Champions-Implants

Minimally invasive implantology with a two-piece system

The implant market offers not only different implant systems, but also different implantation procedures. As an alternative to conventional approaches, the MIMI Flapless method with the specially developed Champions (R)Evolution® implant offers a minimally invasive workflow with a unique organisational, surgical and prosthetic approach. Read this interview with Armin Nedjat, Professor (PMS College Science & Research), dentist and developer of the MIMI procedure.

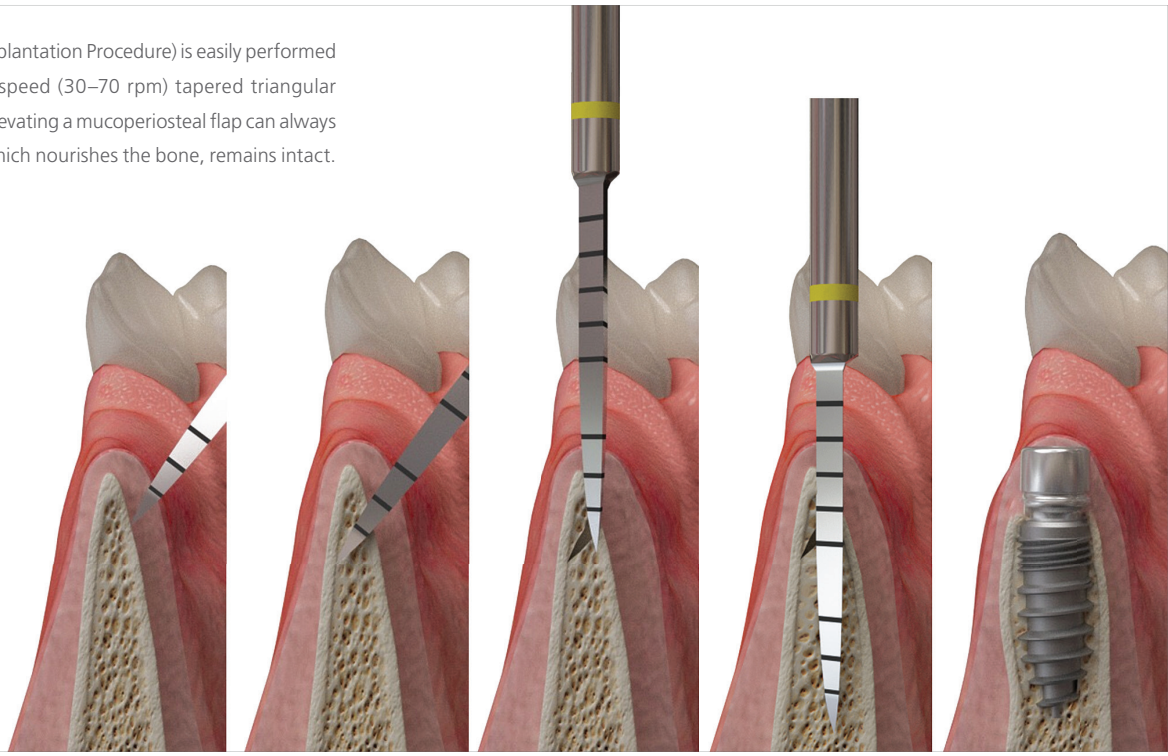
Professor Nedjat, what is unique about the Champions (R)Evolution® implant?

The Champions (R)Evolution® implant is a targeted bone-densifying implant body made of grade 4 titanium (pure titanium) with an exceptional surface roughness due to irradiation and triple etching. Good osseointegration is achieved quickly and permanently. The double 9.5° taper provides a tight bacterial seal against the future abutment and meets the demand for a common prosthetic platform for all implant diameters—3.5, 4.0, 4.5 and 5.5 mm. The ingeniously simple principle of the Champions (R)Evolution® is the shuttle. Assembled sterile at the factory, it serves as an insertion and impression tool, cover screw and healing abutment. This is the real innovation that allows for minimally invasive implant placement according to the MIMI protocol, a major change in the dental workflow.

What is the implant placement procedure for the two-piece Champions (R)Evolution® implant using the MIMI placement protocol?

At the first appointment, the cortical bone is penetrated either transgingivally or with the help of a small incision or punch, either with a sterile diamond in the irrigated high-speed handpiece or at only 250 rpm in a green contra-angle handpiece with a conical triangular drill. When the cancellous bone is reached (after approximately 1–3 mm), the drill speed is reduced to 50–70 rpm to "activate" the CNIP navigation. The tapered triangular pilot drill

The CNIP (Cortical Navigated Implantation Procedure) is easily performed in cancellous bone using low-speed (30–70 rpm) tapered triangular drills. Exposure of the bone by elevating a mucoperiosteal flap can always be avoided. The periosteum, which nourishes the bone, remains intact.

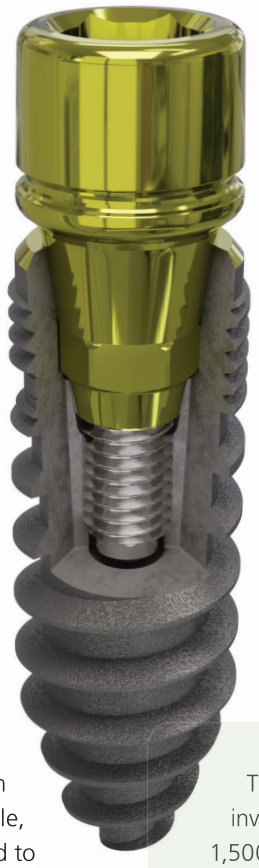


will not penetrate the lateral cortical bone at this low speed—this is similar to the way a Hedström file works, which can never perforate a tooth during root-canal preparation.

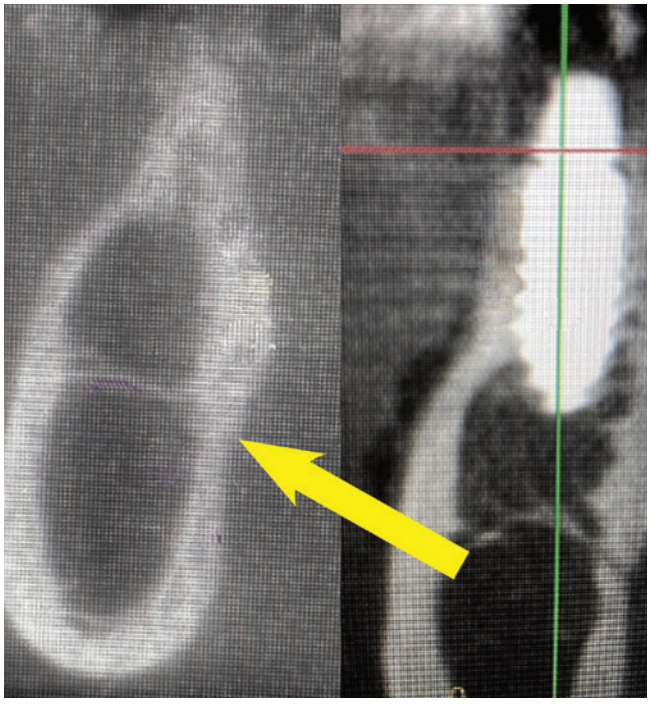
The other drills used after the yellow Champions pilot drill are also used at very low speeds and therefore only navigate the "softer" parts of the bone. After preparing the implant site with so-called crestal relief in the hard D1/D2 bone (a drill 0.5 mm wider than the diameter of the implant is used crestally), the implant is inserted with a torque of about 20–60 Ncm, if possible 1–2 mm subcrestally.

What is the research on the success of the MIMI procedure?

Evaluation of a ten-year study of 13,834 Champions (R)Evolution® implants placed showed a success rate of over 96%. The study was evaluated according to the strict Albrektsson criteria, which concluded that subcrestal implantation is preferable to bone-level implantation. A MIMI principle is therefore that it is better to use shorter implants and to place them subcrestally. In many cases in the lateral mandible, shorter implant lengths, e.g. 8 mm, can also be used to achieve a prosthetically ideal implant position due to the mylohyoid lobe.



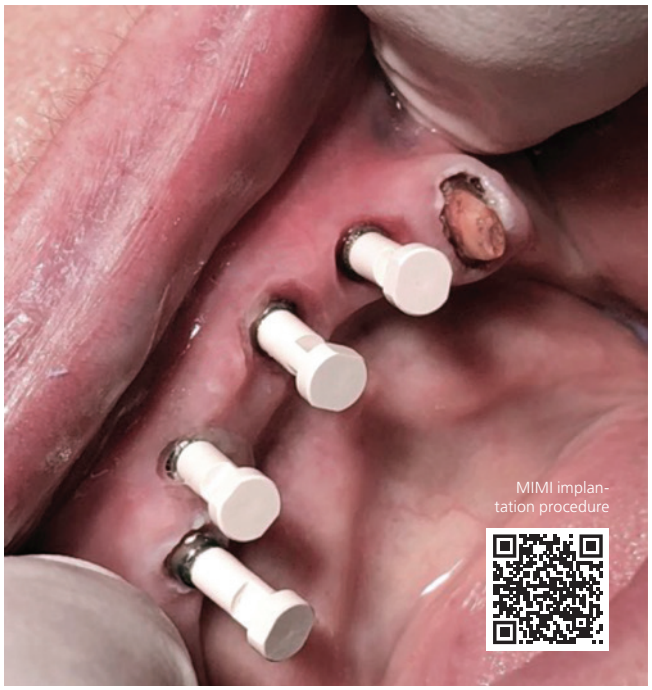
The Champions (R)Evolution® implant has a bone-condensing body made of grade 4 titanium (pure titanium), which is exceptionally rough due to irradiation and triple etching. Good osseointegration is achieved quickly and permanently. The 9.5° telescopic crown provides a tight bacterial seal against the future abutment and meets the demand for a common prosthetic platform for all implant diameters—3.5, 4.0, 4.5 and 5.5 mm.



It is better to use shorter implants and to use them subcrestally. In the lateral mandible, shorter implants, for example 8 mm, are ideally in many cases, even in the presence of a mylohyoid lobe (yellow arrow).

Classic implant placement

The classic method of implant placement involves preparing the implant site at 400 to 1,500 rpm (with irrigation), inserting an implant in a "closed" procedure, sealing it with a cover screw and carefully suturing the large wound to seal it against saliva. The sutures are removed after seven to ten days. Complications in the form of soft-tissue inflammation, swelling, haematomas and pain are the rule rather than the exception with this conventional implantation procedure in the first two weeks. At the third appointment, a few months later, the implant site is surgically re-entered, the cover screw is removed, and a so-called gingiva former or healing abutment is placed. After a further one to two weeks, the gingiva former is then removed—often in conjunction with a control radiograph to check correct placement—to allow a metal impression post to be connected to the implant, which is then again unscrewed again for an "open impression" using a custom impression tray. The gingiva former is then reconnected. At the fifth and final appointment, the gingiva former is again removed, the definitive abutment is connected, and the final screw-retained or cemented restoration is connected. The entire procedure, which requires five appointments, takes an average of three hours of chair time for a single crown. This highly complex workflow has not changed since the early days of oral implantology. The MIMI procedure, with the dedicated Champions (R)Evolution® implant system takes a new approach to implant placement.



MIMI—one of the keys to successful dental implantation.

Comparison with cardiac stents

I like to compare MIMI implantology with cardiac stenting, which was first used by US radiologist Charles Dotter in 1963—against considerable resistance from the medical profession at the time. Prior to this, aortic stenosis was treated by extensive open-heart surgery, which involved opening the entire chest. Fourteen years later, German cardiologist Andreas Grüntzig helped catheter-based dilatation achieve a breakthrough. in 1977, he was the first to dilate a narrowed coronary artery using a balloon catheter he had developed. Another decade later, Dotter's idea of using a stent, a small tube, to keep a vessel open permanently became a reality: in 1986, Jaques Puel and Ulrich Sigwart placed the first coronary stents into a human coronary artery. In 1989, the first inflatable stent was implanted using a balloon catheter. High-pressure implantation, developed by Italian cardiologist Antonio Colombo in 1996, was the final breakthrough for stents. In orthopaedic surgery, too, the entire surgical site is no longer opened if possible, because the aim is "to work with nature, not against it". Everything is done as atraumatically and minimally invasive as possible, in the interest of the patient's health, to achieve an improved "workflow" and healing process without the risk of complications. MIMI implantology follows the same philosophy.

What is the MIMI procedure at the first appointment?

After a MIMI implantation with equigingival shuttle closure (to prevent lateral micromovement during healing or bone remodelling in the first six to eight weeks after surgery), a closed impression is taken with a prefabricated impression tray at the first appointment, immediately after implant placement. A PEEK impression post is clipped into the shuttle, which is then scanned intra-orally as a scanbody or left in a conventional polyether or silicone compound, duplicating the oral situation for the dental laboratory with extreme precision. In softer D3/D4 bone, the Champions condensers are used after the first two tapered triangular drills. These bone-compressing instruments can convert D4 bone into D2 bone and achieve primary implant stability of up to 60 Ncm in the cancellous bone in just a few minutes. We call this "osseous metamorphosis" (OMM) because the bone can be gently and carefully "transformed" into a denser structure.

What prejudices does MIMI face?

Surgical exposure of the bone by raising a mucoperiosteal flap in implant-bed preparation should be obsolete by now. Long-term studies have shown that iatrogenic peri-implantitis, including bone and soft-tissue resorption, is a predictable consequence. Prejudices voiced against MIMI, namely that the surgeon is "flying blind" in the bone, are entirely obsolete. With the correct procedure, complete control is maintained at all times.

What does the MIMI procedure achieve, and what does it avoid?

The inside of the implant usually remains sterile until the second and final appointment, when the restoration is delivered. There will be no "breeding ground" for anaerobic bacteria inside the implant body during the so-called healing period. Nor is the all-important biologic width compromised or impaired by "active" reentry. In addition, the internal threads of the implant are not subjected to multiple stresses when using the MIMI procedure with Champions (R)Evolution® implants. Multiple changes of screws, gingiva formers, impression posts, etc. would inevitably result in significant loss of soft and hard tissue.

Contact address
Champions-Implants GmbH, Germany
+49 6734 914080
www.championsimplants.com

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