Teetanium System | Surgical Procedure

GS impladental

teetanium by Medibrex

Contents

1. Purpose Of The Implants

The purpose of TEETANIUM implants is to recover function, aesthetics and health by replacing teeth lost from the mandible or maxilla through the surgical implantation of dental implants in the remaining bone tissue, and to restore the various functions through suitable prostheses.

1.1. Models & Series

The TEETANIUM implant system comprises two models of self-threading implants made from pure grade IV titanium, and an active thread.The TEETANIUM implant system has available in two models or external profiles “Straigths” (S) and “Conicals” (C).

The TEETANIUM implant series for model “Straigths” (S):

S-series 3.3 mm
Platform diameter 3.7 mm and body diameter 3.3 mm.
Available in various lengths: From 8.5 to 14.5 mm, with intervals of 1.5 mm.

S-series 3.7 mm
Platform diameter 3.9 mm and body diameter 3.7 mm.
Available in various lengths: From 8.5 to 16.0 mm, with intervals of 1.5 mm.

S-series 4.2 mm
Platform diameter 4.6 mm and body diameter 4.2 mm.
Available in various lengths: From 8.5 to 16.0 mm, with intervals of 1.5 mm.

S-series 4.9 mm
Platform diameter 5.2 mm and body diameter 4.9 mm.
Available in various lengths: From 8.5 to 13.0 mm, with intervals of 1.5 mm.

S-series 5.7 mm
Platform diameter 5.9 mm and body diameter 5.7 mm.
Available in various lengths: From 8.5 to 13.0 mm, with intervals of 1.5 mm.

The TEETANIUM implant series for model “Conicals” (C):

C-series 3.7 mm
Platform diameter and maximum body diameter 3.7 mm.
Available in various lengths: From 8.5 to 16.0 mm, with intervals of 1.5 mm.

C-series 4.2 mm
Platform diameter and maximum body diameter 4.2 mm.
Available in various lengths: From 8.5 to 16.0 mm, with intervals of 1.5 mm.

C-series 4.9 mm
Platform diameter and maximum body diameter 4.9 mm.
Available in various lengths: From 8.5 to 13.0 mm, with intervals of 1.5 mm.

C-series 5.7 mm
Platform diameter and maximum body diameter 5.7 mm.
Available in various lengths: From 8.5 to 13.0 mm, with intervals of 1.5 mm.

1.2. Connection

The TEETANIUM implant has an internal hex connection. Hexagon connections offer the antirotation feature of prosthetic elements fixed to the implant. Retention is provided by the retention screw, 1.8 mm internal thread for all platforms.

Internal connection offering the following advantages:

· Immediate aesthetic effect.
· Greater stability of the implant-prosthetic accessory interface
· Better distribution of forces.
· Larger contact surface
· Maximum prosthetic versatility.
· Longer mechanical duration of the implant and prosthesis
· Improved quality of life for patients.
· Greater long-term preservation of the marginal bone.
· Mismatched Platform to minimise marginal bone loss.

1.3. Self-threading profile & microthreads

The TEETANIUM implant has an active thread, for the benefit of biomechanical stimulation of the osseous tissue and maximum stability of the implant after insertion.

The design of the implant neck includes some microthreads that distribute forces in the cortical interface.

The critical point in the bone-implant interface is found in the cortical bone, where the highest stress values occur. The microthreads reduce post-loading stress and improve secondary stability.

The implant has 2 mm of treated microthreads that reach their most coronal portion, the point of contact with the bone crest.

These microthreads:

· Reduce cortical stress on post-loading
· Increase the bone-implant contact surface
· Ensure less marginal bone loss in the long term
· Minimally invasive screw tap
· Contribute to the self-threading profile
· Improve secondary stability

2. Insertion specifications

2.1. Insertion height

The final insertion of the TEETANIUM implant must be at the crestal level, leaving the entire surface protected by the bone.

2.2. Recommended minimum distance

As ageneral rule, we advise a minimum distance of 3 mm between two adjacents implants and 1,5 mm an implant a tooth, in order to preserve bone vascularisation and the emergence profile.

2.3. Clinical indications

The design of the product, its behaviour and the success of the treatment are based on the indications given above. Therefore, all those products that do not conform to the indications described and in the clinical cases involving insufficient bone, advanced surgery, application of biomaterials, sinus lifts, bone fillings, advanced surgical techniques, and disparallelisms between implants, among others, are not covered by any guarantee.

S-series 3.3 mm - S-series 3.7 mm - C-series 3.7 mm

General indications with suitable width, height and bone qualities:
In fixed single and multiple restorations involving the replacement of natural roots and crown support for lateral and central lower incisors.
Immediate loading under optimum conditions where the implants reach a suitable primary stability for immediate loading (≥ 60 ISQ).
Immediate individual temporisation without contact on occlusion or during excursive mandibular movements.
Post-extraction conditions where optimal primary stability can be achieved.

Contraindications:
Implants measuring 8.5 mm in length are not indicated in bone of type III or IV osseous quality for supporting a single crown.

S-series 4.2 mm - C-series 4.2 mm

General indications with suitable width, height and bone qualities:
In fixed single and multiple restorations involving the replacement of natural roots and crown support for central incisors, canine teeth and premolars in the maxilla, and canine teeth and premolars in the mandible.
Immediate individual temporisation without contact on occlusion or during excursive mandibular movements.
Immediate loading under optimum conditions where the implants reach a suitable primary stability for immediate loading (≥ 60 ISQ).
Post-extraction conditions where optimal primary stability can be achieved.

Contraindications:
Implants measuring 8.5 mm in length are not indicated in bone of type III or IV osseous quality for supporting a single crown.

S-series 4.9 mm - C-series 4.9 mm - S-series 5.7 mm - C-series 5.7 mm

General indications with suitable width, height and bone qualities:
In fixed single and multiple restorations involving the replacement of natural roots and crown support for molars in both the mandible and the maxilla.
Immediate individual temporisation without contact on occlusion or during excursive mandibular movements.
Immediate loading under optimum conditions where the implants reach a suitable primary stability for immediate loading (≥ 60 ISQ).
Post-extraction conditions where optimal primary stability can be achieved, with or without osseous regeneration of the gap between the implant shoulder and the bone crest.

Contraindications:
Implants measuring 8.5 mm in length are not indicated in bone of type III or IV osseous quality for supporting a single crown.

3. Treatment planning

The objective of treatment with dental implants is to restore the functionality of the lost natural teeth.

To achieve the objectives of the treatment, treatment planning from the standpoint of prosthodontic restoration is established as the fundamental basis of treatment. To this end we use the patient's medical history, clinical radiological diagnosis, examination, use of study models, among others, in accordance with standards and general protocols applied to implantology.
The general information to be gathered for treatment to be carried out is:

Medical history:
· Personal and family past medical history.
· General medical condition.
· State of dental health.
· Clinical and radiological exploration.
· Recording of anatomical condition through study models.
· Diagnosis and treatment plan.
· Patient's expectations.
· Possible contraindications.

General relative contraindications:
Age, stress, smoking, pregnancy, bone deficiency, alcoholism, drug consumption, lack of oral hygiene, periodontal pathologies, addictions in general, among others.

Absolute contraindications:
Endocrine (unstable diabetes mellitus, hyperparathyroidism), blood dyscrasias that contraindicate surgical treatments, cardiovascular and/or terminal pathologies, infectious diseases, treatments involving radiotherapy, steroid or anticoagulant therapy, epilepsy and psychological factors.
Together with the clinical explorations, the data gathered enable the clinical diagnosis to be made and the prosthodontic restoration to be drawn up.

Diagnosis and treatment plan:
To confirm the initial diagnosis, impressions are made to obtain study models which are placed in a semi-adjustable articulator guided by the bite registration. This enables a diagnosis to be made of the edentulous zones and the dimensions of the available space, the patient's occlusion, the antagonist arch type of the sector to be restored.

The final diagnosis should be performed by the professional responsible for the clinical treatment.

A reconstruction wax-up is also made to establish the dimensions and design of the future prosthesis. The wax-up makes it possible to prepare the provisional restoration and build surgical guides for the placement of the implants and prosthodontic restorations needed for their insertion.

The clinical and radiological exploration and study of the models are basic tools for defining the type of restoration needed to ensure that the patient recovers his or her anatomical characteristics, chewing function and aesthetic appearance.

The use of te Radiological Templates are recommended to facilitate the study of the planning.

A treatment plan is drawn up to include the planning of the restoration over time, type of prosthesis, and number of implants required as supports for the type of prosthesis, their position level with respect to the osseous crest and the soft tissue, among other considerations.

The treatment plan and its scheduling constitute the fundamental basis for safeguarding the biological structures. The objectives are to predict the load along the implant axis, avoid extension elements, manage transversal loads, control stability, occlusion, hygiene and parafunctions, stimulating the osseous anchorage with the incorporation of a number of implants whose length and diameter are suited to their anatomical placement, making it possible to compensate for the various stresses that occur at different levels.

4. Instruments and surgical box

The surgical box is delivered unsterilised. The design of the surgical box contributes a high level of ergonomics to the surgical field.
It is composed of a base, a tray where the surgical instruments are placed, and a closable cover. Before surgery procedure, each of the components of the tray must be cleaned separately, paying special attention to areas that are difficult to access.

Because the detergents used as chemical cleaning agents cannot, by themselves, eliminate all the dirt and/or residues, it is essential to clean the components manually and carefully with a sponge or soft cloth to dislodge material that has become adhered during surgery.

For areas that are hard to reach, we recommend a clean brush with soft bristles. Do not use solvents, abrasive cleaning products, brushes with metal bristles or abrasive pads.

We suggest using a mild, pH-neutral enzymatic detergent. The surgical box can also be mechanically cleaned in an ultrasonic cleaning tank. Check that all the components in the surgical box are clean and intact before use.

Do not place any instruments in the tray that are not intended to be used with it; this is to avoid overloading the tray or an unsuitable entry of water vapour through the holes. It is important to note that the surgical drills are designed for a maximum of 10 uses.

Proper care of the drills, including correct disinfection and cleaning, avoiding knocks, and eliminating any residues, favours their conservation and the maintenance of their cutting specifications. Also note that poor cleaning and maintenance shortens the life and cutting features of the drills, possibly causing implant failure, and even serious damage to the patient's health.

Dual function wrench
The TEETANIUM system wrench has the dual function of controlling torque and tightening the implant. The wrench is delivered unsterilised. It is important to clean and disinfect it before use. The lower part of the wrench can be used to adjust the torque recommended for inserting or placing implants and for tightening the final prosthesis.
The torque to be applied is set on the dynamometric wrench. When the dynamometric wrench reaches the pre-set torque, its upper part, or head, bends to indicate that the established force has been reached.

5. Standard cleaning process, disinfection and sterilisation of prosthodontic components and instruments

As is the case with the preparation of the surgical field, the processes of cleaning, disinfecting and sterilising the surgical instruments, components and equipment in implantology are based on hygiene and patient safety procedures stated in standards and general protocols applied in dentistry.

TEETATIUM prosthodontic components and instruments are not supplied sterile.

Do not use products if packaging has been damaged or opened.

Prosthodontic components and instruments for use in the mouth must be cleaned, disinfected and sterilised prior to use.

Reusable instruments and components must also be cleaned, disinfected and sterilised after use.

Immediately after implantation:
Disassemble instruments comprising several parts into their components according to the instructions for use (e.g. wrench).
Damaged or dull instruments should be set aside (sharp instruments should be replaced after a maximum of 10 uses) and disinfected and cleaned separately.

Manual cleaning and preparation of units
Brush and rinse under running water to remove loose particles in all zones and crevices of instruments for between 20 and 30 seconds until all residue is removed.

Disinfection
Immerse the instruments in an adequate disinfectant bath, strictly following the manufacturer's instructions regarding dose/concentration, immersion time and temperature.

Instrunet Instrumental PRD (universal disinfectant for instruments), a disinfectant with CE marking especially indicated for dental health material is recommended.

Disinfection process
Disinfection may be manual or automatic. The instruments should not be in contact with one another.

1. Prepare the disinfectant solution using tap water and following the manufacturer's instructions for use to achieve a final concentration of 5% Instrunet Instrumental PRD.
2. Mix the solution by stirring gently and then pour it into the ultrasonic bath tray.
3. Immerse the clean and thoroughly rinsed instruments in the bath for 30 minutes at 60ºC with a power setting of 50 W (40 KHz), making sure that they are fully submerged and in contact with the disinfectant.
4. Rinse the material with sterile water for 30 seconds and dry thoroughly under aseptic conditions (with gauze, paper, filtered air, etc.).Do not use hydrogen peroxide, oxidising acids (nitric acid, sulphuric acid, oxalic acid, etc.) or any product with a high chlorine content.

Sterilisation of units
Metal products should be sterilised in a steam autoclave, using a sterilising cycle at 134ºC, for at least 6 minutes. Do not remove the sterilised product until after completion of the drying cycle. We recommend using a sterilisation control, recording the date and expiry date, in addition to performing periodic controls of the sterilisation process using biological indicators.

IMPORTANT:
Failure to follow the indications of the manufacturers of the products used in the processes described previously may cause serious damage to the equipment, such as rusting of the surgical instruments, loss of sharpness and longevity of the surgical drills, as well as complications during the following surgery, giving rise to excessive bone heating / necrosis and implant osseointegration failure.

6. Preparation of the surgical field

As is the case with processes involving cleaning, disinfecting and sterilising surgical instruments, components and implantology equipment, the preparation of the surgical field is based on hygiene and patient safety procedures as laid down in standards and general protocols applied in dental practice. Below is a summary of some of these standard protocols with the specific indications applicable to the TEETANIUM implant system.
The surgical field must be kept aseptic and sterile before and during the surgical procedure.

The general aspects of preparing the surgical field include actions such as:

· Patient's medical history, technical information and treatment plan for the patient.

· Sterilised TEETANIUM implant system instruments.

· Instruments, components and general equipment, all sterilised for surgery.

· Surgery table protected by sterile drapes.

· Orderly placement of all instruments on the surgery table so that they are visible for use, taking into account the surgical procedures to be performed.

· Protection of operating room equipment and components with sterile drapes.

· Surgical motor with new irrigation tubes.

· Preparing the patient for surgery. Mouthwash, cleaning and disinfection of the surgical site.

· Staff shall wear specific surgical clothing for this purpose, such as surgical gowns, masks, disposable sterile gloves, protective plastic glasses, suitable footwear, etc.

· In addition, arms and hands must be cleaned and disinfected according to standard protocol.

It is important to point out that, during the operation, a sterile container with physiological saline solution must be used to deposit used instruments, such as surgical drills, scalpels, wrenches, adaptors, among others, in order to avoid the instruments from being knocked, or getting residue on their surfa-ces.

7. Surgical insertion sequences

Important note, prior to insertion
Sharp and constantly irrigated instruments should be used when preparing the implant bed.

The specific surgical sequence for the insertion of each implant should be carried out as set forth in this surgical procedure, and at the speeds recommended therein.

Otherwise, there may be excessive forces in the insertion of the implant--greater than 50 Ncm-- exceeding the resistance of the bone and causing damage to the implant and its connection, cold soldering of the implant with the carrier, necrosis, bone fracture, etc.

7.1. Incision

Implants can be placed with mucoperiosteal incision and raised flap to allow direct visualisation of the bone; alternatively, they can be placed without a mucoperiosteal incision, using a circular scalpel.

Use of the circular scalpel requires the existence of keratinised gingival tissue, adequate bone width and prior three-dimensional planning of the treatment, to precisely determine the amount of bone.

7.2. Osseous bed preparation

The preparation of the implant bed is accomplished through an initial surgical insertion sequence that is common to all series, and a final surgical sequence which is specific to each implant series.
During the surgical preparation of the implant bed, the following must be borne in mind:

· Apply abundant external cooling with sterile water or NaCl solution.
· Apply soft, intermittent pressure to the bone.

7.3. Recommended rotation speeds

When preparing the maximum implant bed length for all implant diameters, perform minimal pressure applications at the end of the preparation, increasing the time of each pressure application and removing the drill from the interior of the implant bed to permit bleeding, reduction of local pressure and cooling, thus avoiding overheating and possible necrosis of the bone.

It is important to remove the drilling residues by irrigating with sterile solution when the surgical procedure is completed.

The surgical drills are designed for a maximum of 10 uses. Exceeding the indicated number of uses can adversely affect the success of the implant treatment.

The recommended drill rotation speed depends on the drill diameter. The speed for every drill is specified in the table below:

Drill Diameter	Description	RPM
1.8mm	Ball Drill	850
2.3mm	Lance Drill	850
2.3mm	Cylindrical Drill	750
2.8mm	Cylindrical Drill	750
3.0mm	Cylindrical Drill	750
3.6mm	Cylindrical Drill	650
4.3mm	Cylindrical Drill	650
4.7mm	Cylindrical Drill	650
5.2mm	Cylindrical Drill	650
3.7mm	Conical Drill	650
4.2mm	Conical Drill	650
4.9mm	Conical Drill	650
5.7mm	Conical Drill	650

7.4. Initial surgical sequence

Flap Incision
Once the incision has been made, the flap raised and the bone crest uncovered, the initial surgical sequence is started. In cases of narrow bone crest, we recommend to align it to increase the buccal-lingual or palatal width, leaving enough surrounding bone once the implant is inserted.

Ball Drill
The initial sequence begins with the Ø1.8 mm ball drill, set to a drilling speed of 850 rpm. It is used to mark where the implant will be placed.

Lance Drill
Begin the initial sequence with the lance drill at 850 rpm, drilling through the cortical bone while centralising the axis for the osteotomies to follow.
We recommend using the lance drill in clinical cases where a flapless procedure can be applied.

IMPORTANT:
Profuse irrigation in all osteotomies and processes is required until implant placement.

7.5. Final S-Series 3.3 mm surgical sequence

Once completed the initial sequence for all series, start the final osteotomy for the S-series 3.3 implant.
The final osteotomy for the S-series 3.3 implant is performed with the Ø2.3 mm twist drill set at 750 rpm up to the planned depth, applying gentle, intermittent pressure. After the Ø2.3mm twist drill, continue with the Ø2.8mm twist drill set at 750 rpm up to the planned depth, applying gentle, intermittent pressure.
Insert the Ø2.3 and Ø2.8 -mm depth gauge to confirm that the planned length has been achieved. We recommend threading dental floss through the hole in the depth gauge to prevent it is swallowed by the patient.

7.6. Final S-Series 3.7 mm surgical sequence

Once the final S-series 3.3 mm surgical sequence is completed, begin the final surgical sequence for the S-series 3.7 mm implant.
It is performed with the Ø3.0 mm twist drill set at 750 rpm to drill up to the planned depth, applying gentle, intermittent pressure.

7.7. Final S-Series 4.2 mm surgical sequence

Once the final S-series 3.7 mm surgical sequence is completed, begin the final surgical sequence for the S-series 4.2 mm implant.
It is performed with the Ø3.6 mm twist drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.

7.8. Final S-Series 4.9 mm surgical sequence

Once the final S-series 4.2 mm surgical sequence is completed, begin the final surgical sequence for the S-series 4.9 mm implant.
It is performed with the Ø4.3mm twist drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.

7.9. Final S-Series 5.7 mm surgical sequence

Once the final S-series 4.9 mm surgical sequence is completed, begin the final surgical sequence for S-series 5.7 mm implant.
The final osteotomy for the S-series 5.7 mm implant is performed with the Ø4.7mm twist drill set at 650 rpm to drill up to the planned depth, applying gentle, intermittent pressure.
After drilling with the Ø4.7mm twist drill, continue with the Ø5.2mm twist drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.

7.10. Final C-Series 3.7 mm surgical sequence

Once the initial sequence for all the series is completed, start the final osteotomy for the C-series 3.7 mm implant.
It is performed with the Ø3.7 mm conical drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.
Insert the Ø3.7 mm depth gauge to confirm the planned length has been achieved. We recommend threading dental floss through the hole in the depth gauge to prevent it is swallowed by the patient.

7.11. Final C-Series 4.2 mm surgical sequence

Once the final C-series 3.7 mm surgical sequence is completed, begin the final surgical sequence for the C-series 4.2 mm implant.
It is performed with the Ø4.2 mm conical drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.

7.12. Final C-Series 4.9 mm surgical sequence

Once the final C-series 4.2 mm surgical sequence is completed, begin the final surgical sequence for the C-series 4.9 mm implant.
It is performed with the Ø4.9 mm twist drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.

7.13. Final C-Series 5.7 mm surgical sequence

Once the final C-series 4.9 mm surgical sequence is completed, begin the final surgical sequence for C-series 5.7 mm implant.
It is performed with the Ø5.7mm conical drill set at 650 rpm up to the planned depth, applying gentle, intermittent pressure.

IMPORTANT FOR ALL FINALS SERIES:

Profuse irrigation in all osteotomies and processes is required until implant placement.
The use of the Drill Stops, is recommended to avoid overdrilling of the planned length.
The use of Surgical Sequence is recommended to facilitate the monitoring of sequence of the Drills corresponding to each implant series.
It is important to consider for conical drills, the laser marks. The depth markings indicate the implant length plus 0.8 mm, as the drill tip measures 0.8 mm.
In cases where the bone is type I or II, we recommend the use of the Bone Tap TEETANIUM for each series. Its use is intended for the depth of 8, 5 mm from the cortical level.
Depending on the length of the implant and the assessment of bone density, you can perform more depth with the Bone Tap, considering that an excessive use con lead to a stability loss.

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8. Packaging of the implant

Before opening the package, ensure that it is not damaged, opened, perforated or has other defects. Then, check that the details printed on the label match the planned diameter and length. In addition, check the expiry date before opening.
The implants are supplied sterilised by gamma radiation.
The TEETANIUM System Implants are individually packed.

The implant packaging is characterised by:

· Outer fibreboard box with colour code for each implant series.

· Triple adhesive label to control traceability and warranties.

· Double blister, sealed with Tyvek, guaranteeing implant sterility:

- Outer blister. It contains the inner blister. Once opened, deposit the inside blister in the surgical field to maintain the sterility chain.

- Inner blister. It contains the implant with the implant carrier and the cover screw. They are identified by a colour code indicating the series.

Packaging Considerations
Open the outer fibreboard box by pressing on the area showing “ ” to breakthe perforated line. This will free the double blister.

When the outer box has been opened, it is important to note the indications printed on the Tyvek for the correct opening of the outer blister. Be careful not to contaminate the sterile field when handling the outer fibreboard box and opening the outer blister. To maintain asepsis and sterility, these two packaging components must be handled by personnel who do not access the surgical field.

If you open the Tyvek too quickly or with too much force, the cover screw may accidentally fall out of the blister.

If, for whatever reason, the planned surgery is finally not performed, the blister pack containing the implant cannot be stored, maintained or used for another surgery. The sterility of the implant is guaranteed until the external blister pack is opened.

In the surgical field, remove the implant from its housing, and then remove the cover screw. The implant is kept in place in the internal blister pack by friction between the implant carrier and the area designed for this purpose in the blister. It is important to secure the adaptors well to the implant carrier and ensure that they are properly set in place, in order to be able to successfully remove the implant and transfer it to the bed. If the implant falls and loses its sterility, it is absolutely forbiden to manipulate, clean, sterilise or use the implant in the patient.

IMPORTANT:
The purpose of the implant labels is to control product traceability and warranties in each patient. Place the labels on the patient’s medical record form, the treatment record book, the laboratory technical sheet related to the clinic and the patient and, lastly, place the label on documents connected with any process that needs to be identified, concerning the patient’s treatment.

9. Removing the Implant from the blister pack

Mechanical removal of the implant from the blister
With the mechanical adaptor connected to the contra-angle hand piece, insert into the implant carrier until you feel a slight friction and hear a click, which means the adaptor is correctly connected.

Grasp the blister firmly and operate the contra-angle hand piece at a speed of 15 rpm. Then gently remove the implant vertically separating it from the blister.

Manual removal of the implant from the blister pack
With the manual adaptor connected to the dynamometric wrench, insert into the implant carrier until you feel a slight friction and hear a click, which means the adaptor is correctly connected.

Grasp the blister pack firmly and gently remove the implant vertically separeting it from the blister.

IMPORTANT:
Before removing the implant from the blister and placing it into the implant bed, the torque of the contra-angle hand piece and the dynamometric wrench must be adjusted to a maximum of 35 Ncm.

The manual or mechanical insertion of the implant should not exceed the maximum recommended torque, otherwise there could be serious or irreversible damages in the implant or ossointegration problems.

Signs and consequences normally associated with excess stress when placing the implant may include:

· Excessive torsion of the implant holder, causing a cold soldering joint between the implant carrier and the implant.

· Perceptible or imperceptible damage to the implant connection, causing fractures of the implant after the restoration in the short or medium term, or lack of fit of the prosthesis to the implant connection.

· Damage to the inner implant thread, causing subsequent misalignments of the final screws of the prosthesis or breakage of the screws.

Possible causes:

· Reduced final osteotomy sequence.

· Final drilling and implant insertion sequence in type I and II bone qualities, without performing the thread with the bone tap.

· Defective surgical drill cutting efficiency.

10. Inserting the implant

General remarks
When the bone quality is type I or II, you should pause briefly and intermittently when performing the insertion, in particular when inserting implants of greater length and diameter.
Once the final drilling sequence has been finished, check that the implant bed is bleeding and vascularising satisfactorily, and ensure there are no sharp osseous projections that might interfere with the insertion of the implant or the subsequent manipulation of the soft tissues.
Before placing the implant it is important to verify, by using the depth gauge, that the length matches the planned implant legth, and to ensure that the implant bed is free of any drilling residue.
The implant can be placed with or without irrigation so that the hydrophilic surface soaks up the blood from the socket.

Primary stability
Various factors such as bone quantity and quality, implant location and preparation technique, among others, will directly influence the degree of stability.

M mechanical and manual insertion
In the case of mechanical insertion, it is advisable not to insert the entire implant mechanically, and to complete the insertion manually with the dynamometric wrench, leaving it at the desired depth and thus perceiving more directly the primary stability of the implant.
It is important to start the implant placment slowly, maintaining continuous irrigation if desired during the placement, with a maximum insertion torque of 35 Ncm and a speed of 15 rpm.
During the implant placement, you must not exceed the prescribed torque or adopt positions with the surgical instruments that would not align them with the axis of the implant bed, thus transferring to undue forces and tensions in the implant carrier and implant.

11. Dismantling the implant carrier

After placing the implant, it is recommended to hold the implant carrier with the open-end wrench while unscrewing its screw. This will allow to maintain the maximum implant stability.

S-series 3.3 mm - S-series 3.7 mm - C-series 3.7 mm - S-series 4.2 mm - C-series 4.2 mm
With the open-end wrench in place, insert the manual or mechanical screwdriver in the small upper screw that connects the carrier with the adaptor and turn it counterclockwise.

After unscrewing the upper screw remove the carrier retention screw with the screwdriver counterclockwise.

S-series 4.9 mm - C-series 4.9 mm - S-series 5.7 mm - C-series 5.7 mm With the open-end wrench in place, insert the manual or mechanical screw-driver in the retention screw and turn it counterclockwise.

All series
The implant carrier retention screws are calibrated with a specific torque so that they can be unscrewed manually or mechanically without any problems. The screwdriver retains the retention screws by friction fit.

If the forces applied were greater than those indicated previously, the retention screw may have been screwed down tighter than normal to the implant carrier, which may be slightly locked on to the implant by the friction and torsion of these elements. In retention screw removal and subsequent implant carrier removal operations, we recommend using the open-end wrench, making small counterclockwise movements to unlock the components.

A mosquito clamp can be used to remove the implant carrier. Depending on the planned treatment, finish the surgery according to the chosen procedure (see next page), first cleaning the area and the implant with physiological saline solution, eliminating any possible particles and elements resulting from the osteotomy that may hinder the placement and fit of the components and accessories to be used.

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