IPS Implants Preprosthetics is a “useful addition for a specific patient group”

By Franziska Beier, DTI

In order to provide an alternative implant solution for those patients with poor medical preconditions, Prof. Nils-Claudius Gellrich, director of the clinic for oral and maxillofacial surgery at the Hannover Medical School in Germany, and Dr Björn Rahlf, senior physician for oral surgery at the same clinic, designed the IPS (individual patient solution) Implants Preprosthetic. In conversation with Dental Tribune International, Gellrich and Rahlf spoke about the patients for whom it is suitable and how they developed this individual implant.

Prof. Gellrich and Dr Rahlf, you provide your patients with the IPS Implants Preprosthetic. For which patients is it intended?

Gellrich: We only use the IPS implant in patients for whom a clinical necessity exists. These include tumour patients and patients with acquired malformations caused by trauma or atrophy but also those with congenital malformations who, as they get older, lose their teeth and exhibit poor bone and soft tissue. When attempting to provide these patients with a conventional dental implant restoration, you reach a point where you can no longer treat them adequately, resulting in the need for an alternative.

What inspired you to create this implant solution, and how does it work?

Gellrich: In addition to the clinical aspect, which I have just described, we have been focusing on computer-assisted surgery for 20 years. We have been dealing with modern biomedical technology, patient-specific implants that are functionalised and 3D analysis. Based on this experience, we realised that it could be advantageous to attach the bone anchorage for our patient-specific implant made of titanium at a location remote from the point where the post passes through the mucosa into the oral cavity. This avoids lengthy treatment protocols that would normally require at least three surgical procedures and a delay of one year before a patient receives a prosthesis.

Fig. 1: With the IPS Implants Preprosthetic, Dr Björn Rahlf (left) and Prof. Nils-Claudius Gellrich offer their patients a customised dental implant solution.
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Our initial goal was to be able to guarantee prostheses after six to 12 weeks. Today, we can even offer immediate care on the day of outpatient treatment. Although this means that the planning phase for the implant is somewhat more intensive, the time for invasive clinical procedures for the patient has become significantly shorter.

Rahlf: Also important to mention is that our patients are spared a major operation in which bone is usually transplanted from their iliac crest or the fibula to the jaw, because these operations often result in complications. With the IPS, we can operate independently of the bone volume because the bone does not necessarily have to be situated where conventional implants would be placed. Instead, we can analyse the existing bone structure, which determines the implants, and we can have the posts emerge from the bone where they are needed for the prosthetic solution. Soft tissue must, nevertheless, be transplanted in many cases, for example to ensure the unrestricted movement of the lips. However, this is not a problem, as the human body has sufficient soft tissue and this transplantation is not very difficult to perform.

Gellrich: The clinic’s cooperative partner is the KLS Martin Group, a globally operating medical technology company based in Tuttlingen in Germany. IPS Implants Preprosthetic is a registered trademark. KLS Martin now also offers the digital interface to prosthetic solutions.

How many patients have received the IPS so far?
Rahlf: The first time we considered this idea was in 2014; the first treatment followed in 2015, and the current number of patients is 41. However, some of them have received more than one IPS, which means that we have placed a total of 45 implants.

Gellrich: We treat sick patients, patients who are often also undergoing irradiation and patients with congenital malformations—meaning all of them have poorer medical preconditions. However, so far, over a period of more than five years, none of the implants has failed. I hope that, with this method, we will also be able to show that, for example, even very old people can still live for many years with a high load capacity and chewing comfort. The oldest patient we treated was 91 years old and the youngest 19.

Is the IPS implant currently only available in your clinic?
Rahlf: We organised an event where we showed other university professors in Hanover how the method works. We have also been to international congresses and have presented the method at these. The demand is great, and some colleagues have already planned and implemented their first major cases.

Gellrich: In Germany, colleagues are now slowly starting to use the method, some of them at a clinic in Kassel. We also have guest students who come from other clinics to watch live operations at our hospital.

Are there clinical studies on your implant application available?
Rahlf: We have already published a clinical study that described the kind of system it is and how it works. In a current follow-up study, we have been investigating whether the quality of life of our patients was improved by the IPS implant.

Would you like to add anything else?
Gellrich: To avoid any misunderstandings, I would like to emphasise that the IPS, contrary to some misconceptions, is not a reinvention of the old subperiosteal implants that were used from the 1930s or 1940s up until the 1970s. The great difference is that subperiosteal implants were an alternative to normal implants at that time; however, this does not apply to our implant solution. Firstly, the indication is different, and secondly, subperiosteal implants were not functionally stable at any time. The IPS implant, however, is a functionally stable anchorage that a normal implant restoration could never achieve in a comparable form in one of our patients, even under the ideal conditions of a perfect bone graft. It is a line extension in implant dentistry, an individual supplement, not a replacement, and certainly not in competition with conventional implants. We consider it a useful addition for a specific patient group.

Editorial note: A list of references is available from the publisher.