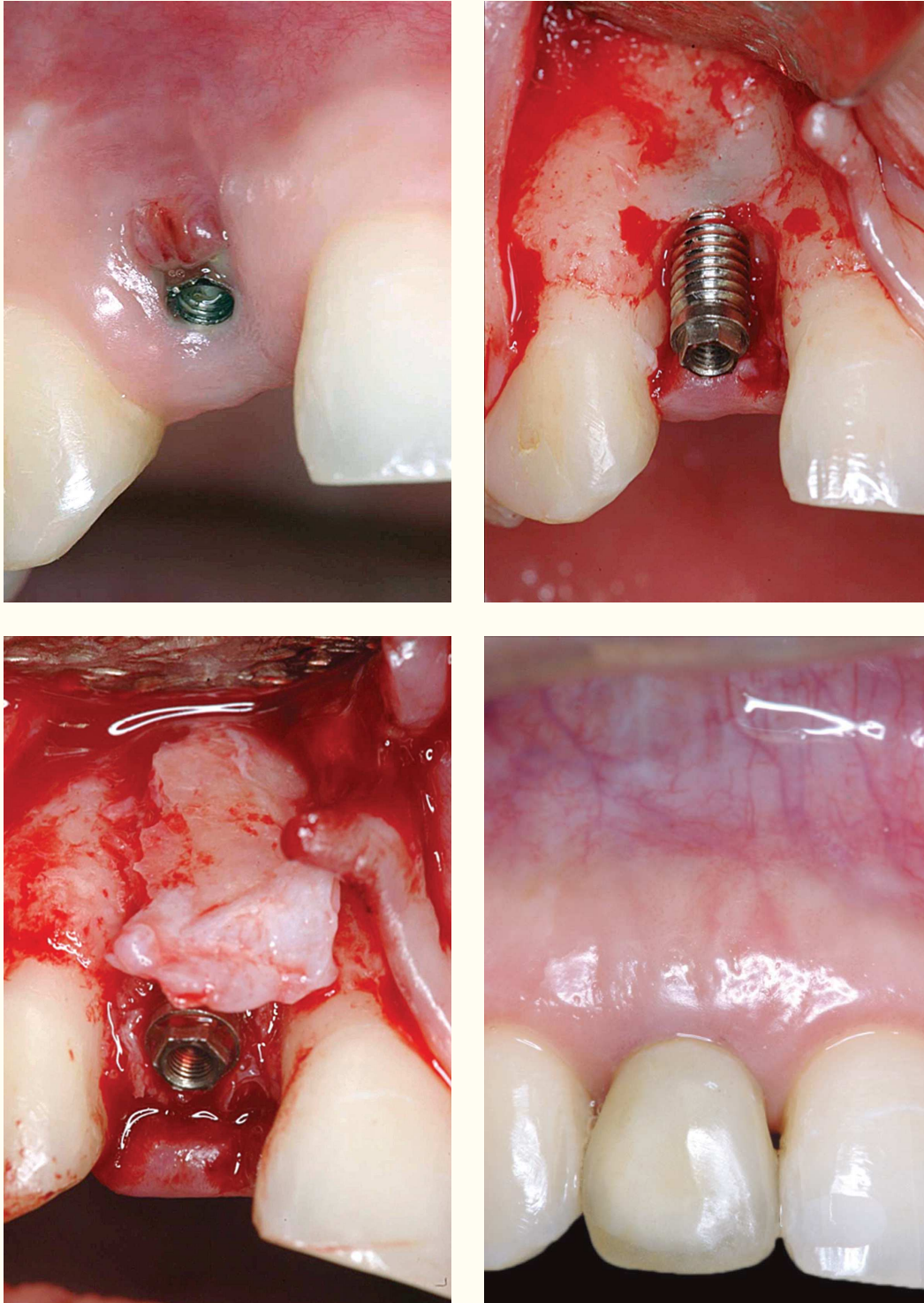
Preservation of crestal bone is neither determined by the prosthetic connection in use nor the platform switching effect, it is of multifactorial nature. Should all other numerous factors be correct and controlled, and should we consider that, for didactic purposes, we are able to establish a relationship between preservation of crestal bone and the two aforementioned factors, I would say that the combination of both is what yields the best results. A long time ago I used to be a heavy user of external hexagon implants 5 mm wide and prosthetic abutments 4 mm in diameter, with which I was able to yield impressive results, including the dwindling of hour-glass-shaped bone resorption around implants. At that time, the whole idea was extraordinary; however, once the concept of platform switching was also applied to internal connections, I was able to comprehend its application for esthetic purposes, which improved treatment predictability in terms of esthetics and function.

How do you see the anchorage techniques in relation to full-arch rehabilitation treatment? Do you consider them to be effective, simpler, less traumatic, faster and with real benefits to edentulous patients?

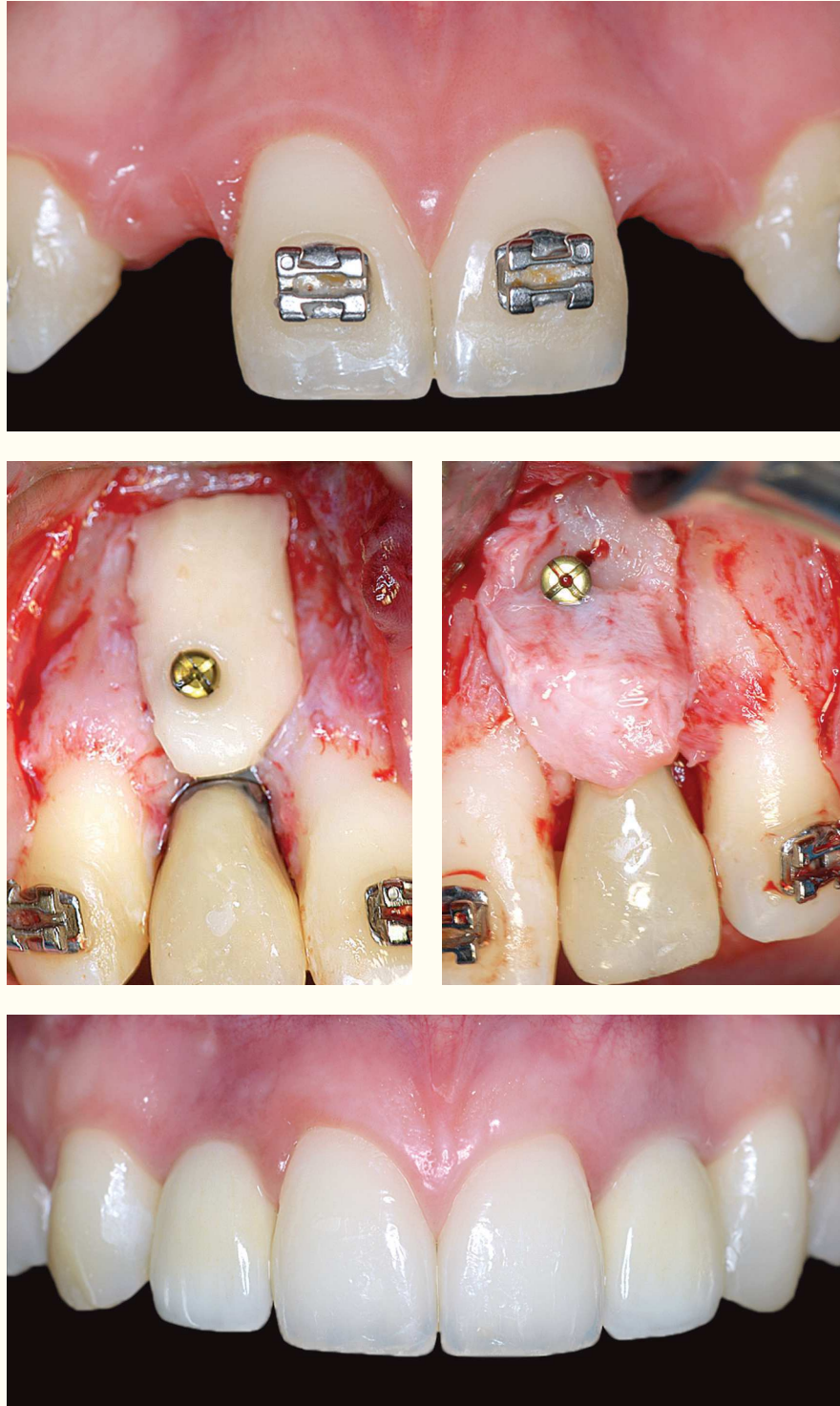
There are several anchorage techniques, namely: palatal, zygomatic, zygomatic abutment, etc. They are an alternative to cases in which the patient disagrees in undergoing surgical repair processes, such as grafting, or when treatment time is patient's major concern. They are effective techniques that provide real benefits to patients.

What have currently been your major interests in terms of dental research?

I have always studied bone tissues. That is one of the links I found with Implantodontics which needs bone repair in order to be established. Before entering the School of Dentistry, my initial education was of laboratory technician. For this reason, I am particularly attracted to esthetics. Today I aim at providing patients with function and esthetics with as little morbidity and treatment time as possible. Eight years ago I directed my research towards donor sites at the tuberosity and its applications in Implantodontics, from socket filling to hard and soft tissue reconstruction with immediate loading (Fig 9). In my last triennial publication, I quantified and qualified, based on clinical as well as tomographic examinations, the changes that occur as a result of reconstruction of a single tooth by means of composite graft of hard and soft tissues harvested from the tuberosity. The study included cases of immediate socket, narrow alveolar ridge and compromised ridge with immediate extraction, all of which included



**Figure 9.** Technique of harvesting hard and soft tissue from the tuberosity by means of a Lexer chisel. The procedure was carried out on the 17<sup>th</sup> of August, 2006).



**Figure 10.** Study comparing the classic technique of harvesting cortical bone from the retromolar region and the technique of harvesting hard and soft tissue from the tuberosity. The procedure was carried out on the 25<sup>th</sup> of January, 2010.

implant placement and immediate loading. The results will be disclosed at a book I am working on (Esthetic procedures aimed at oral rehabilitation). I have currently been developing a research to compare bone reconstruction of the retromolar area (classic technique) and the tuberosity area in a patient with lateral incisors agenesis on both sides, and immediate implant and prosthesis placement (Fig 10).

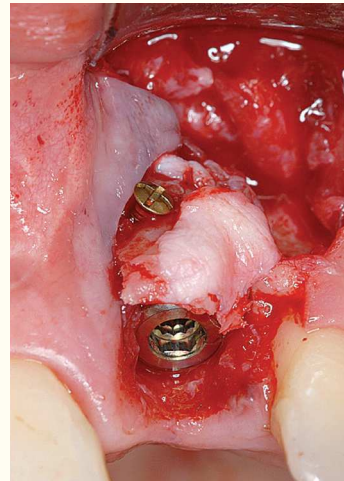
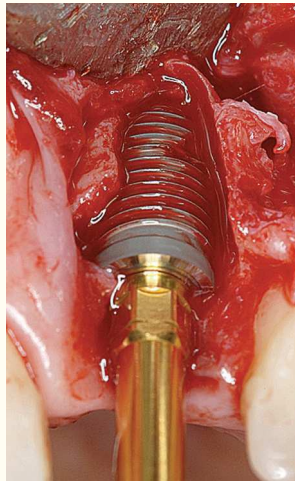
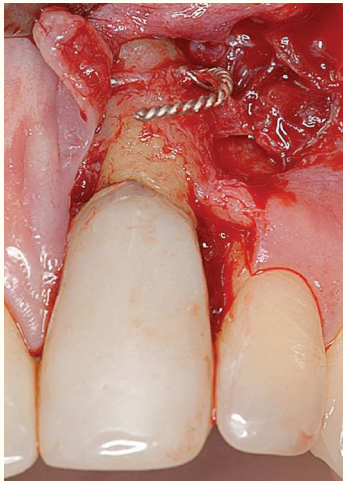
Different fields of science have talked about nanotechnology and nanoparticles. Human curiosity has increasingly joined contemporary Dentistry with a view to plunging into a world of even smaller particles when dealing with treatment of implant surfaces. In light of present Implantodontics, and faced with the development of new material, what are the immediate benefits of these studies? How do they affect your research?

Whenever the term “nano” is brought to light, the following question arises: What is the size we are talking about? In relative proportions, a single grit is for a 1,000-km

beach as much as a nanometer is for a meter. In this context, the events that unfold in Implantodontics after implant placement are rendered much more specific and, as a result, yield more refined results. Cases that used to be performed in several phases are now treated in a single phase. That is the technological advance which most influences my research, as it allows satisfactory reconstruction of hard and soft tissues in compromised ridges with concomitant implant placement and immediate loading application (Fig 11).

Ongoing improvements and supplementary imaging examinations have been increasingly and routinely used for dental diagnosis and planning. Do you believe virtual surgical planning developed with the aid of computers and prototyping are capable of rendering implant treatment completely safe?

Any technology applied to implants only provides partial safety, as treatment relies not only on patient’s compliance, but also on the process of repair. In other words, even if we





**Figure 11.** Alveolar bone reconstruction by means of mixed graft (soft and hard tissues) harvested from the tuberosity and combined with implant placement in compromised fresh socket and immediate loading. The procedure was carried out on the 24<sup>th</sup> of February, 2011.



apply the most accurate technique with the best technology available, we still need patients to make continuous use of the orthotics in the postoperative phase.

Today digital examination is essential in treatment planning. Learning how to deal with DICOM images for diagnosis and specific software for implant placement is part of Implantodontics teaching. Nevertheless, the accuracy provided by digital data collected by means of tomography might oftentimes get lost in the process of transference from the virtual to the clinical phase. The higher the number of prototyping points in hard and static zones, such as healthy teeth, the greater the accuracy of the surgical phase of treatment and as a result, the higher treatment safety. In view of the above, I believe imaging examination contributes to better treatment planning; however, examination reading and conduct remain under the responsibility of implant dentists.

After developing the so-called revolutionary theory of relativity, the worldwide renowned researcher and scientist Albert Einstein was once asked about how he envisioned World War III. As expected, due to his usual fast thinking and geniality, he promptly answered that he knew nothing about with what weapons World War III would be fought, but was sure that World War IV would be fought with sticks and stones. This fact, combined with another quote that says "The mind that opens to a new idea never returns to its original size", leads us to question, within due proportions, how do you see the future or the next steps of dental, surgical and rehabilitation therapeutic procedures?

The next steps will be determined by the industry of technology; and only investigations on the results of Implantodontics will be able to predict the success of therapeutic dental surgical and rehabilitation procedures. All I know is that, in the future, there will no longer be edentulous patients.

**Interviewers**



**Luis Rogério Duarte**

- » Specialist, MSc and PhD in Implantodontics.
- » Dental surgeon at the Renaissance Institute - Oral rehabilitation with implants.



**Franklin Leahy**

- » Specialist, MSc and PhD in Implantodontics.

**REFERENCES:**

1. Azzi R, Takei HH, Etienne D, Carranza FA. Root coverage and papilla reconstruction using autogenous osseous and connective tissue grafts. *Int J Periodontics Restorative Dent.* 2001 Apr;21(2):141-7.
2. Nozawa T, Sugiyama T, Satoh T, Tanaka K, Enomoto H, Ito K. Connective tissue-bone onlay graft with enamel matrix derivative for treatment of gingival recession: a case report. *Int J Periodontics Restorative Dent.* 2002 Dec;22(6):559-65.
3. Rebaudi A, Massei G, Trisi P, Calvari F. A new technique for bone augmentation and papilla reconstruction with autogenous free gingival-bone grafts. *Int J Periodontics Restorative Dent.* 2007 Oct;27(5):429-39.