New study suggests many dental implants may be prone to fracture

An examination of biologically failed dental implants conducted by researchers in Israel has found that more than 60 per cent of these implants showed signs of mechanical flaws and full cracks. In publicising these results, they aim to encourage dental implant manufacturers and dentists to find ways to reduce the structural damage that occurs when a metal is subject to repeated applied loads.

In the study, the researchers from the Technion—Israel Institute of Technology in Haifa examined 100 discarded dental implants, which had been extracted owing to peri-implantitis, made of a titanium alloy and commercially pure titanium using energy dispersive X-ray analysis and scanning electron microscopy. They found mechanical defects in 62 per cent of the specimens. In addition, the inspection showed that the pure titanium implants had more cracks than did the titanium alloy implants.

“Embedded particles appear to be linked to the generation of surface defects that evolve into full cracks,” explained Dr Keren Shemtov-Yona, who conducted the study as part of her Master of Science degree. Furthermore, the wear and tear of daily use also seem to contribute to the potential of manufacturing flaws to develop into cracks and subsequently lead to failure of the material, she said.

It was also found that the width and length of the different implants in this study were not correlated with the observed defects. Shemtov-Yona is now aiming to conduct further studies to investigate the reasons for the development of cracks to determine whether the causes lie in manufacturing, use or both.

Dr Keren Shemtov-Yona (© Technion—Israel Institute of Technology)
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“There is a general sense of frustration throughout the world”

An interview with CoDent founders Profs. Dov Sydney, USA, and Mauro Labanca, Italy

Dental Tribune International: Could you briefly introduce your project?

Prof. Dov Sydney: It is called CoDent and it is part of a company called CongressMed, which has developed a model for congresses based on the concept of “Controversies in…”.

CongressMed’s education is devoted to addressing controversial medical issues in a debate format.

Our role is to bring the concept to the dental field, and this involves defining the first topic, finding the moderators and generally advancing the project. We thought it good to start with implants because it is one of the most difficult issues we are faced with as dentists. In this regard, the first congress will address the topic of controversies in dental implantology and will be held in Barcelona from 3 to 5 November 2016.

What distinguishes this congress concept from other meetings?

Prof. Mauro Labanca: We hope to promote real discussions and interaction between practicing physicians and researchers on unresolved pressing clinical issues. We do not want to be a substitute for any other existing meeting. For the first congress, we will be discussing implants, but future topics do not have to be surgical ones. Congresses could address adhesive and restorative dentistry or different kinds of treatments in orthodontics. We are not an academy or a scientific society; we already have so many and we do not want to compete with them. We are doing something totally different.

What will the programme cover?

Prof. Labanca: Right now, we have eight topic modules that we feel are very interesting and will foster debate, as well as greater knowledge at the end of the meeting, hopefully. The programmes are designed to provide an effective forum for debate by allowing ample time for speaker-audience discussion. There are not going to be long presentations by one single speaker. Instead, we will have very short addresses of about 10 to 15 minutes during which the speakers will seek to answer a specific question. The result will be that, after approximately 1.5 hours, the audience will have had a summary by some of the most important speakers on that topic.
You are both dentists. Have you experienced this problem yourselves?

Prof. Labanca: Exactly. When I started with implants many years ago, I had this idea to bring the most important companies together to initiate open and honest debate between them. At that time I probably didn’t have enough cards to play, but now it is the time! The reality dentists are facing today is that companies are approaching them and claiming to have something special and something new. This could be true, but you do not have the means to compare or confirm whether it is. You could try the products on your patients, but that would not be the right thing to do.

Prof. Sydney: Both of us travel quite a bit. Mauro and I have a global understanding of dentists’ concerns in many parts of the world. There is universally a common sense of frustration regarding the different implant systems. I regard our role as providing a safe, scientifically enabled and controlled environment for implant companies to proactively present the advantages of their systems directly to the end users.

Will there be follow-up documentation after the meeting?

Prof. Sydney: The existing congress model involves a journal issue that is published afterwards and compiled in such a way that it is relevant not only to the event, but also to anybody interested in reading about what was discussed and summarised by creating a permanent and easily-referenced resource.

Prof. Labanca: We are not just trying to look for something different; we have seen that there is a need for this congress. We want to achieve a high level of academic acceptability, as well as accessibility for the general dentist population. That is the balance that we hope will lead to success.

Thank you very much for this interview. 

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