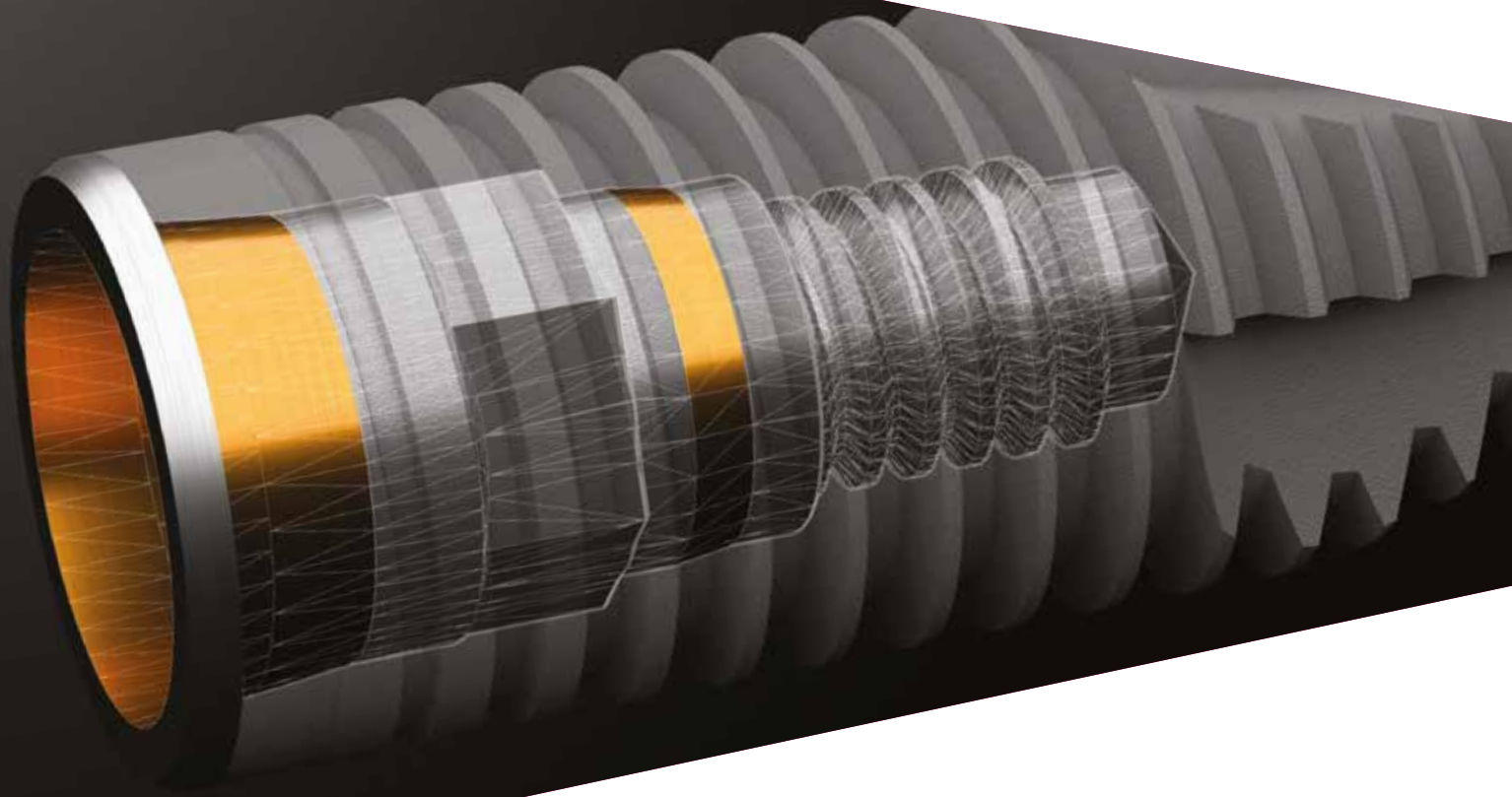
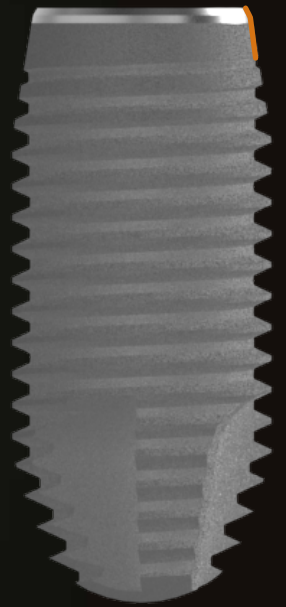


CSR



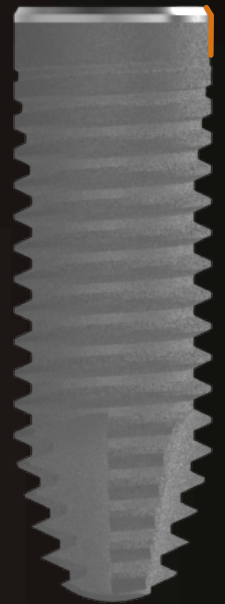
REDUCED NECK

Convergent neck to provide more space at the crestal level and promote bone growth



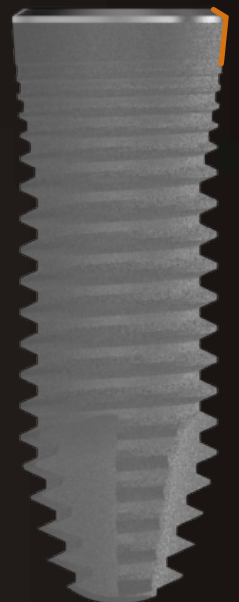
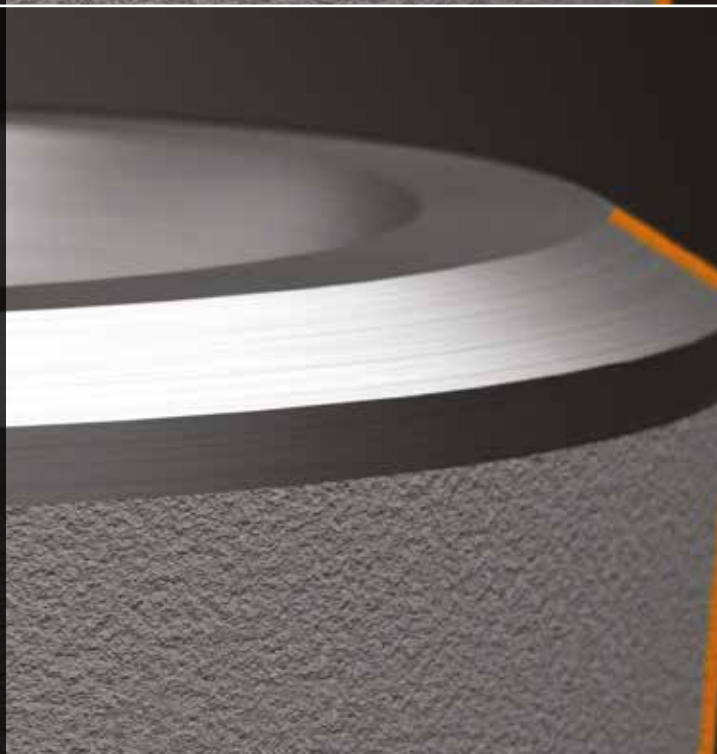
STRAIGHT NECK

Straight, constant morphology throughout the entire body of the implant



WIDE NECK

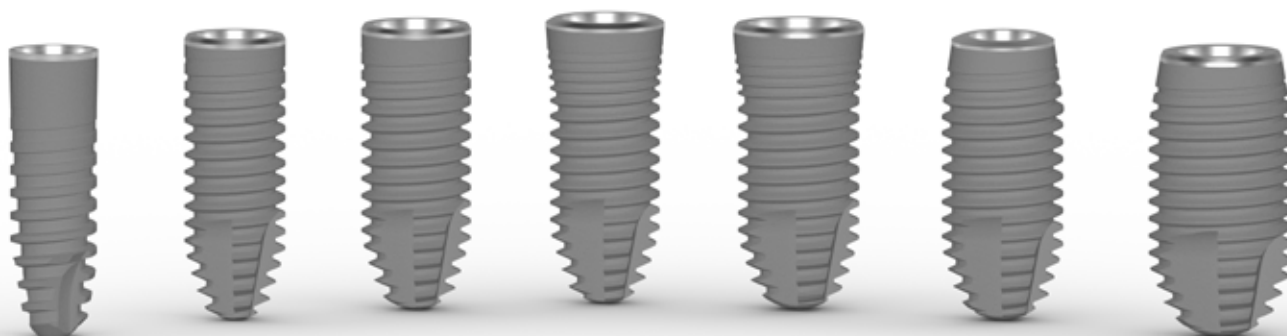
Divergent neck to take advantage of the bicortical coupling and achieve great primary stability



The origins of the CSR implant



The CSR implant was designed by **Sweden & Martina** in collaboration with the **Department of Dentistry of the San Raffaele University Scientific Institute in Milan**. The idea was to develop an implant that can tackle **any clinical situation**, ensuring **good primary stability** in any type of bone and a **simple surgical phase with few instruments**. Cylindrical body, double conical connection interface, different neck morphologies and the possibility to use the **One Abutment-One time technique** make the CSR an extremely versatile implant.



ø 3.00 mm

ø 3.50 mm

ø 3.80 mm

ø 3.80 mm

ø 4.20 mm

ø 4.20 mm

ø 5.00 mm

STRAIGHT NECK

WIDE NECK

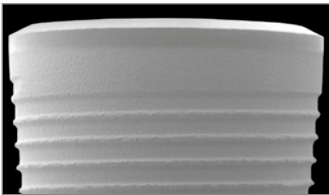
REDUCED NECK

Range of heights

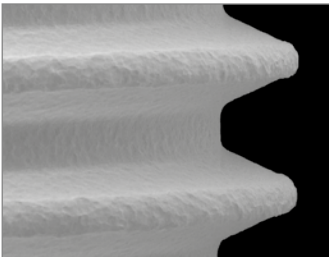
| implant ø | heights |
|---------------------|--|
| ø 3.00 Straight | 8.50, 10.00, 11.50, 13.00, 15.00 mm |
| ø 3.50 Straight | 6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm |
| ø 3.80 Straight | 6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm |
| ø 3.80 Wide Neck | 6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm |
| ø 4.20 Wide Neck | 6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm |
| ø 4.20 Reduced Neck | 6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00 mm |
| ø 5.00 Reduced Neck | 6.50, 8.50, 10.00, 11.50, 13.00 mm |

CSR: different neck morphologies

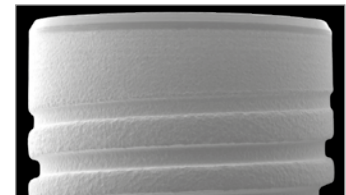
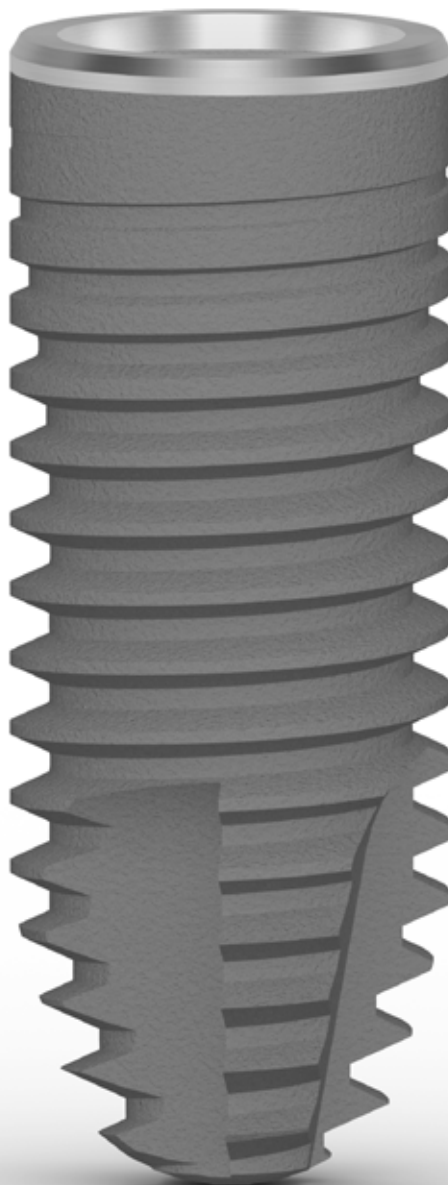
The CSR implant features a **cylindrical morphology** and **full treated ZirTi surface**, whose validity is documented by over 20 years of clinical success, with a **bevel in the most coronal portion**. CSR implants are available with **three different neck morphologies**, Wide Neck, Straight Neck and Reduced Neck, to meet different clinical needs.



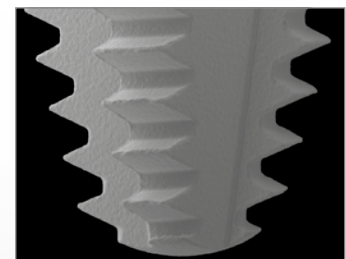
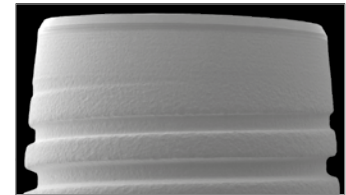
Wide Neck: coronal portion with 50° triangular thread and 0.30 mm pitch to achieve primary stability even in poorly mineralised bone



Central cylindrical portion, with 50° triangular thread and 0.60 mm pitch



Straight Neck and Reduced Neck: coronal portion with 50° triangular thread and 0.60 mm pitch

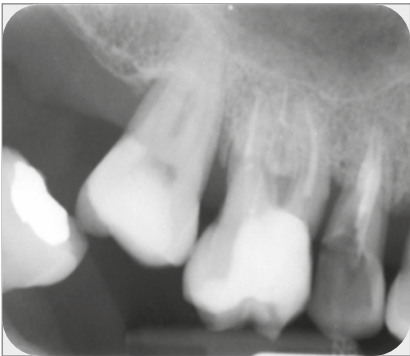


Spherical-shaped apex, with four decompression and drain notches for clot

Clinical case courtesy of Dr. Giuseppe Pellitteri, Bolzano

40-year-old female patient with Grade 3 furcation on element 16 and severe bone resorption of elements 14 and 15 that caused Grade 3 mobility. The patient was treated in two surgical stages about one and a half years apart. Considering the patient's young age and in order to make oral hygiene easier, rehabilitation provided for the insertion of an implant and crown to replace each missing element.

In the first surgical stage, the element 16 was extracted preserving the natural tooth socket, than a sinus lift procedure was performed, followed by the insertion of a CSR Wide Neck implant. The second surgical stage involved elements 14 and 15, which were extracted and immediately replaced with two CSR implants: Straight Neck and Reduced Neck.



Endoral X-ray: it is possible to notice the Grade 3 furcation of element 16



Extraction of the element preserving the natural tooth socket: the crown is cut into three parts. The perfect maintenance of the residual bone anatomy and the inter-radicular septum can be noted



The inter-radicular septum is prepared with drills to perform a sinus lift by inserting collagen and grafting material



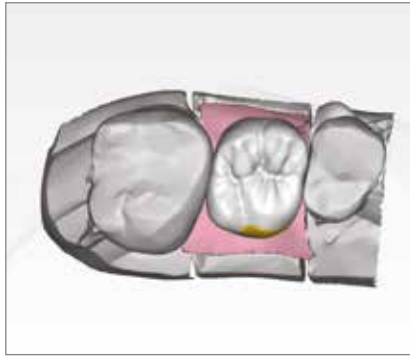
A CSR Wide Neck ϕ 3.80 mm implant is inserted into the socket and then covered with a periodontal dressing for one week



The site is left to heal by second intention and the healing is documented. The photos show the site at two and eight weeks after surgery: the volume gain of the soft tissue can be noted



Four months after surgery, the site is completely healed and the impression is taken for the prosthetic treatment



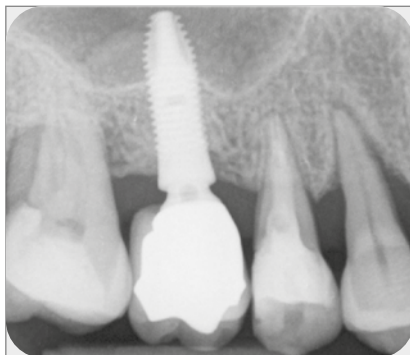
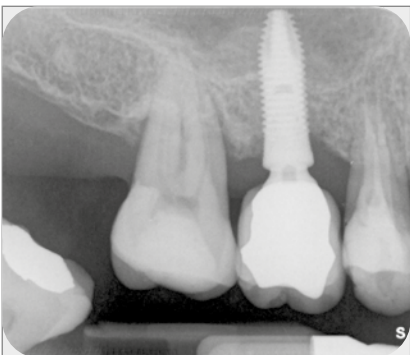
After impression taking and model development, the prosthesis is designed with Exocad software

The crown made with CAD-CAM technique is tested on the model

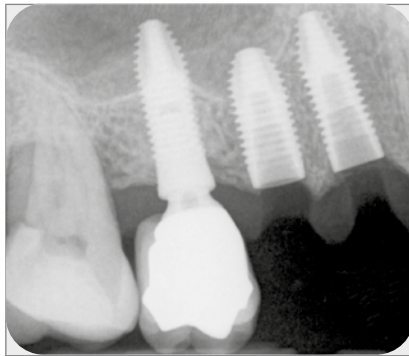


Placement of the screw-retained prosthesis made with CAD-CAM technique

Two months after the placement of the prosthesis, the growth of the papillae around the crown can be noted

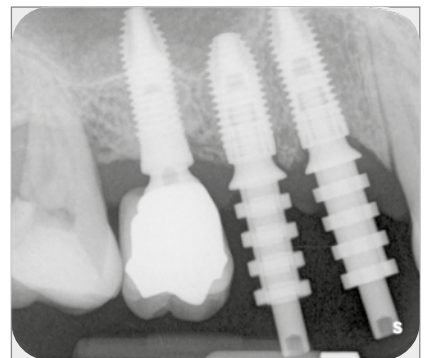


Intraoral X-ray at the time of placement of the crown and follow-up X-ray at 12 months: the recovery of bone volumes around the implant can be noted. At the same time it is possible to note the bone resorption around elements 14 and 15, also visible in the image



In the second surgical stage, element 14 is extracted and a CSR Straight Neck ϕ 3.80 mm implant is inserted; then element 15 is extracted, a mini sinus lift is performed, and a CSR Reduced Neck ϕ 4.20 mm implant is inserted, as shown by the X-ray done immediately after surgery

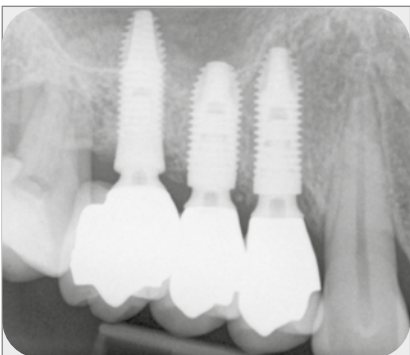
Milled and polished temporary PEEK posts are screw-retained onto the implants



Prefabricated teeth are stabilised on the posts

Vestibular image of the temporary screw-retained crowns, placed on the same day as the surgery

X-ray at five months after surgery: on elements 14 and 15, the impression is taken with Pick-up transfers; it is possible to note the completion of the integration of the implant on element 16



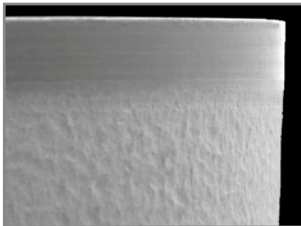
One month after the impression is taken, the crowns screw-retained onto the implants in positions 14 and 15 are placed and a final X-ray is performed: good bone growth around the three different neck morphologies of CSR implants is evident



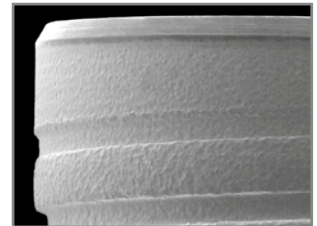
CSR: the narrow range

CSR implants are also available with a **small endosseous diameter of 3.00 and 3.50 mm**, which is ideal for cases where there is **limited prosthetic space in the anterior sectors** or in the presence of **thin ridges**.

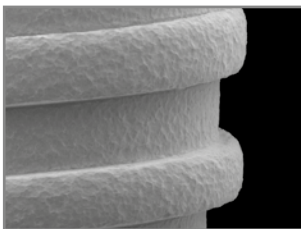
Like the other implants in the range, the narrow diameter implants feature a **full treated ZrTi surface** and a **bevel in the most coronal portion**.



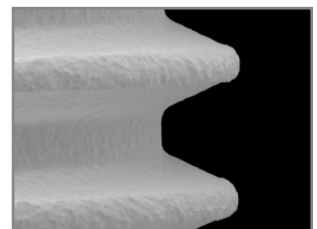
Treated ZrTi neck without thread, 2.00 mm high



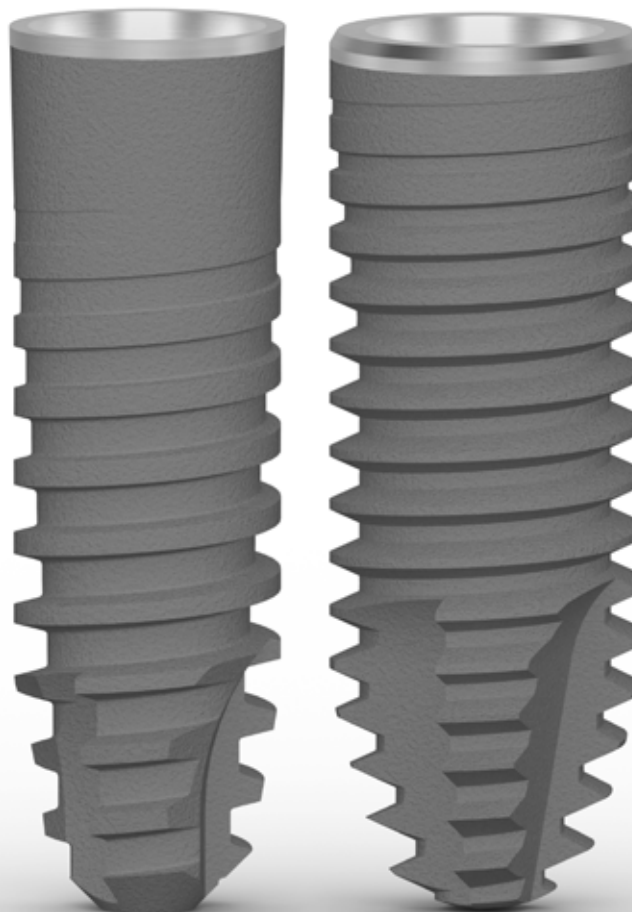
50° triangular thread and 0.60 mm pitch along the entire implant body



Central cylindrical portion, with 30° triangular thread and 0.80 mm pitch



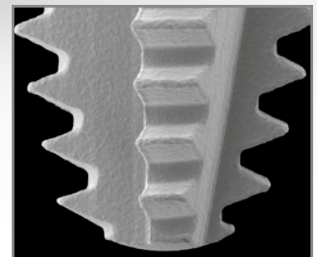
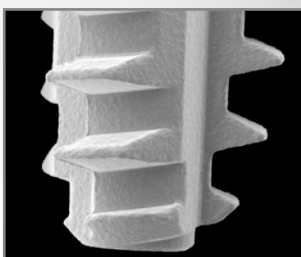
Conical-shaped apex, with three decompression and drain notches for clot



∅ 3.00 mm

∅ 3.50 mm

Spherical-shaped apex, with four decompression and drain notches for clot



Clinical case courtesy of Dr. Giuseppe Pellitteri, Bolzano

70-year-old male patient with zirconia post fracture on element 31.
After extraction of the residual element, a narrow diameter CSR implant was inserted and loaded immediately.



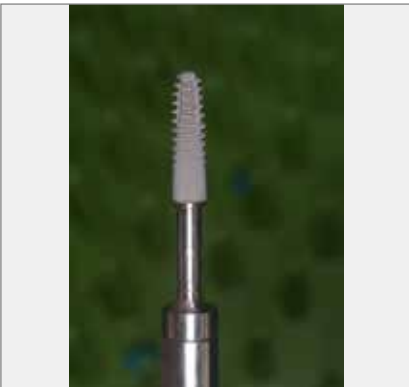
Initial situation: element 31 has a fracture of the zirconia post



Pre-surgery X-ray



The extraction of the residual element is planned and a post-extraction X-ray is done



CSR Straight Neck ϕ 3.00 mm implant inserted after extraction. Due to the limited prosthetic space, an implant with a narrow diameter, high-performance thread is chosen



The implant is immediately loaded with a pre-made post for direct screwing



Post-surgery X-ray

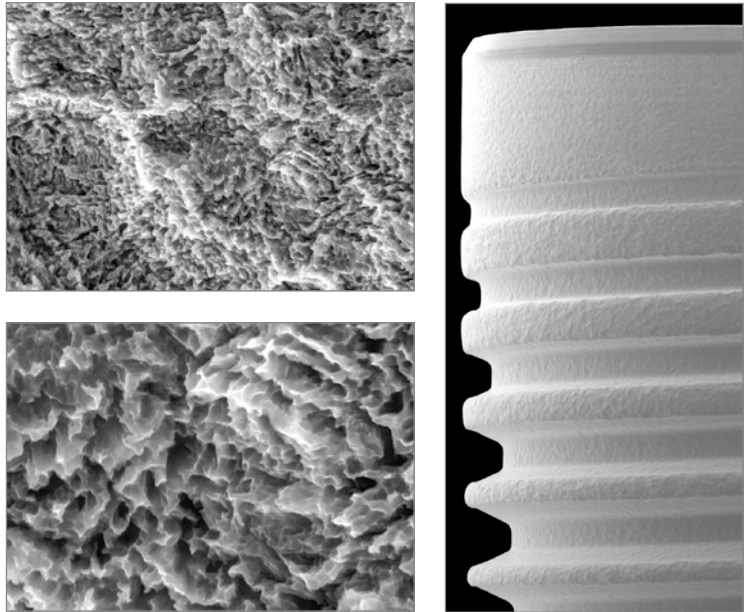


Temporary crown, 6 days after surgery. Note good soft tissue healing

ZirTi Surface

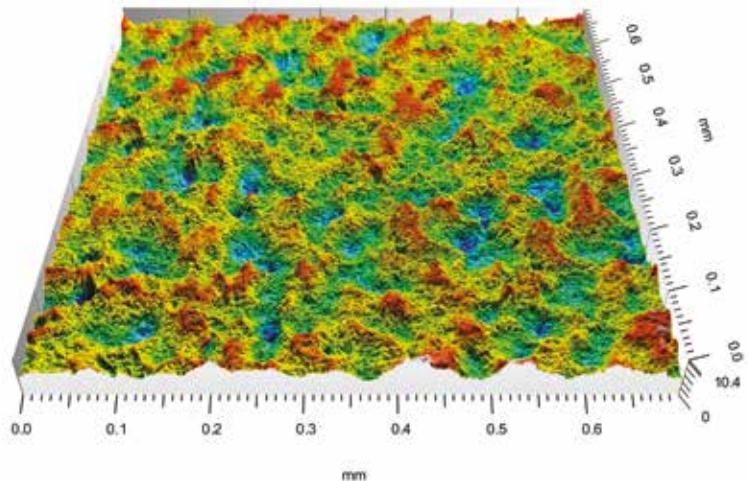
CSR implants are available with **full treatment ZirTi**, sandblasted with zirconium oxide and etched with mineral acids.

Sand-blasting with zirconium oxide and etching with mineral acids gives to the surface a characteristic micromorphology **capable of significantly increasing the bone-to-implant contact area and promoting osseointegration.**



ZirTi surface magnified 4,000 and 10,000 times under scanning electron microscope.

Image of a portion of ZirTi surface obtained using a confocal microscope: the **micromorphology of the surface** and the **regularity of the picks** deriving from sand-blasting and acid-etching can be noted.



Roughness of the surfaces - Conclusions of the 2nd Consensus Conference of the EAO (European Association for Osseointegration), held in Monaco in 2009:

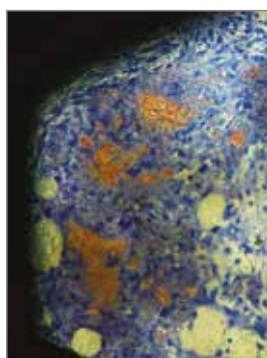
“This review concludes that rough and moderately rough surfaces support a correct osseointegration. The highest level of BIC is associated with moderately rough surfaces (Sa value between 1 and 2 μm).”

The roughness of ZirTi surface, with its Sa medium value of 1.4 - 1.7 μm , is considered ideal to achieve osseointegration.

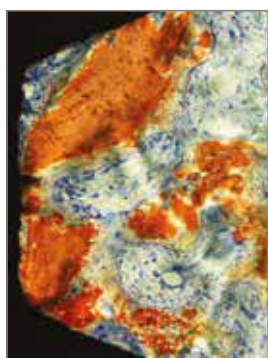
Wennerberg A., Albrektsson T.

Effects of titanium surface topography on bone integration: a systematic review

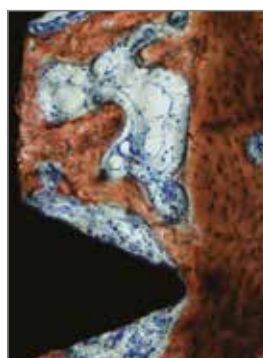
Clin Oral Implants Res. 2009 Sep;20 Suppl 4:172-84



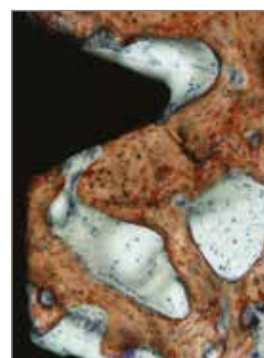
5 days



10 days



20 days



30 days

Sequential healing at implants with ZirTi surface: the new bone can be noted just after 30 days. Histologies by the kind courtesy of Dr. Daniele Botticelli (colored with Stevenel's blues and alizarin red).

Mainetti T., Lang N.P., Bengazi F., Favero V., Soto Cantero L., Botticelli D.

Sequential healing at implants installed immediately into extraction sockets. An experimental study in dogs

Clinical Oral Implant Research, 2016 Jan; 27(1): 130:138

The validity of the ZirTi surface is documented in numerous experimental studies:

Caneva M., Lang N.P., Calvo Guirado J.L., Spriano A.M., Iezzi G., Botticelli D.

Bone healing at bicortically installed implants with different surface configurations. an experimental study in rabbits

Clinical Oral Implant Research, 2015; 26:293-299 doi: *10.1111/clr.12475

Lumetti S., Di Blasio A., Manfredi E., Ghiacci G., Toffoli A., Bonanini M., Macaluso G.M., Galli C.

Implant surface microtopography affects cell the pattern of cell growth, cell-to-cell contacts and the expression of Connexin 43

Clinical Oral Implant Research, 2014; 25 Suppl 10:222

Baffone G., Lang N.P., Pantani F., Favero G., Ferri M., Botticelli D.

Hard and soft tissue changes around implants installed in regular-sized and reduced alveolar bony ridges. An experimental study in dogs

Clin. Oral Impl. Res. 00, 2013, 1-6 doi: 10.1111/clr.12306

Clin. Oral Impl. Res. 00, 2013, 1-6 doi: 10.1111/clr.12306

Rossi F., Botticelli D., Pantani F., Priscila Pereira F., Salata L.A., Lang N.P.

Bone healing pattern in surgically created circumferential defects around submerged implants: an experimental study in dog

Clin. Oral Impl. Res 23, 2012; 41-48. doi: 10.1111/j.1600-0501.2011.02170.x

Sivolella S., Bressan E., Salata L.A., Urrutia Z.A., Lang N.P., Botticelli D.

Osteogenesis at implants without primary bone contact - An experimental study in dogs

Clin. Oral Impl. Res. 23, 2012, 542-549 doi: 10.1111/j.1600-0501.2012.02423.x

For a complete list of studies on the ZirTi surface,
please go to the following link:



DAT conical connection

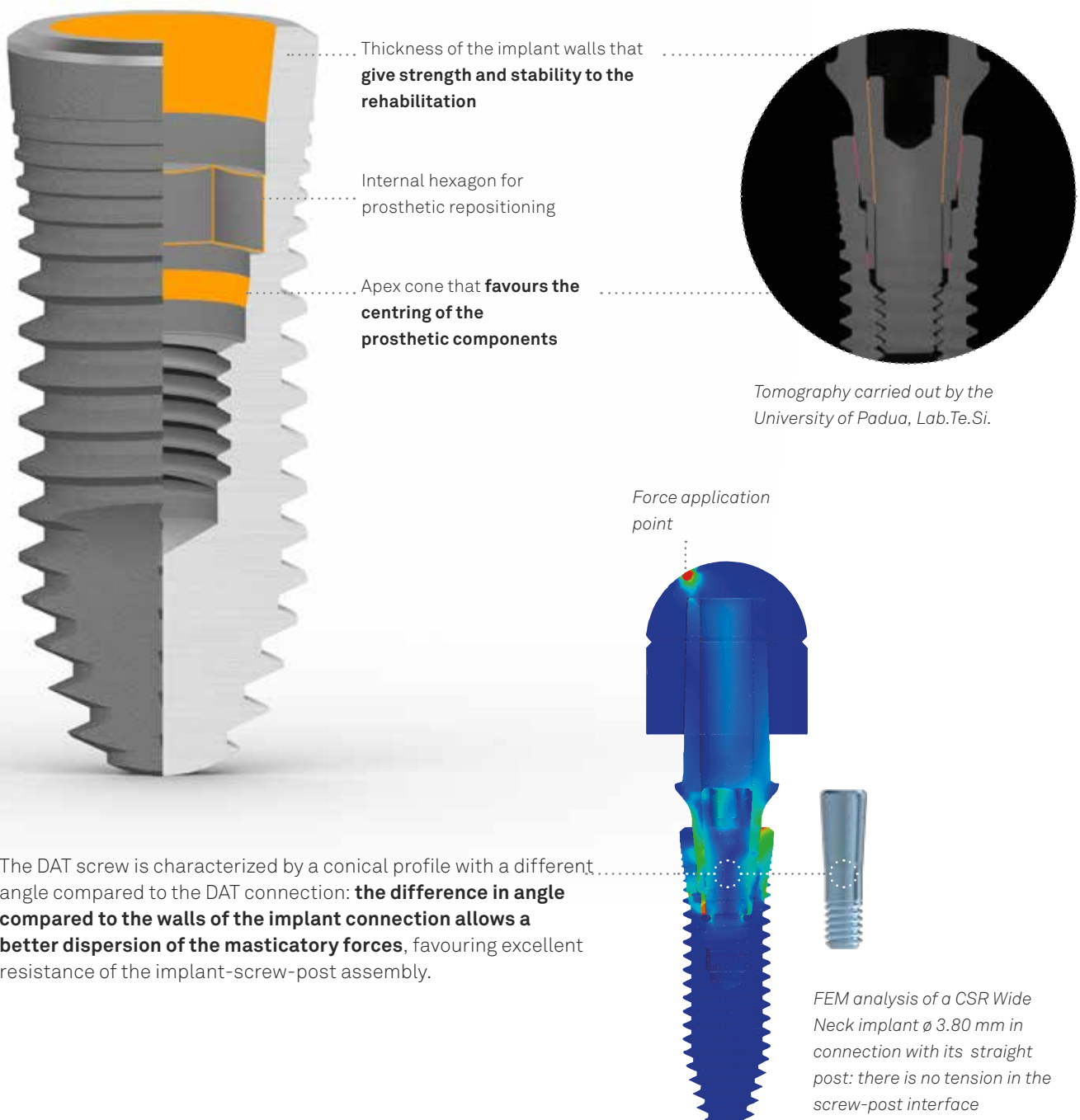
The **DAT (Double Action Tight) connection** is the most innovative feature of the CSR implant: a **double internal conical contact interface between the post and the implant and between the screw and post** ensures excellent seal against bacterial infiltration, protecting the bone from the risk of peri-implant infections that could affect a correct osseointegration and the consequent implant survival.

The **narrow-sized $\varnothing 3.00$ and $\varnothing 3.50$ -mm implants** feature the **DAT-N connection**, that is the double conical interface connection in the narrow version.

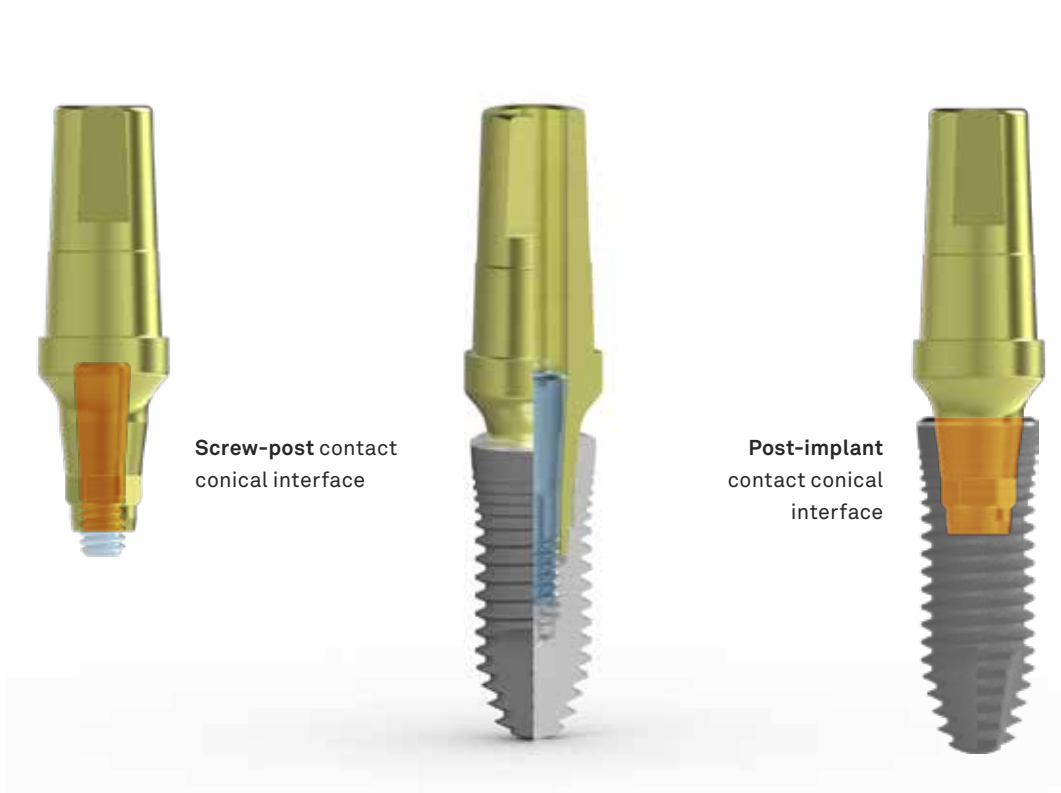
Gherlone E.F., Capparé P., Pasciuta R., Grusovin M.G., Mancini N., Burioni R.

Evaluation of resistance against bacterial microleakage of a new conical implant-abutment connection versus conventional connections: an *in vitro* study

New Microbiol. 2016 Jan;39(1):49-56

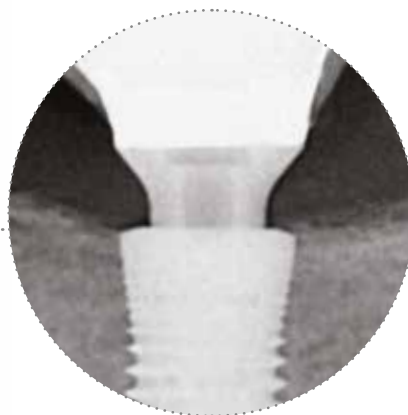


The DAT screw is characterized by a conical profile with a different angle compared to the DAT connection: **the difference in angle compared to the walls of the implant connection allows a better dispersion of the masticatory forces**, favouring excellent resistance of the implant-screw-post assembly.



Platform Switching

The CSR implant connection presents a bevel at the coronal level: the widening generated by this bevel allows **to outdistance the crestal bone from the implant connection**, thus determining a Platform Switching inherent in the implant morphology.



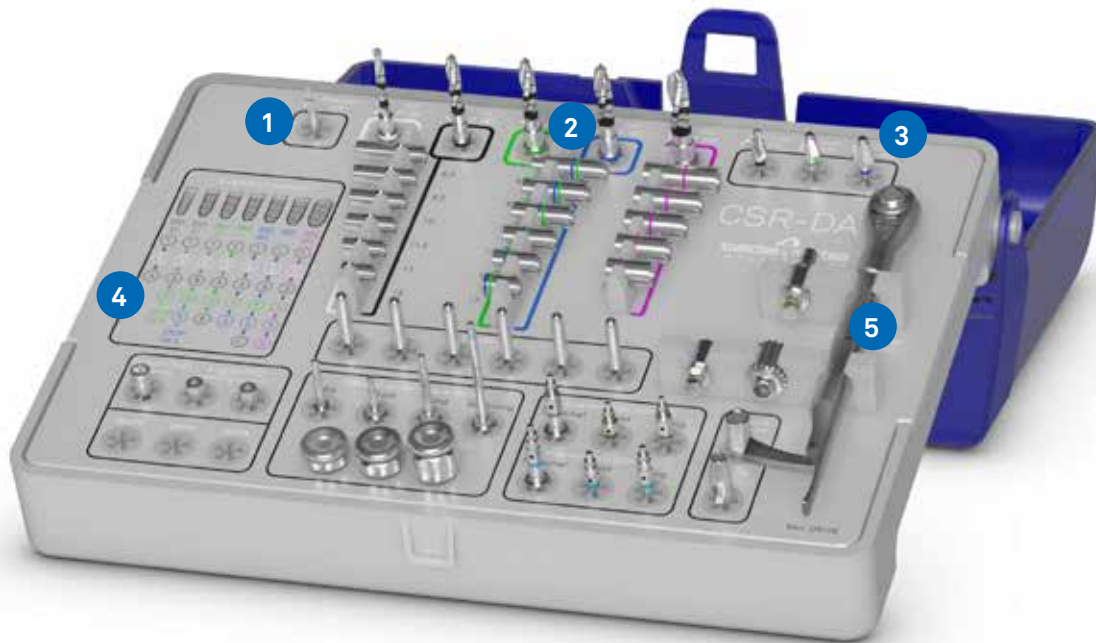
X-ray courtesy of Prof. E. Gherlone

Platform Switching is accentuated by the mismatching between the bevel and the implant connection, which allows the implant-bone junction to be further spaced away from the bone.

Surgical kit

The CSR implant system surgical kit is designed and made to offer **ease of use and optimal organization for the replacement of instruments in the surgical sequence.**

The instruments, all made of surgical stainless steel, have their descriptions screen-printed on the tray to allow the user to identify each instrument more easily and to put it back after the cleansing and cleaning phases.



1 Precision drill, pilot drill and intermediate drill

- Precision drill **is used to cut the cortical bone**, so it is very sharp and cutting
- Pilot drill \varnothing 2.00 mm and intermediate drill to widen from \varnothing 2.00 to 2.80 mm, featuring **laser-etched marks to indicate the working depth** and supplied with the relative **depth stops**



2 Final drills and related stops

- Three colour-coded drills with **progressive size tips**
- Depth stops ensure **safe preparation**



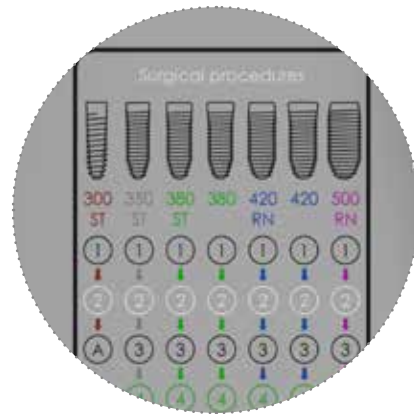
3 Countersink drills

- They allow **preparing the site for the CSR implant neck** in case of dense cortical bone.
- Available in three different sizes



4 Screen-printed sequences on the tray

- The **surgical sequences are indicated on the tray** with the reference colour code of the implant diameter
- **Quick and intuitive management** of each instrument



5 Torque wrench with control lever

- Torque adjustable from 10 to 90 Ncm
- During implant placement, the torque value can be continuously monitored



Easy Insert driver

CSR implants do not require a mounter device because they can be engaged directly inside the connection by ergonomical **Easy Insert drivers**, designed to **guarantee a safe grip, to prevent deformations to connections** and at the same time **to allow easy removal from the implant connection**. The use of these drivers makes the surgical procedure of insertion extremely predictable.



Easy Insert for
DAT-N connection

Easy orientation inside the connection

thanks to the hexagonal visual indicator corresponding to the hexagon of the prosthesis and to black laser-etched dots on three faces

The whole is extremely **safe and reliable** with the use of a special titanium O-ring that engages inside the connection

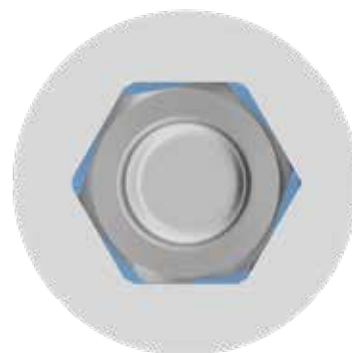
The presence of a wide hexagon allows engaging the patented Easy Insert drivers easily and safely for insertion of the implants into the relative sites



Easy Insert for
DAT connection

The special patented design of Easy Insert drivers ensures that the faces (and not the corners) of the instrument make contact with the faces of the implant hexagon.

The dodecagonal design of the drivers **prevents deformations to the implant connection, thus guaranteeing extremely high prosthetic stability and precision.**

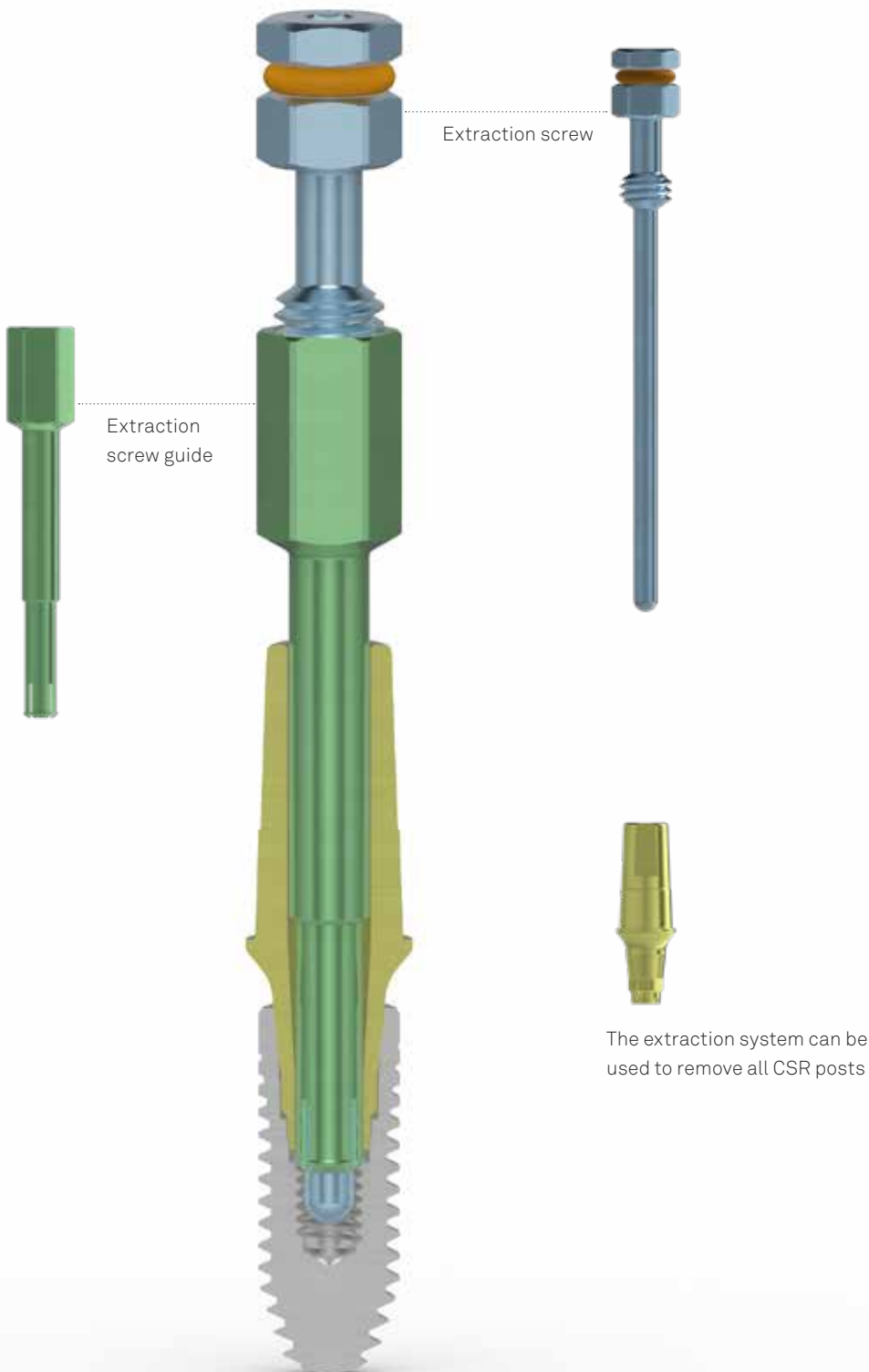


Extraction system for CSR posts

The conical connection between implant and post offers many advantages in terms of prosthetic seal, but makes it more difficult to remove permanently screw-retained posts.

A **special extractor** is available for this purpose, which allows the **removal of the post** with a through screw, **without making any changes or deformations to the two connections.**

The extractor consists of a guide and a screw, to be used with the hand knob and the moulder stop key.

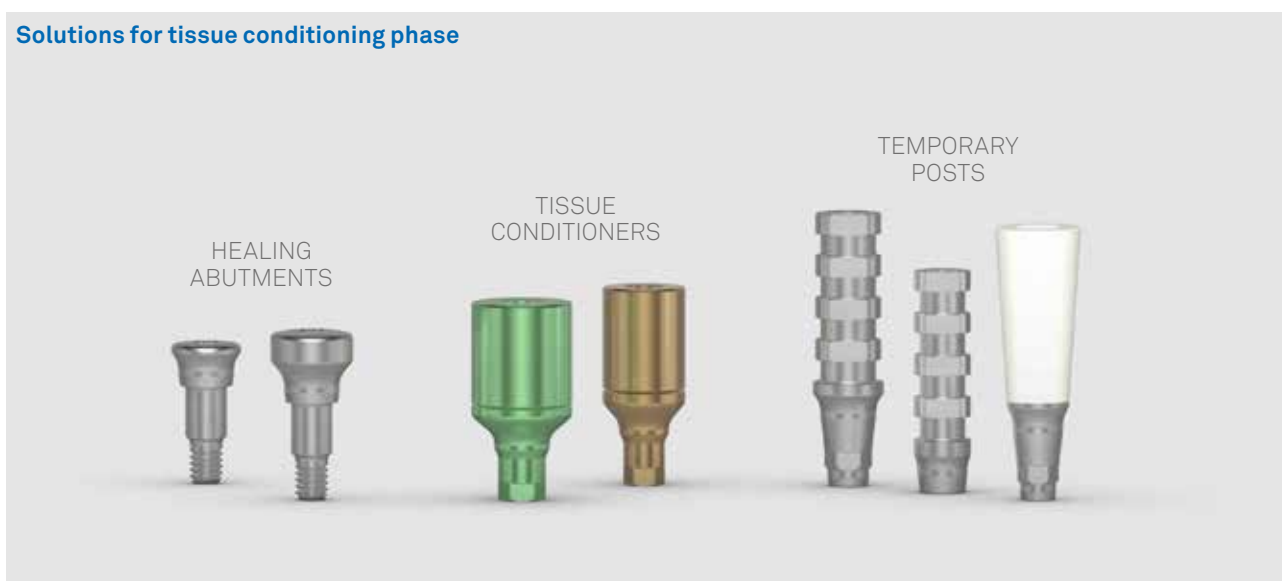


Wide range of prosthetic solutions

Solutions for impression taking and model phase



Solutions for tissue conditioning phase



Solutions for single and multiple cemented rehabilitations



Solutions for single and multiple screw-retained rehabilitations

CASTABLE POSTS WITH ALLOY BASE



Solutions for bridges and full-arch rehabilitations

P.A.D. ABUTMENTS



PLAIN ABUTMENTS



Solutions for overdentures

LOCATOR R-TX



BALL ATTACHMENTS



Solutions for custom-made rehabilitations with CAD-CAM technique

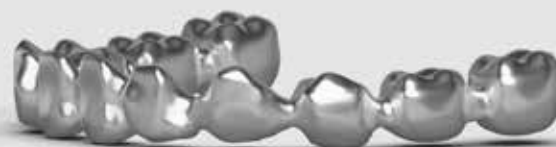
LABORATORY AND INTRAORAL SCANBODIES



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