Case Report

Beyond planning: Exploring the advanced *capabilities* of iPhysio®, the 3-in-1 anatomical device

Dr. Jacques **Cheylus**

- Dr. Jacques Cheylus is a passionate and experienced professional in the field of oral and maxillofacial surgery.
- His academic background includes a University Diploma in Esthetic Orthodontics from Strasbourg, a Master's degree in Oral Implantology from the University of Frankfurt, a Post-Graduation in Implantology and Rehabilitation from the University of New York, and a Certificate in Cranial Radiography from the University of Paris.
- He's currently a practicing dentist in Haute-Savoie and in Switzerland, and actively involved in the International Congress of Oral Implantologists (ICOI) and the European Association for Osseointegration (EAO).
- He's a key figure in the oral implantology community, founding the Wind&Mind conference in 2017, and dedicated to developing innovative implant designs and providing patient-centered care.

It's now been a decade since I started using iPhysio® for implant temporization.

The first release, back in 2015, was a polymer healing cap (available in three different shapes and heights) that clipped onto a titanium base. We quickly encountered mechanical disassembly issues during the osseointegration period; these led to patient discomfort, localized inflammation, and a potential loss of accuracy during intraoral scanning. This was due to the uncertain interlocking mechanism, which could not be verified radiographically because the component was not radiopaque (Fig. 1).

This first experience followed my investment in a 3D intraoral scanner, which marked my first step into digital dentistry. For me, it was obvious that integrating digital technologies into my implant practice was the way forward. Using iPhysio® as a scanbody was clearly the right choice to continue my digital transition and embrace high-performance technology.

Convinced by the innovative approach of LYRA ETK with the iPhysio® tool, I shared my feedback—along with some drawings—with the R&D team to help improve the product (Fig. 2).

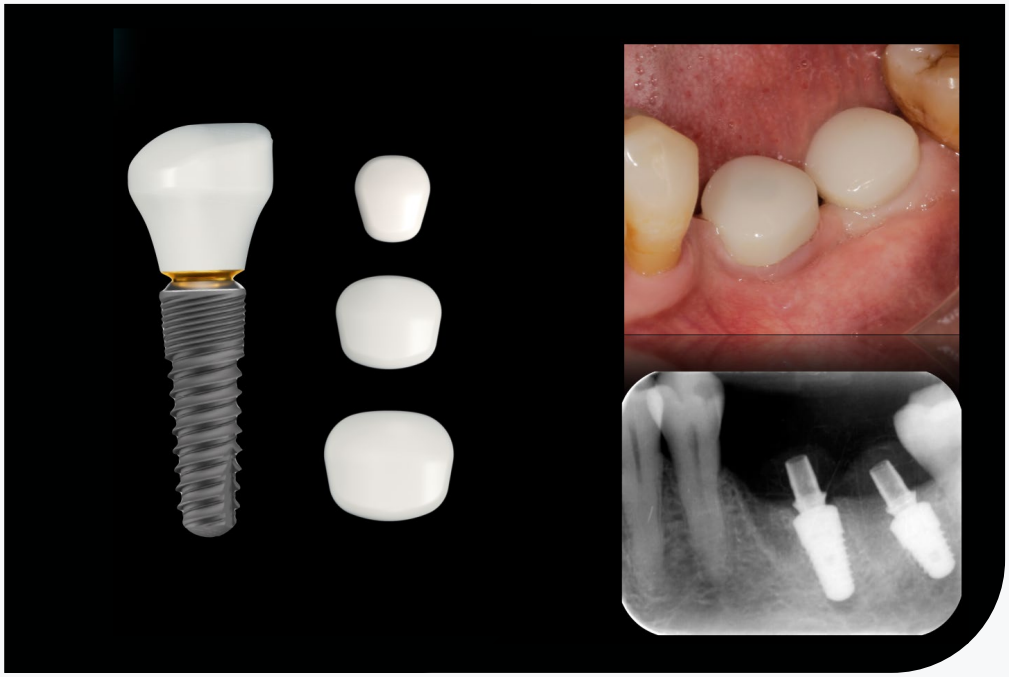

FIG. 1 *iPhysio® healing cap in 2015.*

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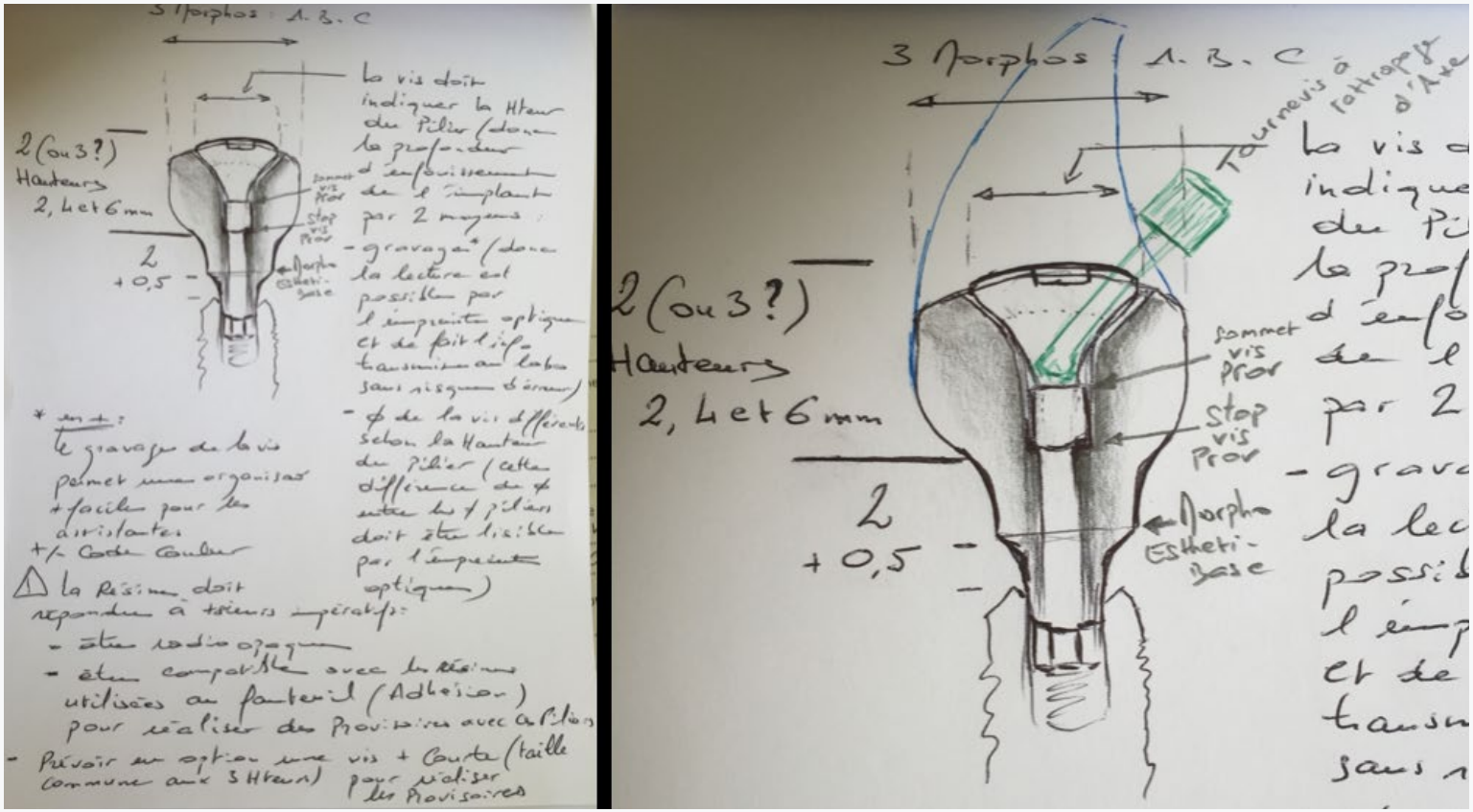

FIG. 2 *Personal drafts on potential evolutions.*

Together, we agreed on three main objectives for the iPhysio®:

- To achieve the best possible emergence profile over the implant, with healthy surrounding soft tissues
- To enable accurate digital impressions in a simple, efficient way, while reducing patient discomfort
- To support provisional restorations during the temporization phase

Two years later, the official release of what we considered the most advanced and intelligent healing abutment became a reality (Fig. 3): a one-piece, screw-retained component made of titanium with a zirconium coating (zirconium nitride). This release offered radiopacity, an optional short screw for provisional restorations, various precisely designed shapes and heights in 3D, and a free digital library for labs; these features helped turn this tool into a must-have in our daily practice.

FIG. 3 *iPhysio® healing abutment in 2017.*

Ten years later, in my practice, over one thousand implants have healed with iPhysio®. I would never go back to using conventional healing abutments or physical impressions.

If I had to give a few reasons why, here they are:

• The different iPhysio® shapes can adapt to all types of clinical situations and allow for optimal papilla support (Figs. 4, 5)

• The soft tissues surrounding iPhysio® abutments are consistently healthy, thanks to the specific surface treatment— titanium with a zirconium nitride coating—which is a gold-standard for biocompatibility (Fig. 6)

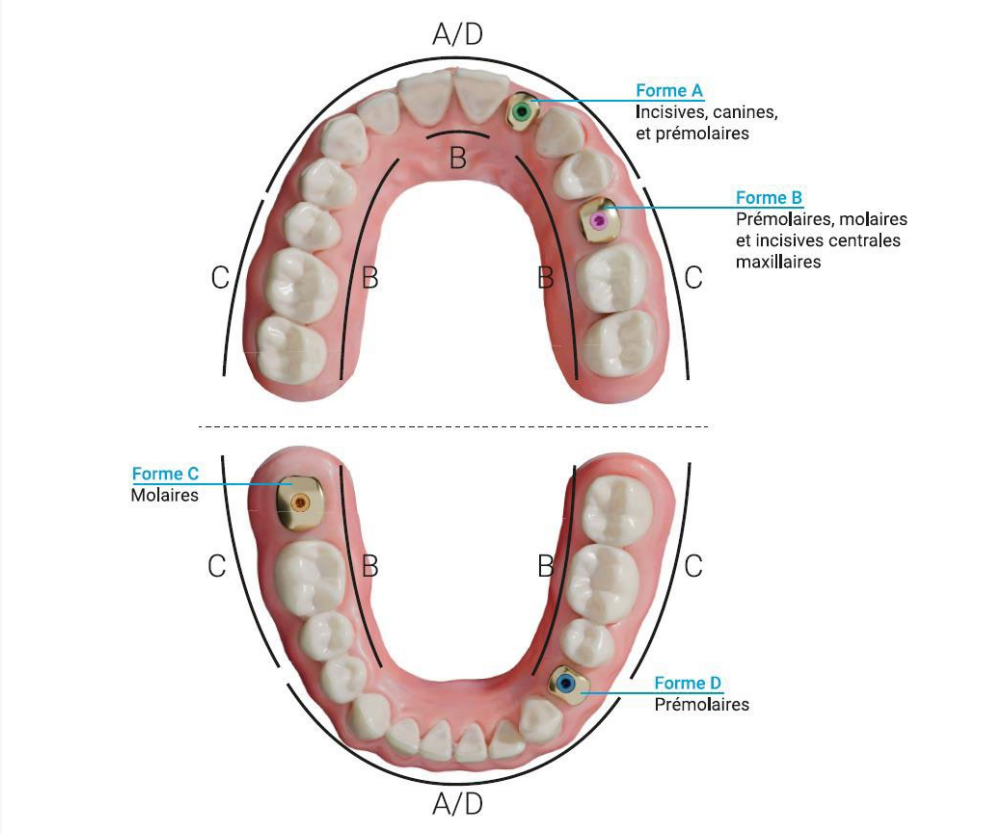

FIG. 4 *iPhysio® different shapes for all sites. B shape is also a good option for upper central incisors.*

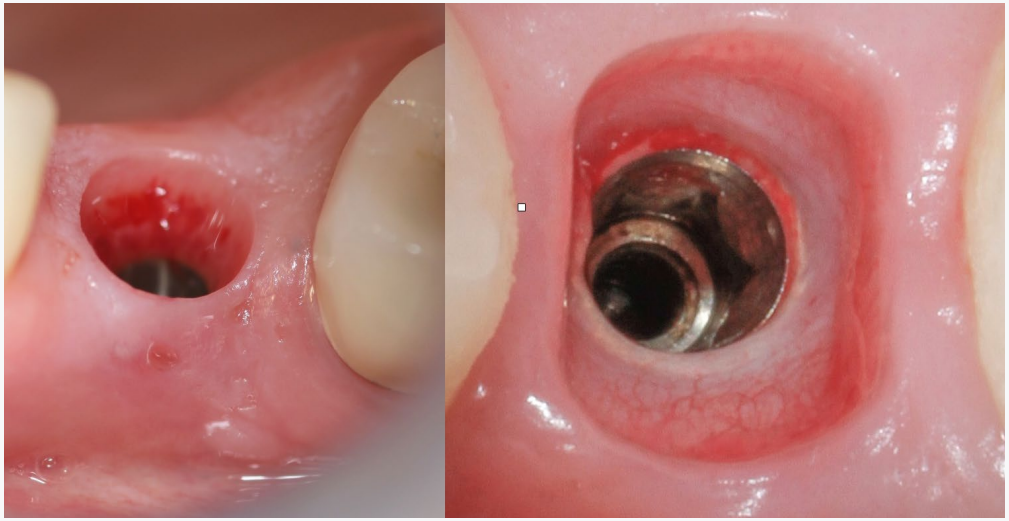

FIG. 5 *Standard cylindric (left) versus iPhysio® anatomical (right) healing abutments. Tissue contours are better supported with iPhysio® (D shape) here on premolar sites.*

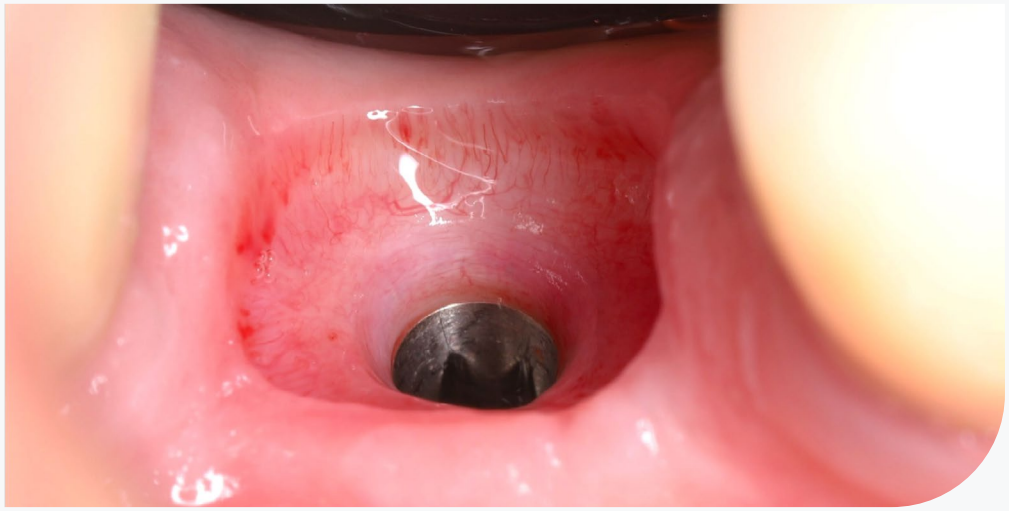

FIG. 6 *Socket healed with iPhysio® healing abutment over implant: 4 months post op. We can clearly observe the full emergence profile and tissue support with distinct fiber types and vascularization from the collar to the margin: deep white connective circular fibers, junctional epithelium in the middle, sulcular epithelium on cervical contour.*

FIG. 7 *Effortless intraoral 3D scanning with iPhysio®, including the emergence profile. There is no need to remove the iPhysio® — it functions as a scanbody itself. No additional scan of the emergence profile is required: the portion of the iPhysio® beneath the soft tissue is anatomically pre-designed, accurately defining the emergence profile.*

FIG. 8 *The iPhysio® digital library is compatible with images from all major intraoral 3D scanners. The full library is available on 3Shape, Exocad, Medit, Zirkonzahn, and 3Diemme. It provides highly accurate implant positioning. The iPhysio® surface is precisely manufactured, and its coating is specifically designed to minimize light reflection during intraoral scanning.*

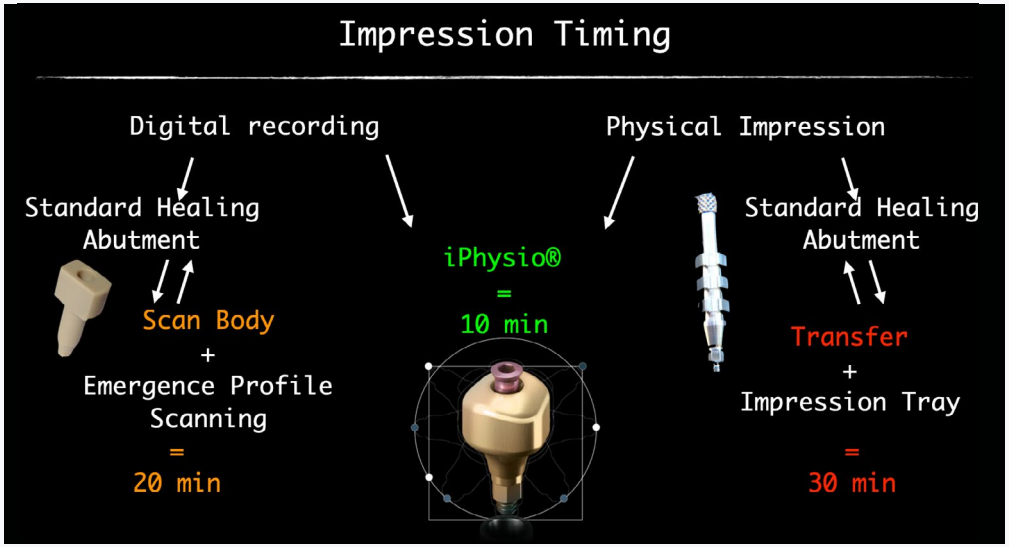

FIG. 9 *Impression timing: conventional vs. digital, scanbody vs. iPhysio®. Less time, less handling, fewer materials. Scanning with iPhysio® appears to be the most efficient technique.*

- My patients, my team, and I feel much more comfortable during the impression phase. Unlike with conventional impressions, there's no impression coping, no discomfort from scanbody placement or removal, and no messy paste or risk of gag reflex (Fig. 7)
- Intraoral scanning provides perfect accuracy and allows for precise repositioning of the implant during the digital workflow (Fig. 8)
- Impression time is significantly reduced, by a factor of two to three (Fig. 9)
- The provisional pin with a short screw is a great option for fixing a temporary crown onto the iPhysio® (Fig. 10). It's easy to use, and similar

FIG. 10 *Cuttable plastic pin with short screw for provisional restoration over iPhysio®.*

to making a provisional on a natural tooth (Fig. 11). The pin also acts as a safety feature in case of implant overload during the osseointegration phase

• The iPhysio® concept offers the easiest way for the lab to exactly reproduce a provisional emergence profile, without requiring any additional records (Fig. 12).

"The iPhysio® concept offers the easiest way for the lab to reproduce the exact same emergence profile as the provisional, without requiring any additional records."

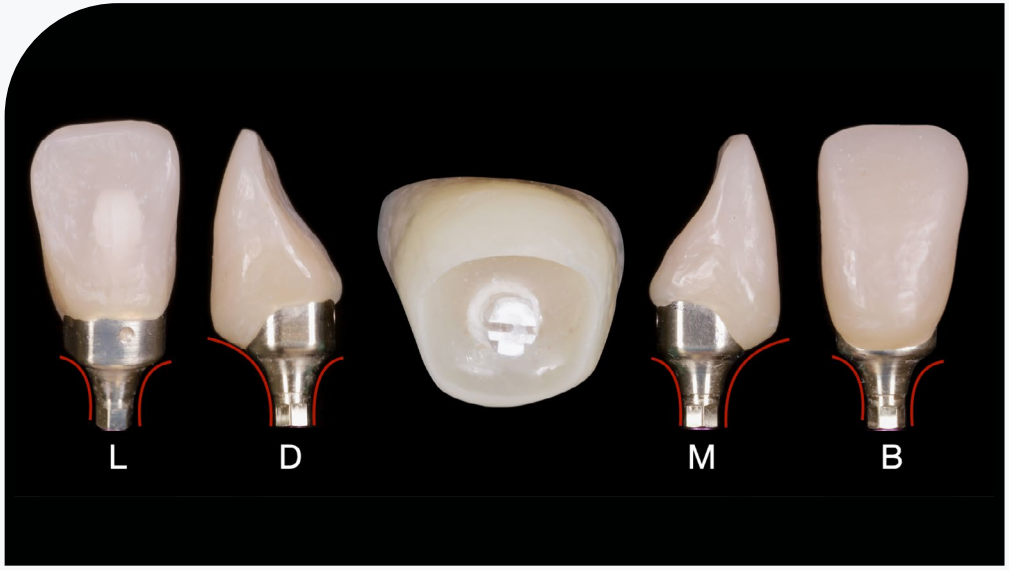

FIG. 11 *Fabrication of a provisional restoration over a B2 iPhysio® healing abutment for replacement of an upper central incisor.The design can be created either manually or digitally, chairside, immediately after surgery. A cleaned, sterilized iPhysio® (identical to the one used during surgery) can be used as a support to facilitate handling and final shape adaptation. The reconstruction technique is similar to that used for provisionals on natural teeth. A silicone key, registered before tooth extraction, can be used to fabricate the provisional crown directly over the surgical site, or alternatively, a prefabricated acrylic tooth may be used. The emergence profile is refined by adding flowable composite and contouring with burs to optimize soft tissue adaptation over the implant.*

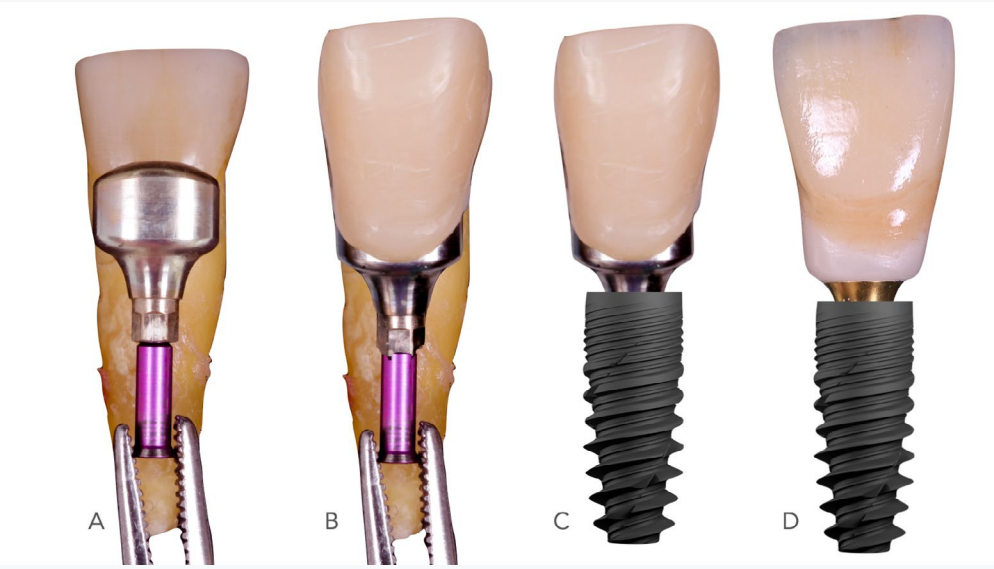

FIG. 12A-D *(A) The ideal iPhysio® shape should closely match the anatomy of the extracted natural tooth. (B) The provisional restoration should replicate the original tooth as accurately as possible. (C) The iPhysio® must provide sufficient space above the implant shoulder to support soft tissue and to allow reconstruction of the peri-implant biological space. (D) The definitive crown should be an exact replica of the provisional in order to perfectly fit the soft tissue contours. In the deep zone, close to the implant and bonded to a titanium-base abutment, polished zirconia (without glaze) is the most biocompatible material choice.*

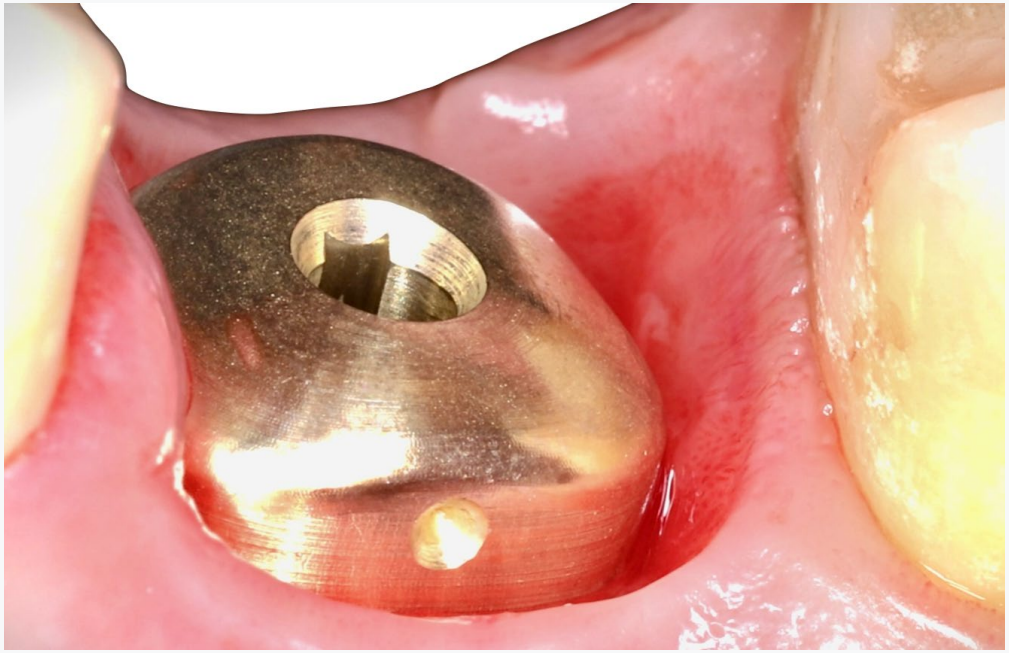

FIG. 13 *Soft tissue contour after removal of the socket sealing resin cover.*

• The same provisionalization protocol can also be applied to molars by creating a Socket Sealing Abutment (SSA) over the iPhysio®, allowing for better soft tissue stability and contour (Fig. 13).

To sum up, iPhysio® is, for me, the perfect link between implantology, digital dentistry, and esthetic dentistry. It's a simple tool that makes all of this accessible.

• ***For patients***: They feel comfortable with these techniques and are grateful for the experience. They're also impressed by the technology and the growing use of digital solutions.

• ***For my team and assistants***: Adapting implant protocols, managing inventory, and handling materials is effortless with the iPhysio® system. And since they don't need to be chairside during impression appointments, it's a welcome break in their daily routine—and a breath of fresh air for me!

Let's describe two case reports: one anterior and one posterior single-tooth replacement. Both cases involved immediate implant placement following tooth extraction.

CONCEPT, MATERIALS, AND METHOD

To optimize the emergence profile and ensure soft tissue stability, a provisional crown was placed for the anterior site, and an SSA was used for the posterior site. Both were built over an iPhysio® abutment with a shape adapted to the post-extraction socket. The healing period lasted four months.

To improve stability and precision when placing implants into fresh extraction sockets, drilling and implant placement were performed using a surgical guide. While these procedures can be performed freehand, full or pilot-guided surgery is generally more comfortable and secure, especially in cases where the remaining bone is thin or fragile.

Current recommendations advise filling any gaps larger than 1 mm between the implant and surrounding bone. In these cases, we used a mix of allogenic bone graft material (Biobank) and PRF exudate (Platelet-Rich Fibrin concentrate).

To preserve the blood supply around the implant and surrounding tissues, tooth extractions must be atraumatic. Elevating a flap is avoided. Roots are carefully sectioned and removed individually to minimize trauma. Inflamed or infected tissue is frequently present, and must be thoroughly removed using curettes and an Er:YAG laser. The entire socket is then disinfected with antiseptics, such as chlorhexidine and/or povidone-iodine.

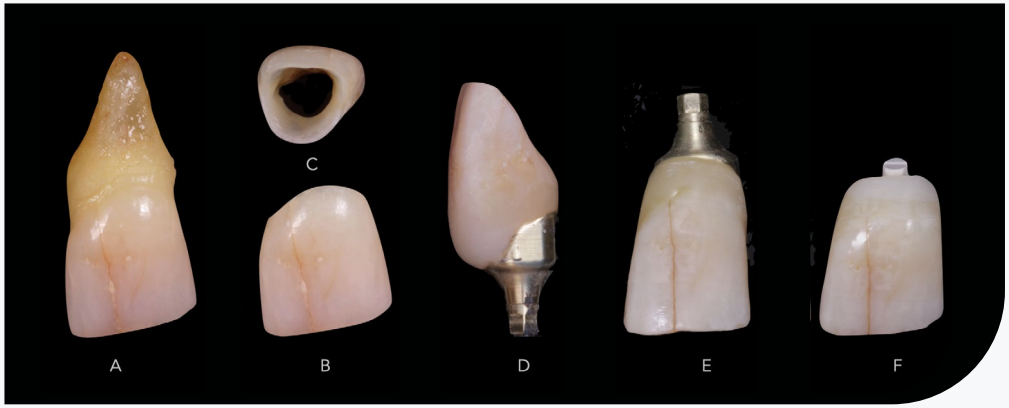

FIG. 14A-F *Provisional restoration over iPhysio® performed chairside using the enamel of the extracted tooth 21 and a retentive pin. Both are bonded with flowable composite and shaped to achieve an ideal contour, preserving the natural soft tissue and papillae.*

“To optimize the emergence profile and ensure soft tissue stability, a provisional crown was placed for the anterior site, built over an iPhysio® abutment with a shape adapted to the post-extraction socket.”

FIG. 15A-F *(A) Initial tooth 21, with severe mobility and periodontal disease, was extracted atraumatically and flapless, then replaced by an implant (ETK Naturactis) with apical anchorage. (B) A provisional restoration, made using the enamel of the extracted tooth, was adapted with composite over a B2 iPhysio® healing abutment (see Fig. 14). (C) Situation 15 days after surgery. (D) Four months post-surgery, the provisional is removed for 3D intraoral scanning without removing the iPhysio® , which now serves as a scan body; the STL files are then sent to the lab. (E) On the day of final crown delivery, the iPhysio® can be removed. The deep contour of the definitive crown should exactly replicate the provisional (see Fig. 12) to fit the healed socket perfectly without causing any overpressure.*

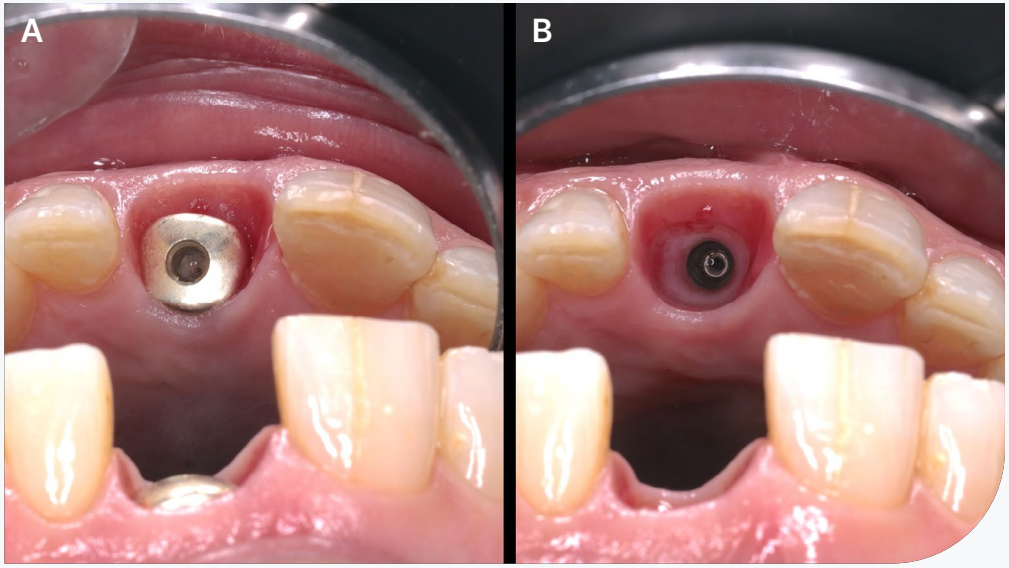

FIG. 16A, B *Occlusal view of the healed socket 4 months post-op: with iPhysio® (A) and without (B). The deep, bright gingival tissue corresponds to the circular connective fibers that encircle the switching platform connection, protecting the underlying bone and implant. To achieve such strong tissue, the connection between abutment and implant must be perfectly stable and sealed, avoiding multiple manipulations. Otherwise, the tissue may become inflamed, potentially leading to peri-implantitis. Critical gingival contours have been perfectly maintained thanks to the provisional restoration combined with the iPhysio® abutment, which creates a profile that supports and guides soft tissue healing. As a result, the papillae have been preserved.*

The second case follows a similar process but is located in the posterior region (first lower left molar).

Placing a provisional crown over an iPhysio® has always been, for me, the standard approach for esthetic sites (from incisors to premolars).

However, for over 5 years now—with more than 100 cases documented for a clinical review—I have been using provisionalization on iPhysio® with the SSA technique for molar sites. This approach appears to be the best way to maintain the full tissue structure around and over implants when performing immediate implant placement after tooth extraction in molar areas.

A five-year follow-up review in my practice showed no significant difference in clinical success rates when comparing bone levels between immediate and delayed implant placements. Regarding soft tissues, this method is undoubtedly superior for stabilizing and maintaining the papillae and gingival margin after tooth extraction. Just as for anterior sites, the pink esthetic score and tissue stability are improved with SSA, not only for esthetic reasons but also through preventing soft tissue shrinkage over the implants.

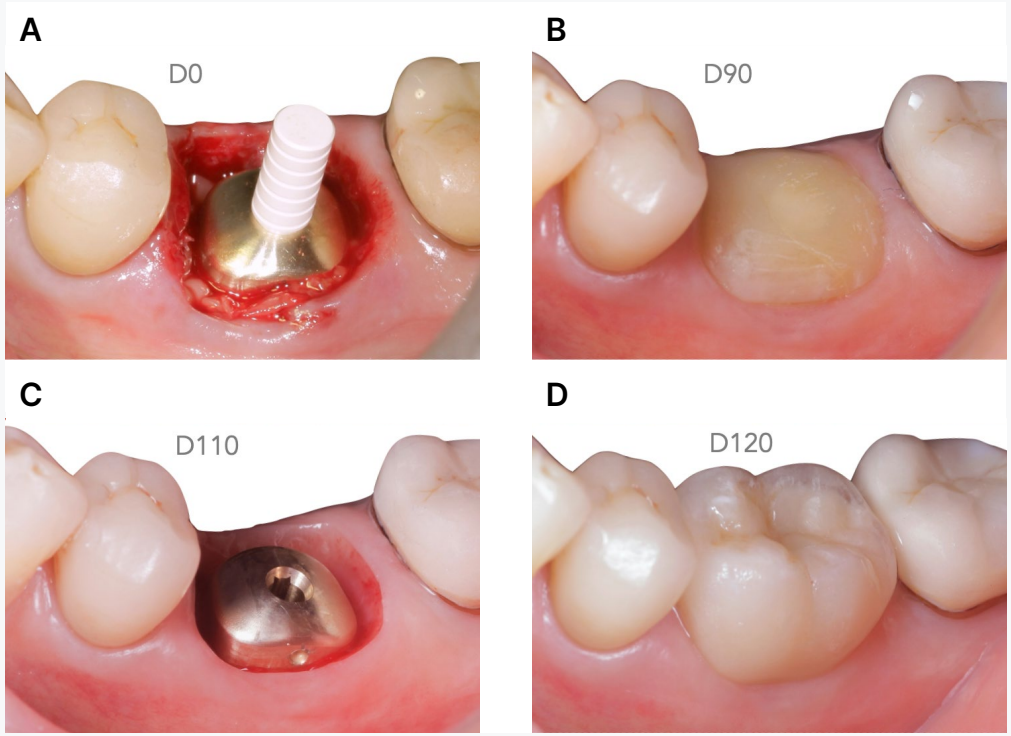

FIG. 17A-D *Socket Sealing Abutment (SSA) over iPhysio®.*
(A) Day 0: For better sealing of the socket and full soft tissue contour support, an additional resin cover can be adapted over the iPhysio® using a plastic pin, replacing the initial long screw with a short one. This method provides easier handling over the surgical site compared to techniques requiring multiple removals of the healing abutment to adjust the SSA deep within the cavity, in contact with the implant and bone particles. The socket is completely filled with bone and clot around the implant and protected by the iPhysio®, which is covered by a PRF membrane. At this stage, the surgery is complete, and the site remains stable without any prosthetic manipulation in this fragile deep contour over the implant platform. Subsequent prosthetic procedures can be safely performed thanks to the iPhysio® abutment, which prevents tension or contamination of the bone graft and implant by flowable resin.
(B) Day 90: Soft tissues have been well maintained throughout the healing period, preventing papillae resorption and socket cratering.
(C) Day 110: Impression was performed using a 3D intraoral scanner. After removal of the socket-sealing resin cap, scanning the iPhysio® surface and its emergence profile provides precise implant position and deep emergence profile without the need for any transfer or scan body.
(D) Day 120: Final crown situation, 4 months after surgery.

CONCLUSION

Reaching a decade using iPhysio® is more than just an anniversary; it has been truly satisfying to collaborate with LYRA ETK in developing one of the simplest, most accessible, predictable, and efficient tools for beginner and advanced surgeons, and the prosthodontists working alongside them.

Certainly, although the protocol appears straightforward, new users must follow the usual learning curve, starting with simple cases and progressing to more advanced surgeries. Sharing my experience with the company was not enough for me; that's why it felt natural to share it with colleagues and offer courses on various digital e-learning platforms (LYRA ETK, EvolYou, FrenchTooth) and at congresses.

I hope this interview finds its rightful place in Digital Dentistry magazine, allowing me to share 10 years of experience with a community of modern practitioners passionate about cutting-edge digital tools.