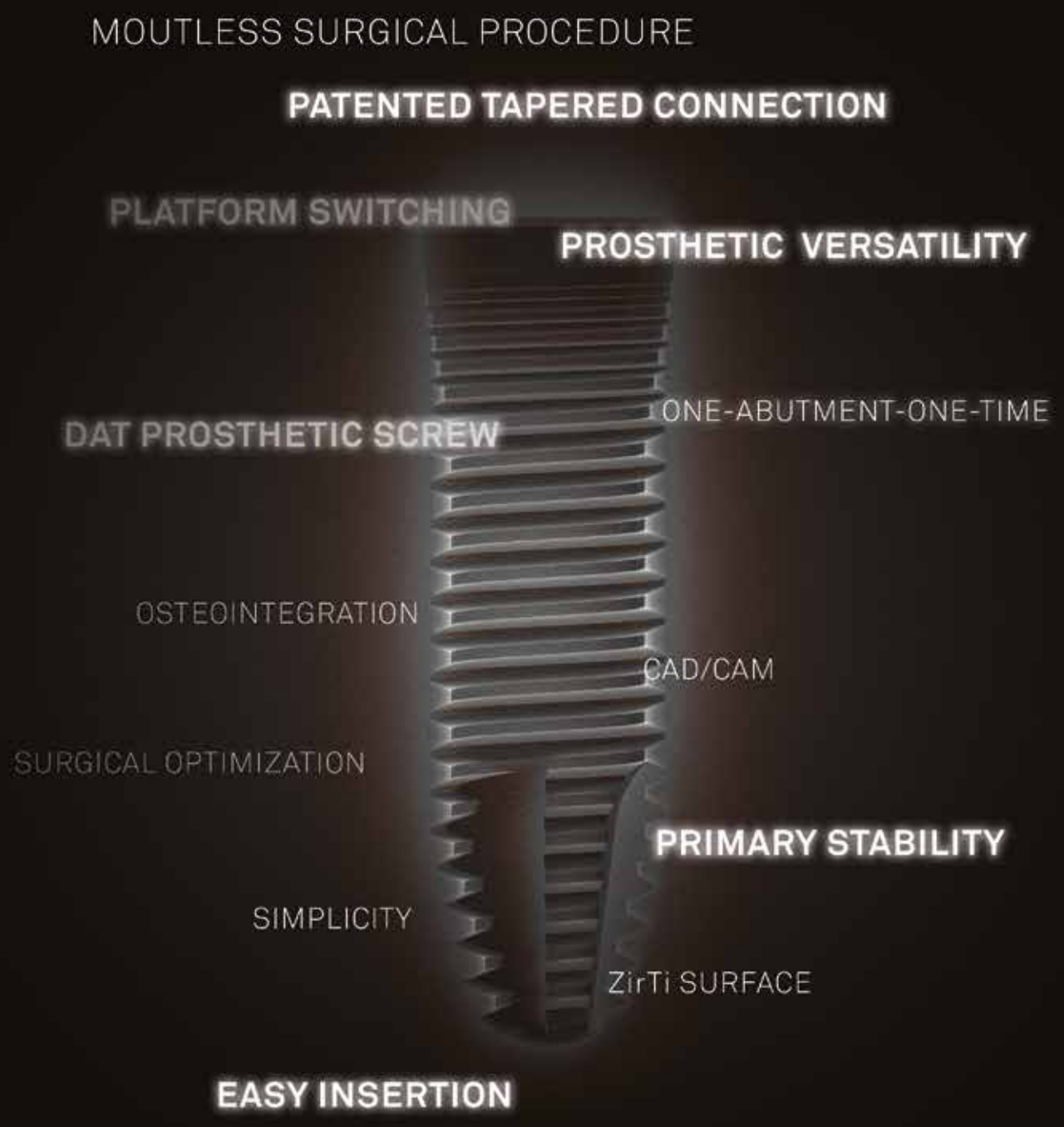
CSR-DAT

sweden & martina
IMPLANTOLOGY

The origin of implant CSR-DAT

Result of the experience of the Odontology Department teamwork of San Raffaele (Milan, Italy) in collaboration with Sweden & Martina Research & Development Department, the implant CSR-DAT is designed from a demand of SEMPLICITY. The idea was to develop an implant that would be suitable for any clinical situation, optimizing time and results and that would offer a good primary stability whenever conditions are favorable, performing the surgical phase with a reduced number of specific instruments. This are CSR-DAT premises: a very versatile and easy-to-use implant, whose hybrid morphology with tapered apex and increase of the angle in the coronal section allows to obtain an excellent stability also in immediate loading protocols.



Clinical Case

By kind courtesy of Prof. Enrico Gherlone

64 years old patient with total edentulism in the upper jaw and partial in the lower.

Notable the serious atrophy and the sharp-edge mandible.

The RX confirms the diagnosis and the compromised remaining elements.

Intra-oral image after the extraction of the dental elements.

Bone leveling of the interforaminal area.

Control of the implant sites with four parallel pins supplied in the CSR-DAT kit.

CSR-DAT implant with Easy Insert driver ready to be inserted.

Check at the end of the implant insertion phase.

P.A.D. positioning. The frontal ones are straight, and the posterior ones are angled.

Provisional prosthesis: occlusal view.

Provisional prosthesis: buccal view.

RX image for control.

Check at 4 months: notable good healing of the tissues.

Deliver of the final prosthesis.

Occlusion check: notable the good aesthetic result obtained.

Control after 1 year: remarkable is the excellent adaptation of the gingiva.

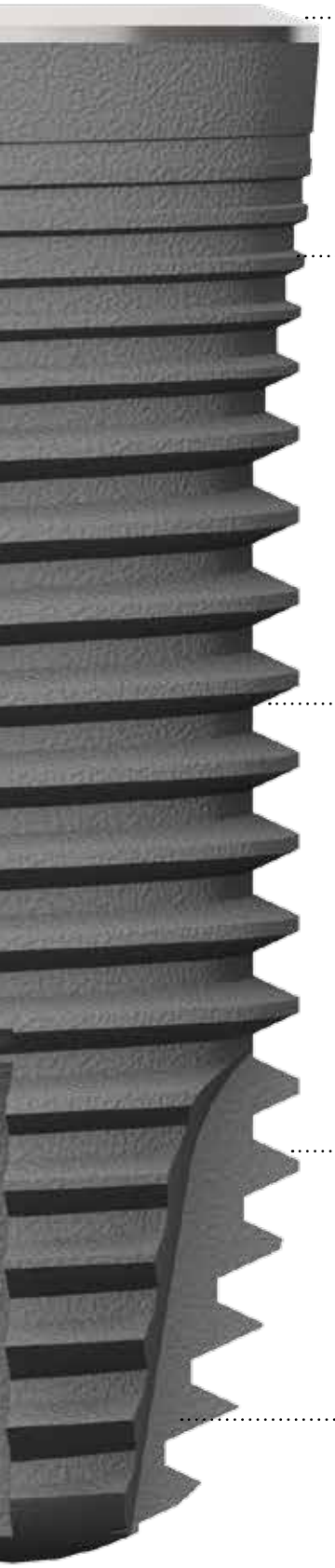
CSR-DAT implant

The CSR-DAT implant presents innovative characteristics in the morphology and in the connection, together with a full treated ZirTi surface whose validity is documented by numerous *in vivo*, experimental and clinical studies. The implant is available **in two diameters, 3.80 mm and 4.20 mm**, and it simplifies the prosthodontist work, as it optimizes the stock, since **the prosthetic components are in common to both the diameters.**

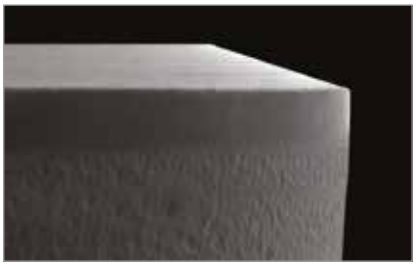
Implants CSR-DAT present a hybrid morphology with tapered apex, designed to gain when possible, a great primary stability in the bicortical engagement.
The shape of CSR-DAT is ideal to be used **in any clinical situation**, from single crowns to more complex multiple rehabilitations.

Available heights of CSR-DAT implants

diameter	height
ø 3.80 mm	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00
ø 4.20 mm	6.50, 8.50, 10.00, 11.50, 13.00, 15.00, 18.00

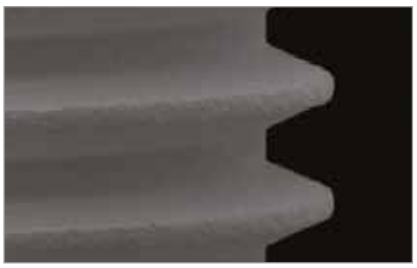


The more coronal section presents a **bevel** which allows the realization of **implant Platform Switching** .



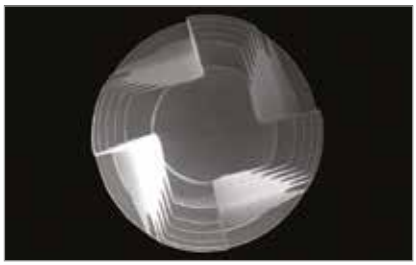
The **coronal segment** , with a 50° triangular thread and pitch of 0.30 mm, presents a **tapered morphology**, to obtain a **great primary stability**.

The central portion is cylindrical, has a 50° triangular thread with 0.60 mm pitch.



The apex is tapered, with 50° triangular thread more accentuated then the central segment, to facilitate the **insertion** also in very compact bone.

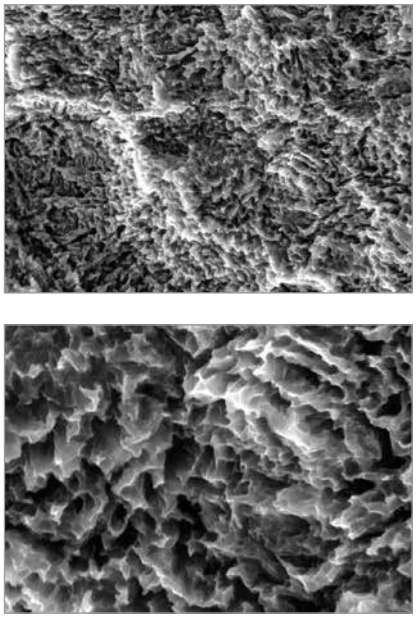
The apex has a **round shape** and presents **4 incisions** that increase the **penetration ability** and the **antirotational aspect.** They performe as decompression and release area for the blood clot.



ZirTi surface

CSR-DAT implants present the ZirTi surface, characterized by **zirconium oxide sandblasting and acid-etching with mineral acids**.

The ZirTi body is sandblasted with zirconium oxide and acid-etched with mineral acids; the micromorphology **increases considerably the bone-implant bone surface**.



ZirTi surface at 4.000 and 10.000 magnifications at the electron microscope.

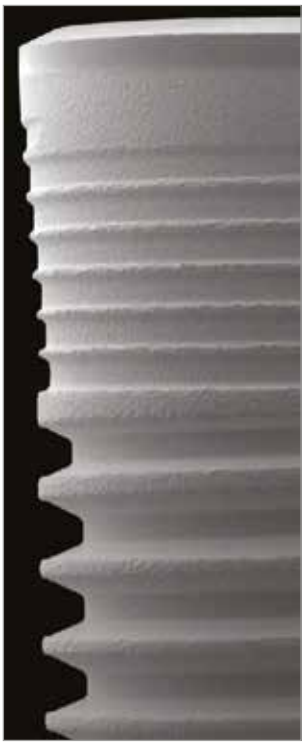
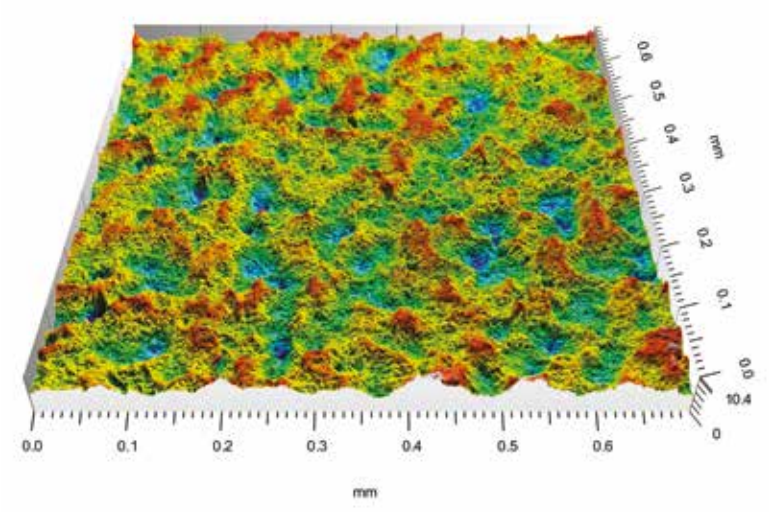


Image of a portion of ZirTi surface obtained by an optical interferometer in radiofrequency: it is possible to appreciate the micro-morphology of the surface and the regularity of the peaks, derived from the sandblasting and acid-etching treatments.



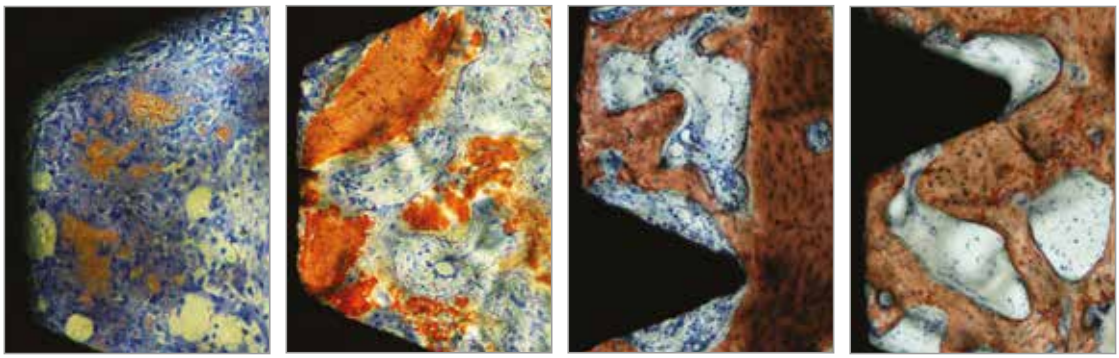
Roughness of the surfaces – Conclusions of the 2nd EAO Consensus Conference:

"This review concludes that rough surfaces and moderately rough surface support a correct osseointegration. The highest BIC value is associated with moderately rough surfaces (Sa values included between 1 and 2 µm)."

The roughness of ZirTi surface, with its Sa medium value of 1.3 µm, is considered ideal to achieve osseointegration.

Clin. Oral Impl. Res. 20 (Suppl. 4), 2009; 172-184. Doi: 10.1111/j.1600-0501.2009.017755.x

Healing of the bone around an implant with ZirTi surface after different time intervals:



5 days *10 days* *20 days* *30 days*

Histologies by the kind courtesy of Dr. Daniele Botticelli (colored with Stevenel Blue and Alizarin Red).

The validity of ZirTi surface is proven by many 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

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

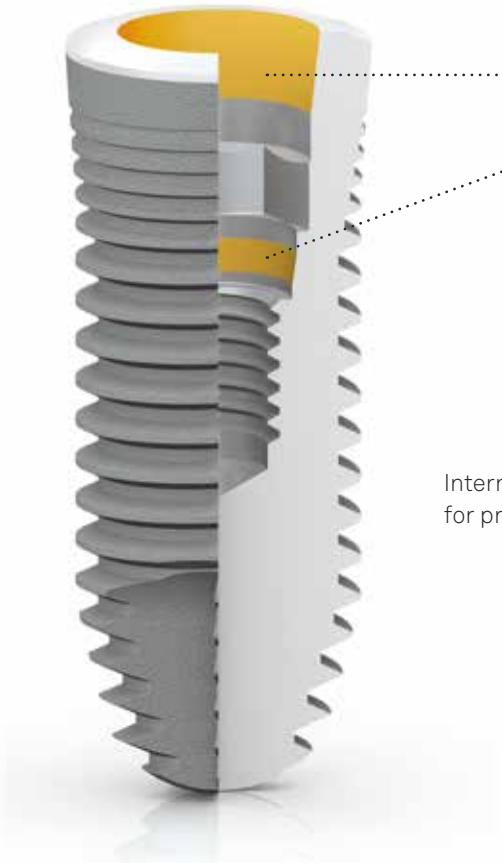
Sivolella S., Bressan E., Salata L.A., Urrutia Z.A., Lang N.P., Botticelli D.
Osteogenesis at implants without primary bone contact – An experimental study in dogs
Clin. Oral Impl. Res. 23, 2012, 542–549 doi: 10.1111/j.1600-0501.2012.02423.x

For the complete list of studies on Zirti Sufrace and to request a free copy of the bibliographic review "SCIENTIFICA", please follow the link below:

DAT connection (Double Action Tight)

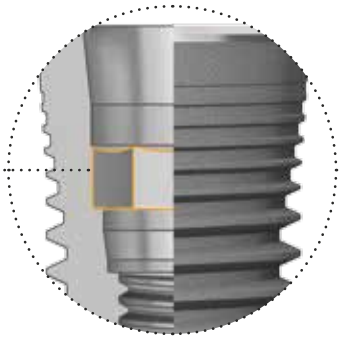
The DAT connection (Double Action Tight) represents the most innovative characteristic of the CSR implant: the internal interface is double and conical and it allows an excellent impermeability to bacterial attack, protecting the bone from risks of peri-implantitis infections that could affect a correct osseointegration and the consequent implant survival.

Gherlone EF, Capparé P, Pasciuta R, Grusovin MG, 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.

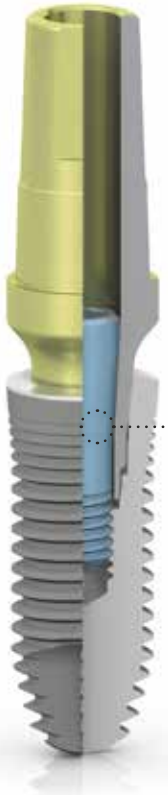


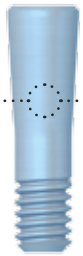
- **The contact between implant and abutment is a double conical interface.**
- The most apical cone **facilitates the insertion of the abutments.**
- The thickness of the implant walls is wide enough to confer **strength and stability** during the rehabilitation.

Internal hexagon for prosthetic repositioning.



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

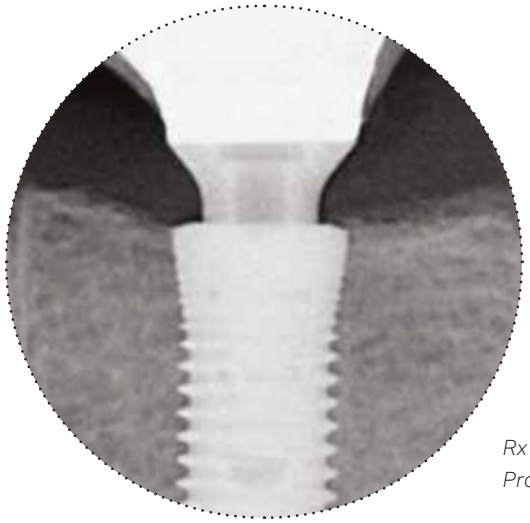




The barycenter of the head of the screw remains internal in the connection in order to minimize the effect of the masticatory loads and to preserve the abutment-screw contact and, therefore, the same implant-abutment contact.

Platform Switching

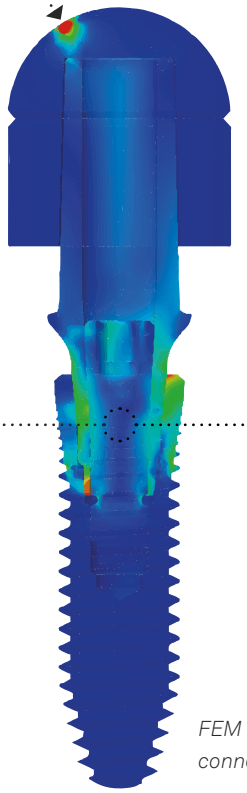
The CSR-DAT prosthetic platform presents a bevel at the coronal level: the widening generates by the bevel allows to outdistance the **crestal bone from the internal connection**, thus determining a Platform Switching inherent in the implant morphology.



Rx image by courtesy of Prof. E. Gherlone

The Platform Switching is highlighted by the mismatching presented between the bevel and the implant connection, this allows to distance the implant-abutment junction from the bone.

Point of force application

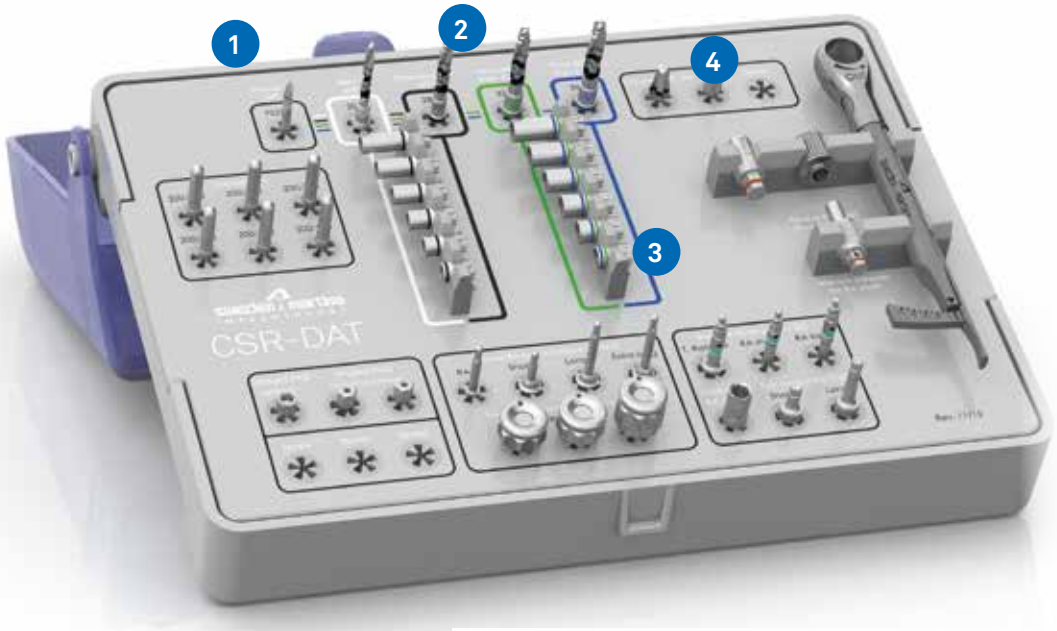


The FEM analysis doesn't underline tensions in the interface between the screw and the abutment: the union between the taper of the implant connection and the DAT screw results extremely important to confer **strength and stability** to the whole implant-abutment-screw assembly and to grant a **correct distribution of the loads**.

FEM analysis of a CSR-DAT implant ø 3.80 mm in connection with its straight post..

Surgical Kit

The CSR-DAT surgical is **designed to offer simplicity and ergonomics, it contains all the instruments needed for the surgercina nd prosthetic phase** with this implant system.
The instruments categories are screen-printed on the tray to allow dental assistants to identify each instrument more easily and to reposition after cleasing and cleaning phase.



1 Precision drill, pilot drill and intermediate drill

- A precision drill to slice the cortical bone, therefore sharp and cutting.
- A pilot drill, Ø 2.00 mm, with laser notches to indicate the depth of the work and supplied with the relative depth stops.
- The intermediate drill enlarges progressively the size of the preparation from 2.00 mm to 2.80 mm. It presents laser notches to indicate the depth of the work, and depths stops to follow a safe preparation.

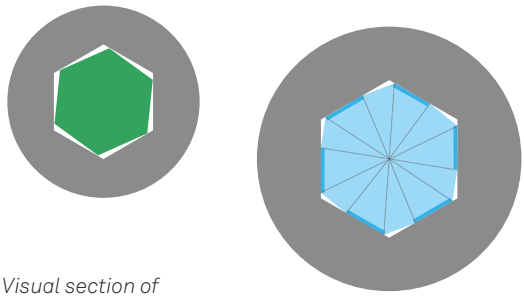
2 Final drills and stops

Just two drills to complete the site preparation, with progressive size tips: from ø 2.00 mm to ø 3.20 mm (green) and from ø 2.60 mm to ø 3.60 mm (blue). **A common series of depth stops** is designed to fit over both drills.

3 Easy Insert Driver

CSR-DAT implants can be engaged directly inside the connection by ergonomic Easy Insert drivers, designed to guarantee a safe grip to prevent deformations to the connections and at the same time to allow easy removal from the implant connection.

The special patented design of the drivers **prevents any deformation of the implant connection**, as the faces of the instruments (not the angles) are the ones in contact with the implant connection.



Visual section of a traditional driver work

Visual section of the Easy Insert work

4 Dynamometric key with control lever

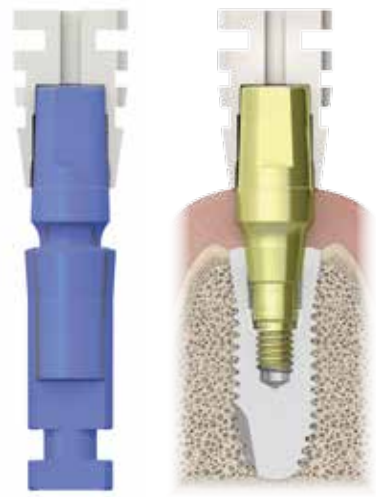
The dynamometric key is contained in the surgical kit and it allows to insert the implant while **controlling the achieved torque value,** therefore is possible to see the exact torque of the screwing in any phase of the surgery.

Prosthetic versatility

The prosthetic offer related to CSR-DAT implant allows the application of different excellent rehabilitation protocols, answering to the more different clinical needs.

For the impression phase, in addition to the **practical pick-up, closed-tray** transfers are available to **be used with a dedicated PEEK cap**, characterized by retentive wings that guarantee a strong engagement in the impression material.

The closed-tray transfers reproduce **the same coronal geometry of the premade abutments**: the PEEK cap can be used also directly on them to **take the impression also using the abutments instead of closed-tray transfers**.



In case of **One-Abutment-One-Time protocol,** it is available a practical analogue reproducing the direct abutment.In this way it's possible to **take the impression directly on the abutment without the need of its later removal from the implant.**

Abutment Locator R-Tx

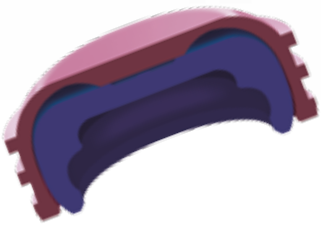
The CSR-DAT system prosthetic offer is enriched by the **Locator R-Tx abutments**, the new generation of the famous Zest Anchors overdenture solution. Locator R-Tx combines the consolidated Locator technology and a series of improvements that make this system **even more performing and easy-to-use**.

The new DuraTec™ treatment, a carbon nitride coating highly aesthetic, allows a stronger and resistant protection from wear.

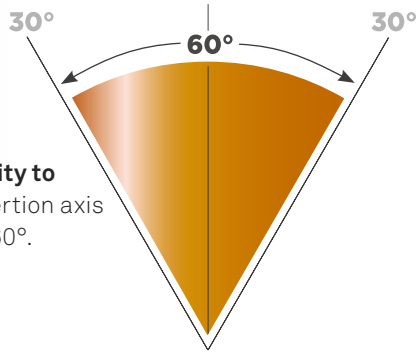
New "All-in-One" packaging.

Dual retentive surfaces for engagement and narrower coronal geometry for easier seating of overdenture.

Denture attachment housing with **increased geometry** to resist to movements, with pink colour to **improve aesthetic**.



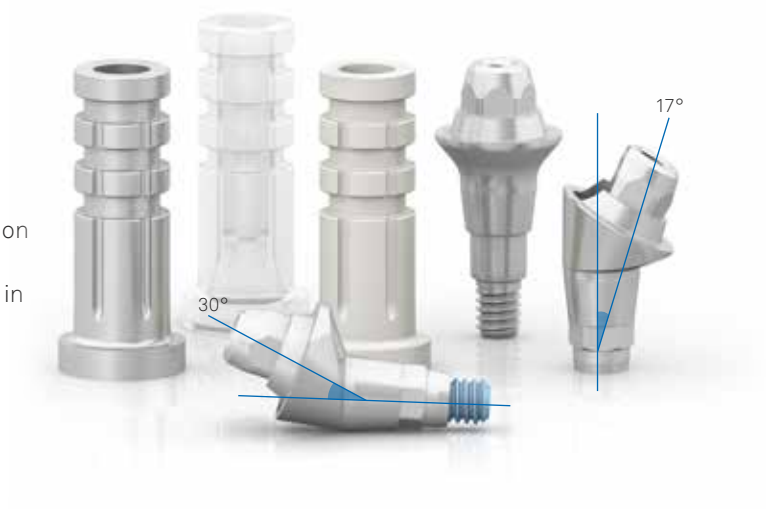
Higher possibility to correct the insertion axis up to a total of 60°.



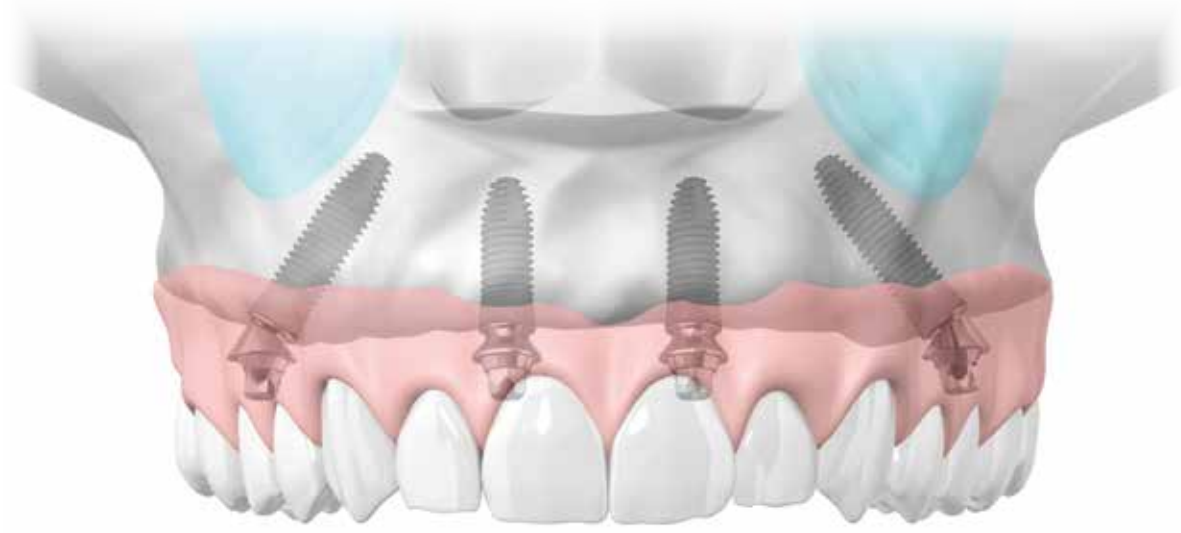
P.A.D. (Disparallel Screwed Prosthesis)

P.A.D. prosthetic system has been designed to **realization of multiple screw-retained rehabilitations even in presence of divergent implants** and disparallel prosthetic emergence axes, both with traditional techniques on 6 or 8 implants, or with protocols on 4 or 6 implants, with the angled insertion of the two most distal implants.

The different versions available with angulation 17° to 30°, make possible a favorable prosthetic positioning of the connection also in case of disparallel implants.



A **15° cone is positioned over the P.A.D. platform to facilitate the insertion of multiple rehabilitation structures.**
This cone permits to orient further the prosthetic structure: in case of P.A.D. angled abutments the 15° of the superior cone are added to the 17° or 30° incline. This characteristic allows to recover **disparallelism between implants up to 45° per side**.



Wide range of prosthetic solutions

The prosthetic solutions are extremely versatile and complete. Consult the CSR-DAT catalogue for further details.

Healing abutment

SIMPLE temporary posts

Millable abutments

T-Connects for luting protocols

Intraoral Scanbodies

Personalized ECHO CAD/CAM prosthetic frameworks

Castable Abutments with premade gold alloy or chrome-cobalt bases

Overdenture on ball attachments

D-IMP-CSR-DAT-E

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