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editor-in-chief

## The process, the human being, and the error

Any dental procedure is a set of processes, that is, a continuous sequence of operations that present a certain unity and that are reproduced with some regularity, in an orderly and precise way.<sup>1</sup>

Does a dental procedure seem complex? It does not seem so, it is.

However, due to the repetition of any technique or method that a clinician or dental technician performs, the routine dental procedure,

with time and repetition, begins to seem simple. This mechanism of repetition in any area of human knowledge makes the professional more confident, experienced and, consequently, familiar with a certain method, becoming, depending on the quality of the procedure, a specialist in an area.

The mastery and improvement of a technique until we achieve excellence is what guides the human being until they reach “Professional Nirvana”.

Well, poetic and superb! But there is a determining factor before reaching that goal. And it is at this point or factor that we must concentrate!

In March 2017, the world's largest air accident turned 40<sup>3</sup>. This accident, which killed 583 people, marked world aviation and, consequently, the whole of humanity. I will not go into the details of this tragedy, depicted in books, news, television specials and countless citations on the internet. But I cannot fail to mention some crucial points that are important in our professional life as dentists, dental technicians, as health professionals. After data analysis and extensive investigation, the result of the tests (more than one!) pointed out several causes for the accident; surprisingly, they are all related to human factors. Among the main ones, were the lack of communication between pilots and air traffic control, errors in English pronunciation by controllers, pilots' fatigue and even problems of personal relationship between the airline pilots. Now replace the area of action and come to Dentistry; instead of communication between pilots and controllers, picture the communication errors between dentists and dental technicians; think of the fatigue of the pilots as the stress of a potter making a ceramic laminate until two o'clock in the morning after more than twenty hours of work; add to it a dentist with financial, health or even personal problems, performing a complex procedure at 7:00 pm, after a hard day's work, without having made the proper financial planning, knowing that he is "losing" money with the case. The example of this air crash serves as a reference for many process analyses, learning and professional improvement, and as an attitude of how to be human. Following this crash, international aviation organs have established a number of procedural changes, ranging from pilot training and flight

controllers' improvements, including psychological assessment, to more rigorous testing of English proficiency. These changes have made aviation safer for millions of people on five continents. But back to Dentistry.

I have focused on the development of CAD/CAM (Computer -Aided Design/Computer -Aided Manufacturing) technology for almost 10 years, with company visits, dental prosthesis laboratories and clinics in various locations around the world, besides being present in several events. In my private practice, I use digital radiography, intrabucal scanner, milling machine and everything that involves this technology that, if well used, becomes productive.

There are two points that can be enlightening. One of them is that this technology is "sold", most of the times, as a successor to the prosthesis laboratory - that is, the machine replacing the dental technician - and that, thus, will make the dentist make fewer mistakes, causing fewer problems and becoming more profitable. Another point is that digital technology (which is a reality and I do not disagree) simplifies processes and minimizes errors, which is partly true in my understanding. There are other important elements, but these two points allow me to finish my line of thought in relation to the theme proposed for this editorial. As mentioned above, in the air crash, the human factor must be considered at both points of discussion. It is important to note that even with technology the human element is present. The machine produces an "input", a crown, for example, which is of no use if the preparation is not adequate and the cementation is done incorrectly. The CAD/CAM technology is in the middle of the process! The human factor exists and must be taken into account; in these two steps, for example, dental preparation and cementation, in addition to the

technical knowledge in the digital design and post-milling finalization, of course. The process should be known in details; the human factor cannot be neglected even in digital processes, so that the error is avoided or at least minimized. For this, the detailed process of all parts of an operation is part of any type of organization, be it a dental practice or an aircraft manufacturer. As for the human factor, this should be controlled with attitudes that transcend technical training, but are based on personal and professional organization. Unfortunately, education in digital processes is totally incipient in dentistry.

The control I call TOTAL within Dentistry - that is, to understand all the steps of a process - depends on how the professional organizes the office, the laboratory, the planning,

the appropriate and real cost to carry out each case, in short, the “whole of the work”. Dentistry is a health area made by humans for humans.

Knowledge is imperative in any profession, but without organization, it vanishes, gets lost quickly, causing disappointment and errors.

When I analyze professionals I know, with long-lived success and recognition, I always find practices organized and managed by people who control stress in a productive way. Every day, I see more and more controlled and well-applied knowledge as a success factor, regardless of the presence or absence of technology.

Enjoy your reading!

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