PROSTHETIC

procedure

2015

for

Leone

implant system

Proc. 02/10-12 *May 01, 2015*

DISCLAIMER

The Prosthetic Procedure and the use of the products of the LEONE Implant System described in the following pages are intended for Professionals experienced in dental implant techniques.
In case of lack of basic notions, we suggest to attend specific courses in order to reach a high level of knowledge and practice in the use of implants.
The rules on the use of the products described below represent a group of standard instructions that must be adjusted to the single needs and to the particular situations that may occur according to the manual ability, to the experience and to the diagnosis made by the legally qualified medical operator.
It is not ascribed to the manufacturer the duty of monitoring the procedures of use of the product. A correct and appropriate use of the instruments and products related to the **LEONE** Implant System shall completely be reverted to the clinician.
The prosthetic procedure hereunder described is merely indicative as any single treatment case is assigned to the experience of the operator. As every medical operator well knows, a correct procedure and a perfect manufacture of the prosthesis may sometimes be followed by not satisfactory results owing to particular situations not imputable to responsibility of the dental operator or the manufacturer.

PREMISE

The prosthetic procedure of the **LEONE** Implant System is similar to that used for the natural teeth.

For the preparation of the abutment and the realization of the definitive prosthesis on implants is possible to follow a “Direct Technique” or an “Indirect Technique.”

The Direct Technique consists in the placement of the abutment directly in the mouth of the patient and in its preparation in situ.
The impression taking and the preparation of the prosthesis follow the same method used for the abutments of natural teeth.

The Indirect Technique consists in the impression taking with the placement of the transfer inside the implants to reproduce on the cast the exact position. Both impression and transfer are sent to the dental laboratory where the abutments, the definitive prosthesis or the temporary prosthesis (if the clinician decides to favour a further conditioning of the soft tissues and for the application of a progressive load) are manufactured.

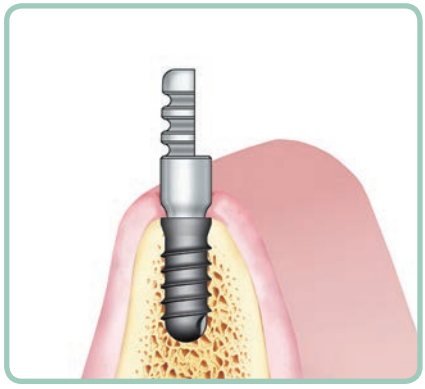
CAUTION*: in case of corrections of notable problems of lack of parallelism among implants and whenever the use of special abutments is required, the use of the indirect technique is recommended.*

For the fabrication of provisional prosthesis, temporary abutments are available.
For every implant platform (Standard, Large and Slim) various types of abutments are available: cylinder and/or for the correction of possible lack of parallelism.
For Standard platform straight or angled anatomical abutments are available.
For the manufacture of removable prosthesis, ball head abutments for overdenture and abutments for screw-retained prosthesis suitable for bar-retained overdenture are available.
For the realisation of screw-retained prosthesis, specific abutments are available.
For selecting the most appropriate abutment for the specific case **two kits of try-in abutments** are available: one for the anatomical **LEONE 360°** abutments, one for all the other **LEONE** abutments.

CAUTION*: the patient should be informed about the precautions for the period after installation of the implant restoration in order to prevent complications and variations in the efficiency of the device: a good level of oral hygiene and periodical check-ups should be performed.*

The Surgical Procedure and the Prosthetic Procedure reported were conceived with invaluable contribution of Dr. Leonardo Targetti, whom we thank sincerely.

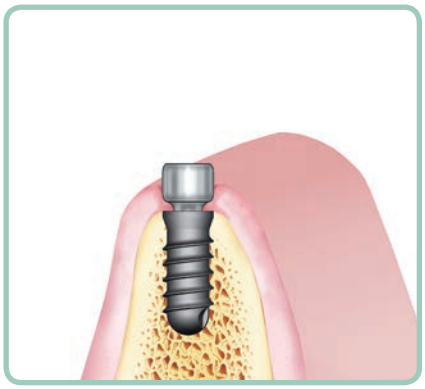
1) INDIRECT TECHNIQUE: IMPRESSION TAKING



1.1 After having removed the healing cap, place the transfer related to the implant and the selected platform. After having found the engagement in the internal hexagon, exert pressure on the transfer to get a perfect connection.

1.2 Impression taking with one or two materials using either a one-step impression technique or a two-step impression technique. In case of two-step impression technique, after having taken the first impression, without the transfer, an adequate space in the material is created to take the second precision impression with a light body.

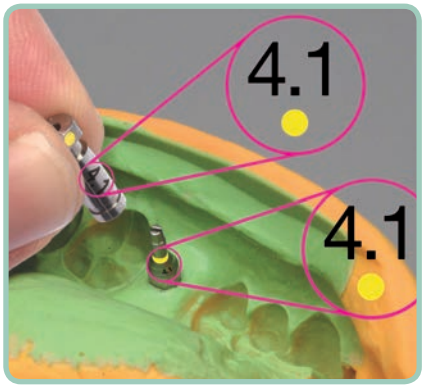
1.3 The transfer is kept in the impression due to the retentions. If this does not happen, it will be quite easy to reposition it in the impression, thanks to the particular shape of the transfer.



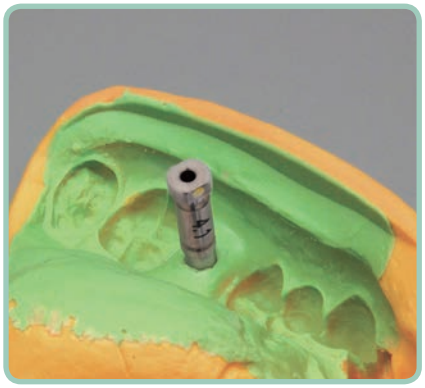
1.4 The impression is sent to the dental laboratory and a healing cap is positioned on the implant following the previous described steps.

2) INDIRECT TECHNIQUE: PREPARATION OF THE DENTAL CAST

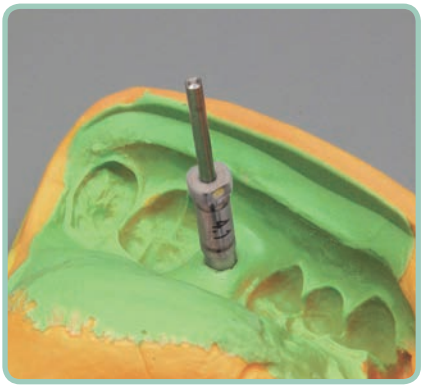
2.1 Check for correct position of the transfer on the impression or, if necessary, reposition the transfer.



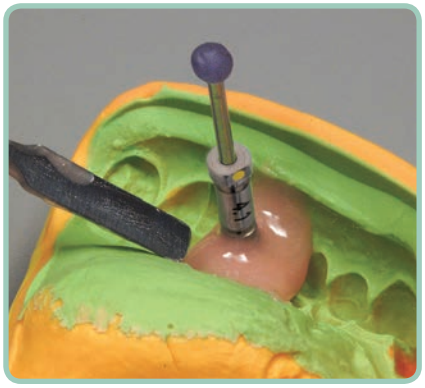
2.2 Verify the correspondence of the dimensions and the colour code on the surface of both analog and transfer. For the realization of dental casts with silicon gingiva, the use of the long analog is recommended. Placement of the analog on the transfer through the positioning hexagon which is present on the transfer. Exert a slight pressure on the analog until its complete placement.



2.3 CAUTION*: the analog must be seated completely in order to avoid errors in the fabrication of the dental cast.*



2.4 Placement of the pin on the analog. The connection among the two elements happens through a conic interference with no need of further fixing methods.

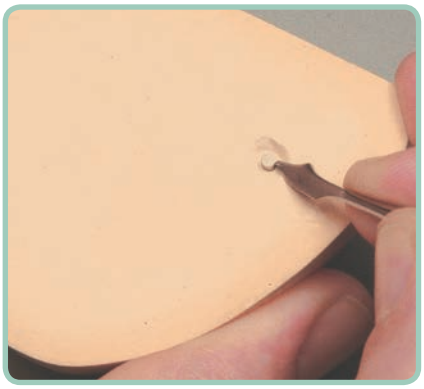


2.5 Placement of a small ball of wax on the top of the pin. The position of the ball will indicate the presence of the pin in case the pin would not come out of the dental cast. During this phase, non-rigid soft resin material can be used on the cast to mimic the presence of soft tissues. Pouring of the material that simulates the gingiva around the area of the analog.

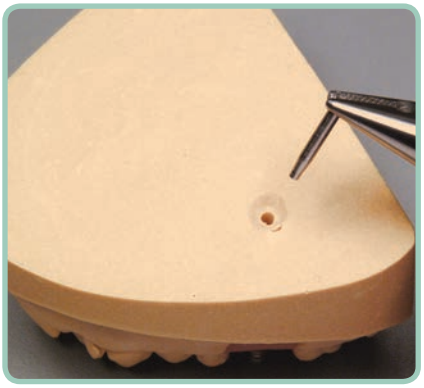
2.6 The plaster is poured making sure that the position of the pin is not modified.

2.7 After curing of the plaster, the cast is removed from the impression carefully and it is checked for imperfections. Due to its retentive design, the transfer is kept in the impression.

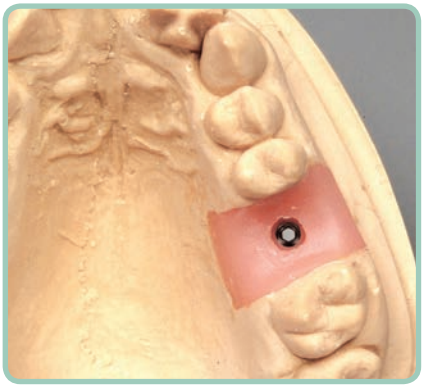
2.8 The cast is trimmed until the wax over the pin gets exposed.



2.9 The opening on the plaster of the cast is widened when the gap created by the wax ball is not sufficient for the extraction of the pin.



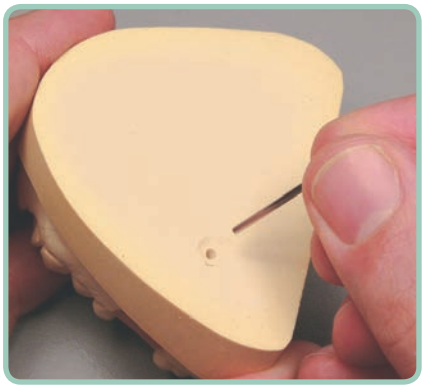
2.10 The pin is extracted from the cast with a laboratory plier. In this way, a posterior access canal to the analog is created.



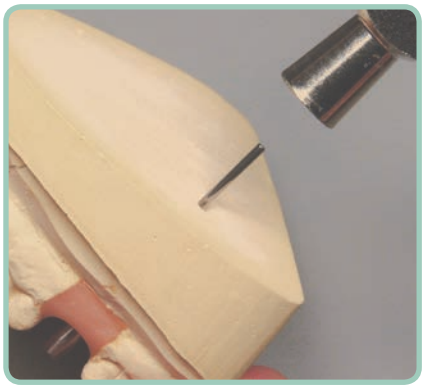
2.11 Final result: cast with analog seated in the correct position with regard to implant position in patient's mouth.

3) INDIRECT TECHNIQUE: PREPARATION OF THE ABUTMENT

3.1 With the use of try-in abutments (pages 15 and 28) select the ideal abutment, seat it on the analog engaging the internal hexagon and applying an impulsive force (beat gently on the top of the abutment with a mallet). Control of the dimension and planning of subsequent modifications.

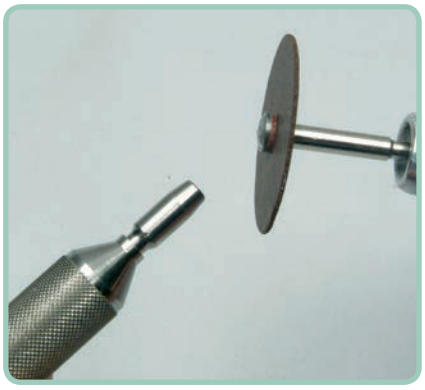


3.2 Placement of the specific bar for removal of the abutment into the access canal previously created on the base of the cast.



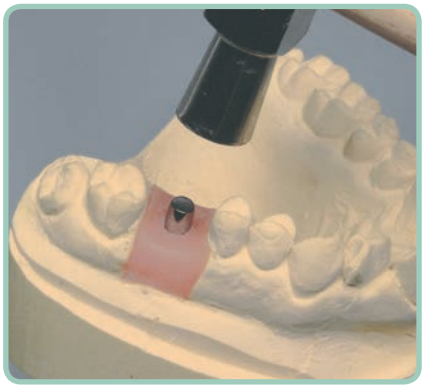
3.3 Percussion with a mallet and extraction of the abutment from the analog.

3.4 Placement of the abutment onto the specific handle for abutments, engaging the internal hexagon and applying an impulsive force. The handle facilitates the reduction of the abutment and prevents any damages to the abutment. It also avoids problems due to overheating and unstable grips.

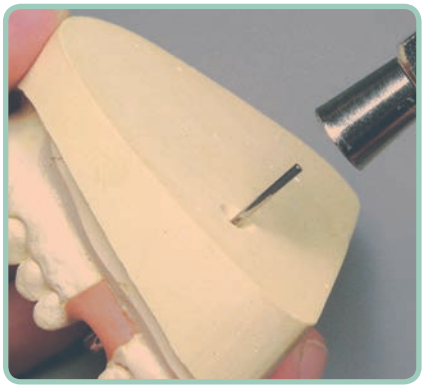


3.5 First phase of the reduction of the abutment seated on the handle.
The abutments of the **LEONE** Implant System allow an easy preparation both in the laboratory and in the patient's mouth, due to the particular quality of the titanium utilized and to their design (solid abutments). Separation disks and cross cut tungsten carbide burs are particularly indicated for this type of preparation.

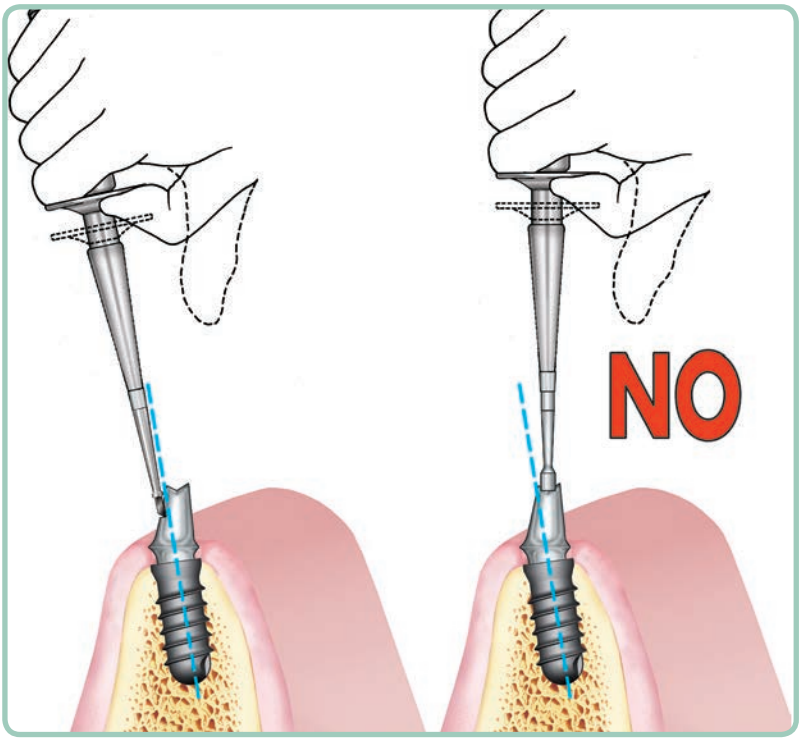
3.6 Removal of the abutment from the handle. The handle has a special push-button that allows a simple and rapid ejection of the abutment.



3.7 Placement of the semi-finished abutment in the analog and application of an impulsive force. If necessary, the abutment can be finished on the cast with a milling parallelometer.



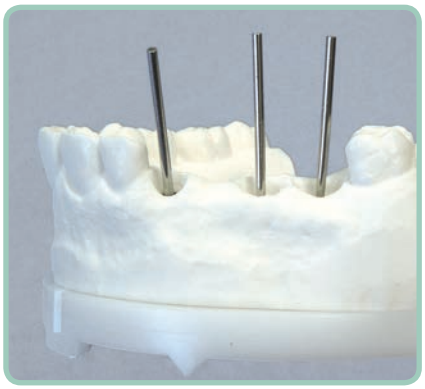
3.8 Placement of the specific bar for removal of the abutment in the access canal created previously on the base of the cast. Percussion with a small mallet and extraction of the abutment from the analog.



CAUTION*: in case of angled abutments, create a step parallel to the axis of the cone. The abutment beater with the specific flat tip will be placed on the step for a correct percussion of the abutment on the implant. The anatomical abutments already show a step parallel to the axis. Percussion on the angled and pre-inclined abutments must be performed with the special flat seating tip Cat. 156-1008-06 placed on the step and by aligning the instruments along the implant axis. On the contrary, the seating tip might not find the correct support on the step and slip sideways. In order to get a permanent connection, at least 2 consecutive percussions are advisable.*

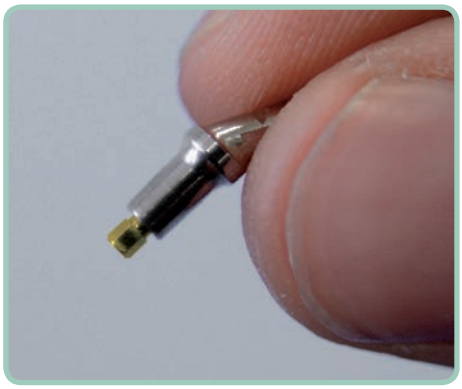
3.9 Waxing, casting and try-in of the coping or of the framework on the abutments that will be marked with numbers indicating their position and with a sign on the vestibular side. Manufacture of a temporary prosthesis.
Sending of abutments and copings or frameworks and temporary prosthesis to the dental office.

4) INDIRECT TECHNIQUE: SELECTION, USE AND POSITIONING OF LEONE 360° ANATOMICAL ABUTMENTS



4.1 Highlight the different implant inclination by seating the bars (included in the package) or the related try-in abutments on the analogs.

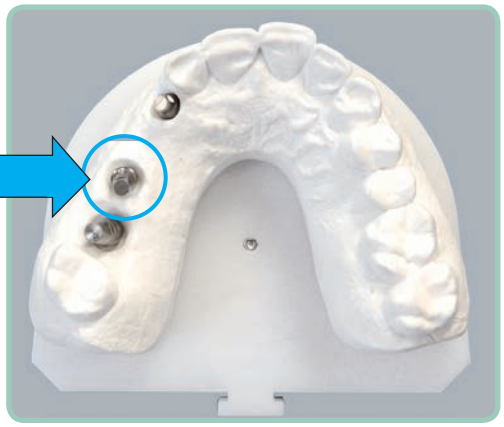
4.2 Selection of the most appropriate abutment from the try-in kit for **LEONE 360°** anatomical abutments (Cat. 160-0001-03). It is now possible to order the correct selected abutment.



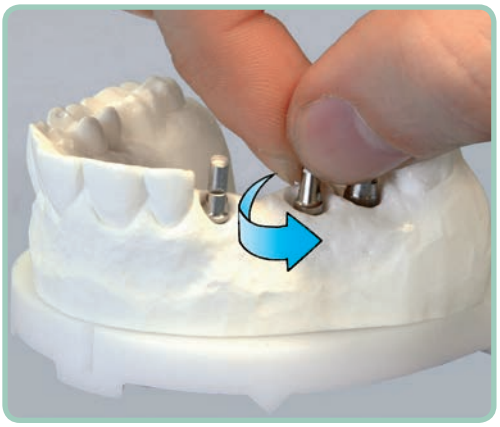
4.3 The apical hexagon is only seated but **not locked** in the 360° anatomical abutment: this allows a free positioning to 360° on the dental cast. When supplied, the conical locking-taper connection between the hexagon and the abutment is not activated, therefore the hexagon can rotate on the abutment.

4.4 Engage the internal hexagon and gently press the abutment on the corresponding analog on the dental cast.

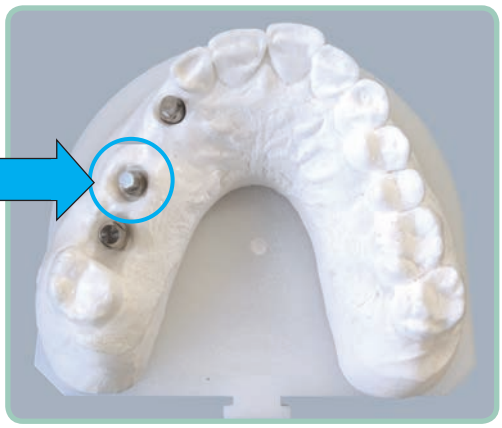
CAUTION:
*do not place the **LEONE 360°** anatomical abutment without the hexagon into the dental cast.*



4.5 The angular position of the hexagon is casual and accordingly the abutment emergence.

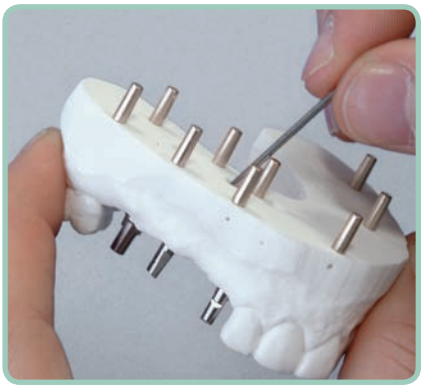


4.6 Take the **LEONE 360°** anatomical abutment and rotate it to its correct angular position. Eventually use universal pliers.

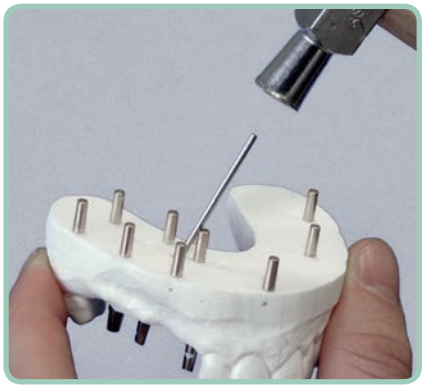


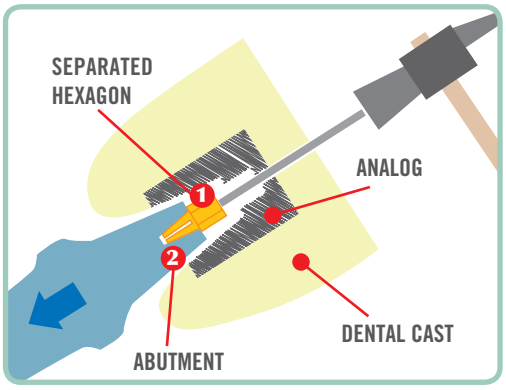
4.7 In this way the best parallelism among abutments has been set and the placement axis has been selected.

4.8 Fix the position through an impulsive force on abutments.

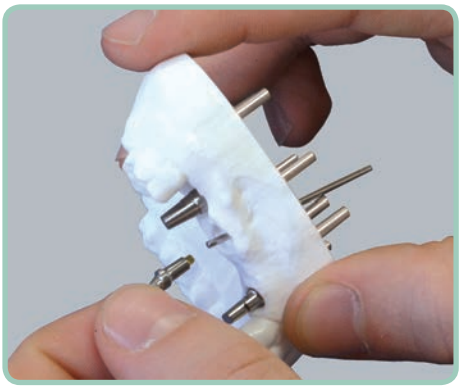


4.9 Placement of the special bar for the abutment removal into the access channel on the bottom of the dental cast.



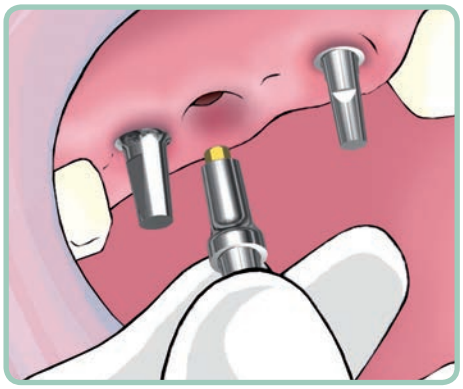


4.10 Application of an impulsive force on the pin. The hexagon is permanently fixed to the abutment and at the same time the abutment is being removed from the analog.



4.11 Extraction of the abutment from the dental cast.
The hexagon is now fixed in the most favourable position for the prosthetic restoration and has been pushed all the way down up to the end stop on the abutment body. Finishing of the abutment, if necessary, and manufacturing of the framework making reference to points 3.4-3.9.

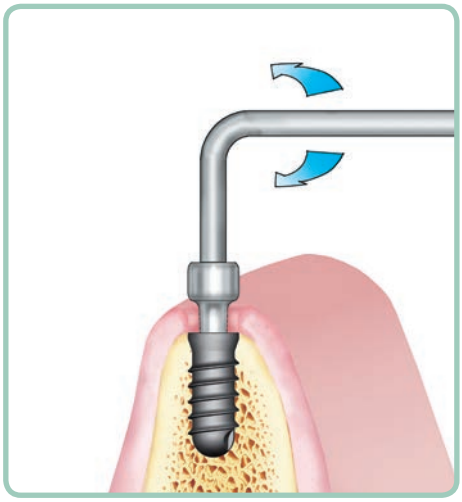
CAUTION: *before doing any finishing or try-in of the framework, always secure the abutments with an impulsive force in order to prevent unwanted movements of the hexagon.*



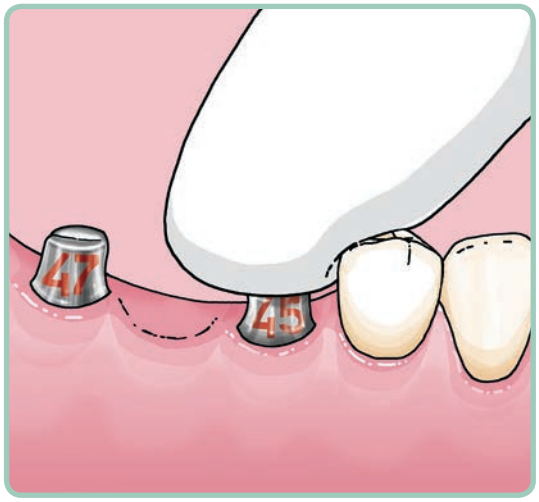
4.12 Once activated the self-locking conical connection ensures the stability of the hexagon and the positioning of the abutment in the mouth is only one-way. For the final positioning of the abutment, follow the general instructions indicated at points 5.1-5.6.
In case of choice of a **LEONE 360°** anatomical abutment either angled at 15° or 25°, the activation of the connection must be performed on the special step with the flat tip Cat. 156-1008-06.

5) INDIRECT TECHNIQUE: FINAL POSITIONING FOR STANDARD AND LARGE PLATFORM

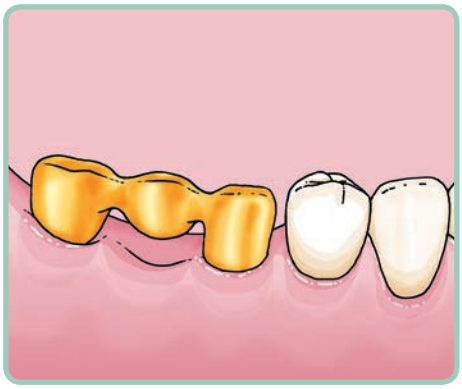
The prosthetic technique of **LEONE** Implant System is similar to the one always used on natural teeth.
The dental office receives the prepared abutments, the cap or the metal framework and the temporary prosthesis from the laboratory.
For the fabrication of provisional prosthesis with temporary abutments see paragraph 12.



5.1 Unlock the healing cap with the specific hex head extractor Cat. 156-1006-00. The extractor, which presents a hole for the placement of a safety leash, is seated into the hexagon on the head of the healing cap and rotated subsequently, either clockwise or anti-clockwise indifferently, in order to unlock the healing cap. The removal of the cap from the implant is completed with the aid of tweezers.
Accurate rinsing and drying of the inside of the implant.

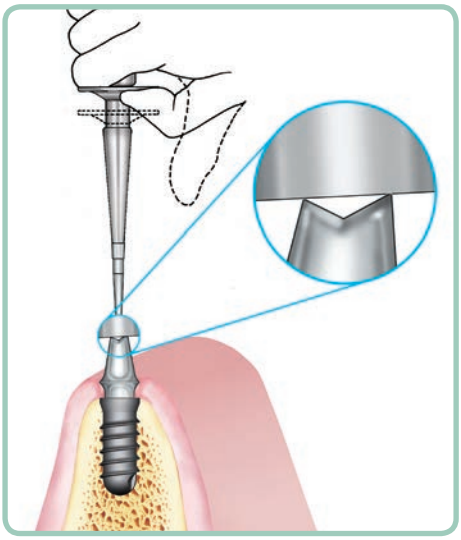


5.2 For the abutment try-in, the abutments are placed inside the implants paying attention to the corresponding numbers. The hexagonal engagement is found and a light finger pressure is exerted on the abutments. By doing so, the abutments will be sufficiently retained inside the implants and, if necessary, at the end of the try-in procedure, the abutments can be easily removed either manually or with the help of Weingart style pliers (LEONE Orthodontic Cat. No. P2104-00).



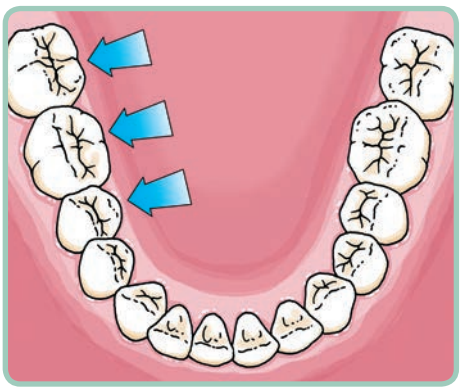
5.3 Try-in of the coping or of the framework on the abutments.
Once the perfect fit of the metal structure and the abutments has been checked, the copings or the framework are sent to the laboratory for the completion of the manufacturing process.[1]

[1]In the event of an imperfect fit of the framework, it may be cut and repositioned on the abutments if suggested by the clinician. The fit of the framework is checked in the mouth of the patient and the framework is fixed with self-curing resin. Once the final set of the self-curing resin has occurred, an impression is taken with the framework still in place. The framework kept in the impression is sent to the laboratory for final soldering the technique is the same as the one on natural teeth.



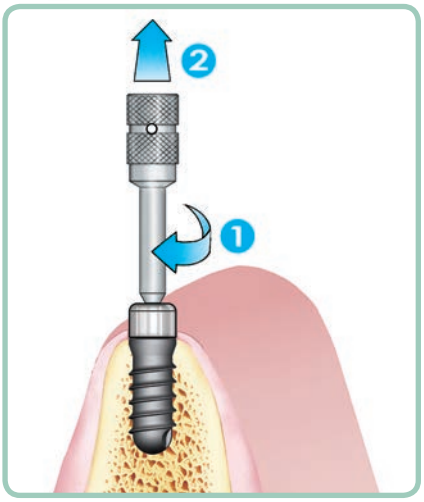
5.4 The clinician may decide for the final placement of abutments inside the implants by placing a temporary prosthesis. In this case, the placement of the abutments is performed by applying an impulsive force along the longitudinal axis of the implants with the special abutment beater. In order to get a permanent connection, 2 consecutive percussions are advisable. In case of seating an abutment in the posterior region, use the specific offset tip Cat. 156-1008-02. In that case we recommend to perform 3 consecutive percussions. In case of seating an angled abutment, please refer to the indications on page 87.

5.5 Application of a temporary prosthesis may promote further conditioning of the soft tissues and application of a progressive loading. As an alternative, the abutments can be removed with a pliers and the healing caps are repositioned. Once the final prosthesis is ready, the healing caps are removed, the abutments are definitively seated and the prosthesis is applied.

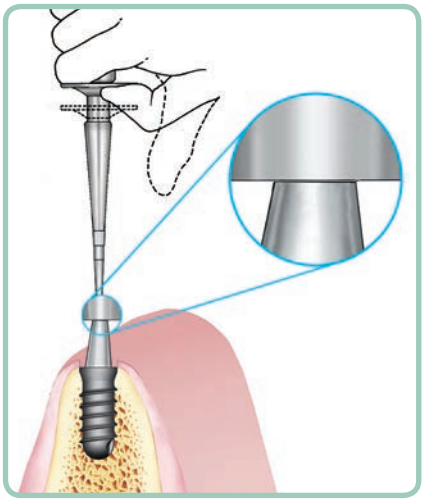


5.6 Once the prosthodontist has decided to apply the final manufacture, the temporary prosthesis is removed. After final touches and polishing, the final prosthesis is positioned and cemented.

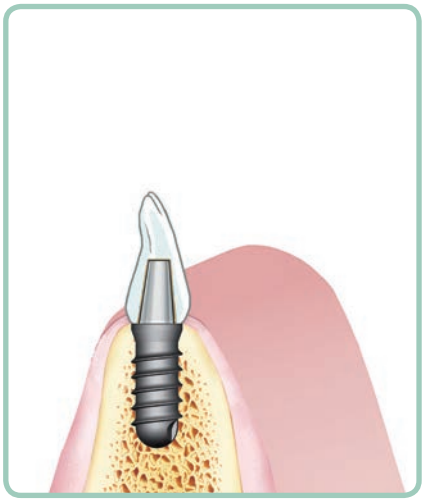
6) INDIRECT TECHNIQUE: FINAL POSITIONING FOR SLIM PLATFORM



6.1 Removal of the healing cap with the special instrument for cover caps Cat. 156-1003-00. The instrument for cover caps has to be screwed in the head of the healing cap to be able to practice enough traction to remove the cap.

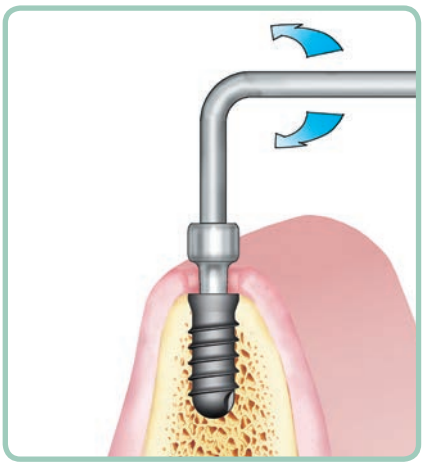


6.2 Final placement of the abutment in the implant through the application of an impulsive force along the longitudinal axis of the implant with the special abutment beater. To get a permanent connection, 2 consecutive percussions are advisable.

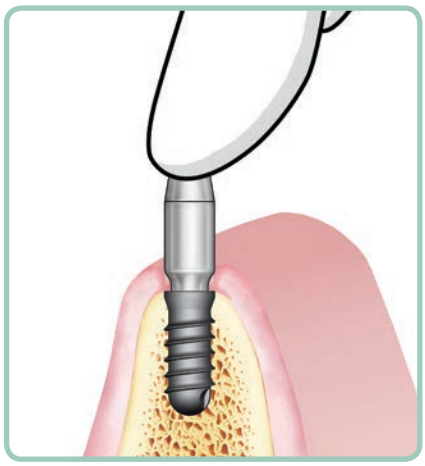


6.3 Cementation of the crown closing on the neck of the implant.

7) DIRECT TECHNIQUE: POSITIONING AND PREPARATION OF THE ABUTMENT, IMPRESSION TAKING FOR STANDARD AND LARGE PLATFORM

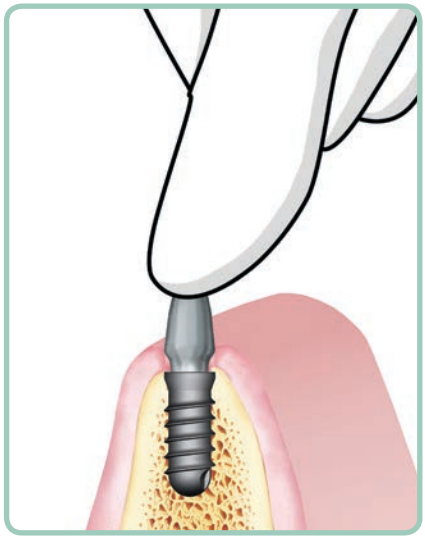


7.1 Unlock of the healing cap with the specific hex head extractor Cat. 156-1006-00. The removal of the cap from the implant is completed with the aid of tweezers. Accurate rinsing and drying of the inside of the implant.

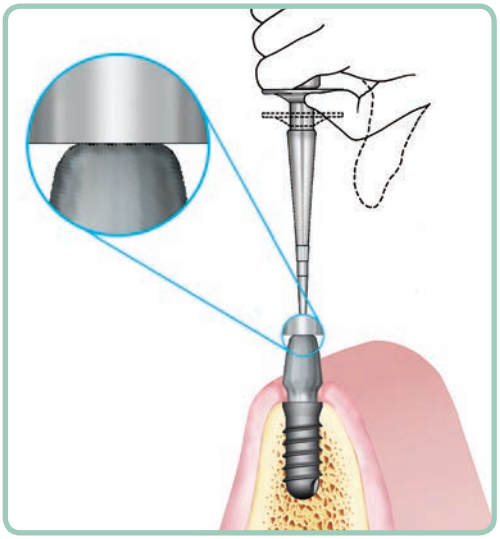


7.2 Selection of the most appropriate abutment with the use of the try-in kit for Standard and Large abutments (Cat. 160-0001-04). Try the abutment in the mouth of the patient. Placement of the abutment in the implant engaging the internal hexagon. Use finger pressure to get a retention of the abutment inside the implant. Highlighting of possible parts to be trimmed. Hand removal of the abutment or with the help of Weingart style pliers (**LEONE** Orthodontic Cat. No. P2104-00).

7.3 Eventual rough shaping of the abutment, especially in height, with the aid of the special handle for abutment.

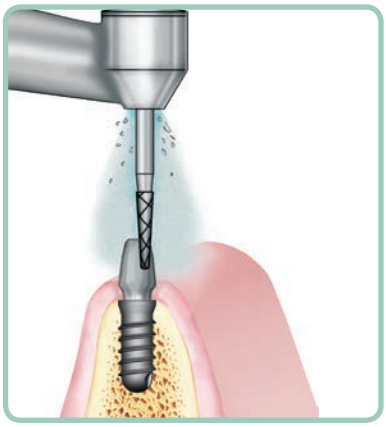


7.4 When rough shaping is finished, placement of the abutment in the implant engaging the internal hexagon.

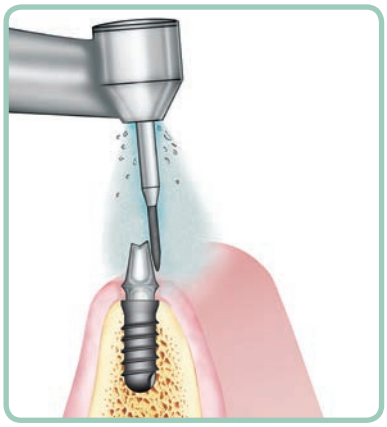


7.5 Percussion of the abutment with the specific abutment beater on the longitudinal axis of the implant. To get a permanent connection, 2 consecutive percussions are advisable. In case of seating an abutment in the posterior region, use the specific offset tip Cat 156-1008-02. In that case we recommend to perform 3 consecutive percussions. In case of seating an angled abutment, please refer to the indications on page 87.

7.6 Milling of the abutment directly in the patient's mouth **under profuse irrigation**. The abutments of the **LEONE** Implant System allow an easy preparation both in the laboratory and in the patient's mouth thanks to the low thermic conductivity coefficient of the titanium with which they are manufactured.



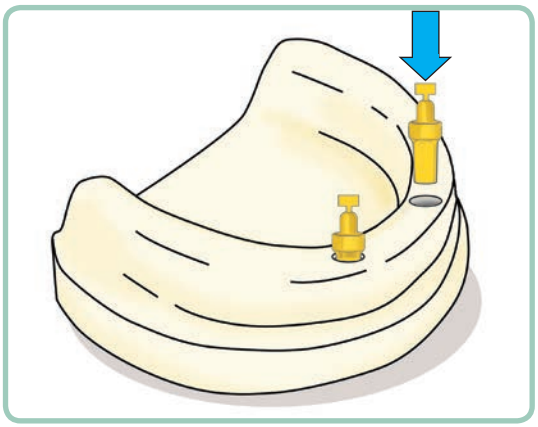
7.6a For important cuts in height and rough shaping, the use of a cross cut tungsten carbide bur Cat. 153-1221-02 or Cat. 153-1235-02 (included in the specific organizer) is recommended. We advise to prepare the abutment as a chamfer.



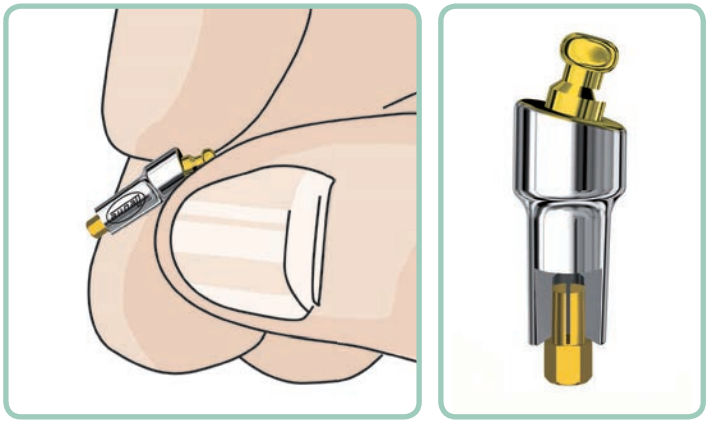
7.6b For the final finishing use a coarse-cut diamond bur Cat. 153-1610-01 or Cat. 153-1810-01 included in the specific organizer.

7.7 Impression taking with classical technique as on the natural teeth and dispatch of the same to the dental laboratory for the preparation of the prosthesis. The application of a temporary prosthesis is advisable to get a conditioning of the soft tissues.

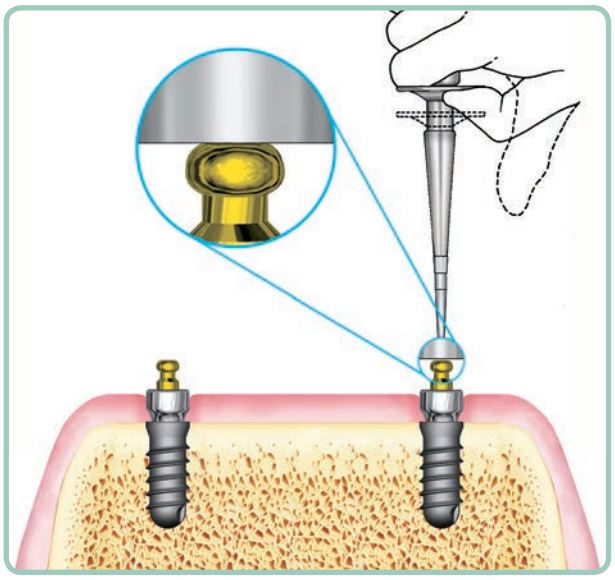
8) BALL HEAD ABUTMENTS FOR OVERDENTURE



8.1 After the healing of soft tissues, take the impression with the conventional indirect technique using Standard transfers, send the impression to the lab and pour the dental cast (par. 1 and 2 of the prosthetic procedure). Select the appropriate ball head abutments according to the thickness of gingival tissues and inclination of implants, using the try-in abutments kit Cat. 160-0001-04. The abutment must protrude from the gingiva by at least 1 mm to avoid a possible impingement of the housing on the patient's soft tissues.

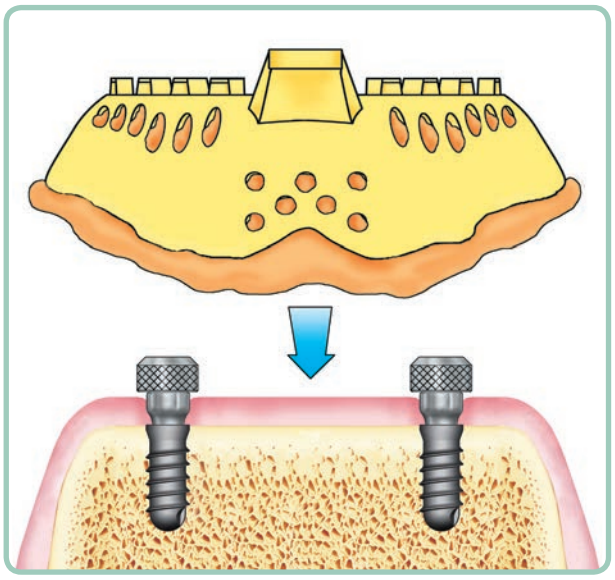


8.2 In case of **360° angled ball head abutments,** the procedure for permanently fixing the hexagon to the abutment body is like the one for **LEONE 360°** anatomical abutments (points 4.3 – 4.11 of the prosthetic procedure). Deliver the dental cast and the selected abutments to the dental office.

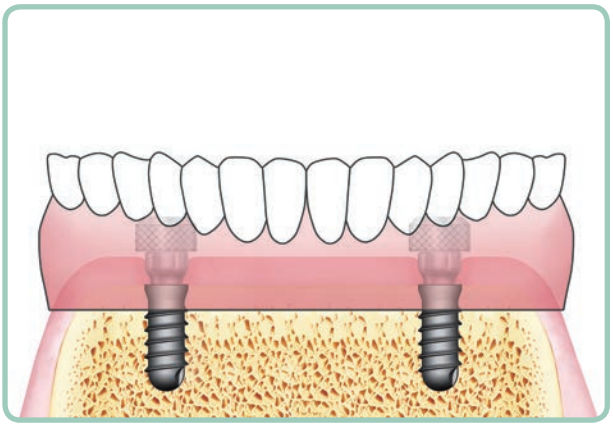


8.3 After the removal of the healing caps (point 7.5 of the surgical procedure), rinse and dry the implant's inner side, seat the ball head abutments into the implants and apply an impulsive force onto the abutments' heads. To get a permanent connection of **straight ball head abutments 2 consecutive percussions** with the proper abutment beater are recommended; on **angled abutments perform 4 consecutive percussions.**

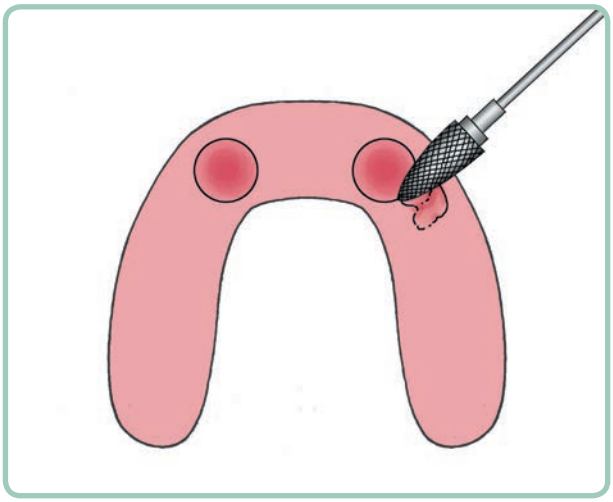
8.4 Choose one attachment type of the following options:
1) housing with O-ring
2) micro housing with O-ring
3) micro housing with insert.
All attachments, which will be incorporated into the prosthesis, must belong to the same type.



8.5 Place the chosen housings on the abutments' heads. Take an impression and send it to the lab. In this way, the manufacturing of the definitive prosthesis can occur with an adequate space for the housings. Remove the housings and adapt the temporary prosthesis, if necessary.



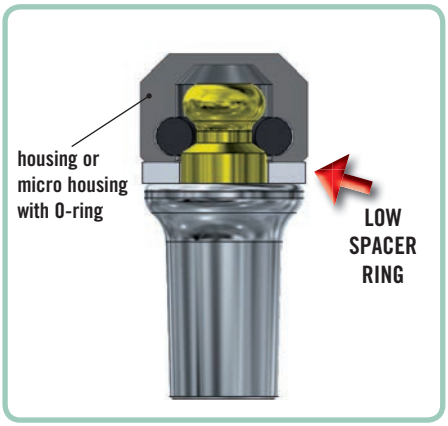
8.6 Check the final prosthesis, particularly in relation to the space left for the housings.



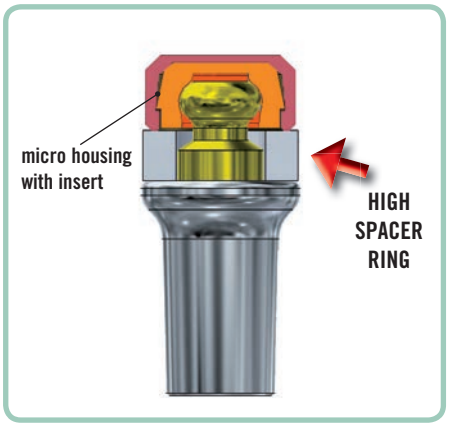
8.7 If necessary, relieve the prosthesis in the areas for the housings, in order to obtain a perfect tissue borne prosthesis without any friction on the housings.

CAUTION: *It is recommended to deliver the final prosthesis in the initial phase without housings to the patient to allow for adequate tissue adaptation and to correct possible impingements. The clinician will determine the length of the adaptation period.*

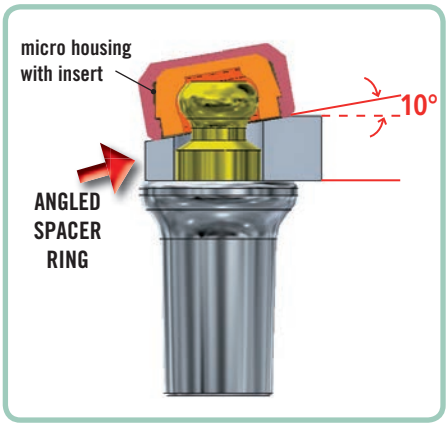
8.8 After adaptation, place over each abutment the proper spacer ring suitable for the selected housing. The spacer rings allow a precise incorporation of the housings into the prosthesis without displacements, promote a correct resilient retention of the prosthesis and protect the undercuts of the abutments' heads from acrylic.



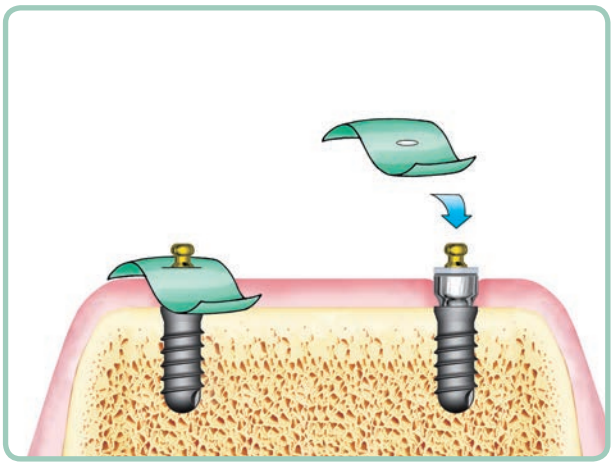
8.8a The **LOW** spacer ring is used to incorporate the housing with O-ring or the micro housing with micro O-ring into the prosthesis.



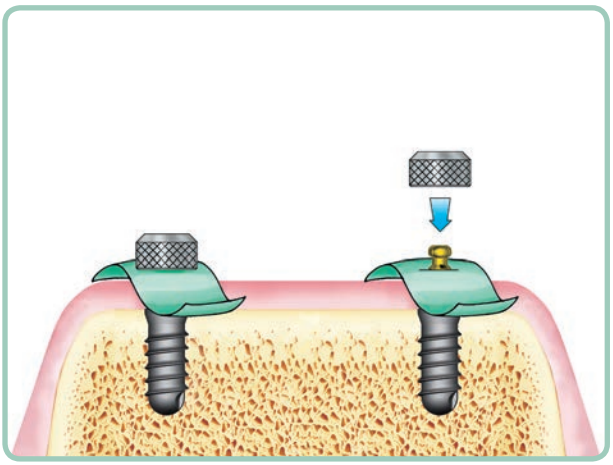
8.8b The **HIGH** spacer ring is used to incorporate the micro housing with insert into the prosthesis along the head axis of the abutment.



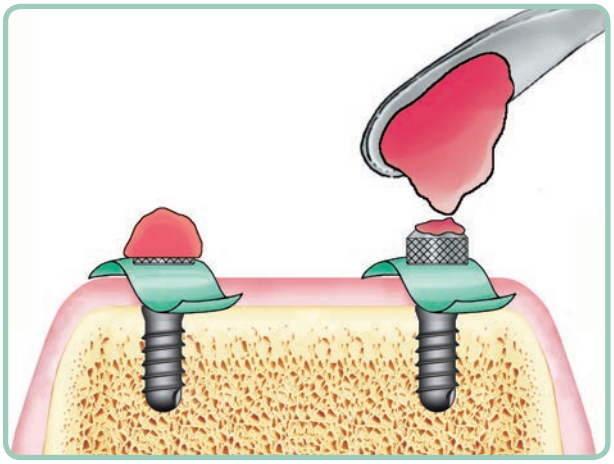
8.8c The **HIGH ANGLED** spacer ring, easily recognisable due to a protrusion at its maximum thickness, is used to incorporate the micro housing with insert into the prosthesis with an angle increased by 10° in respect to the abutments head.



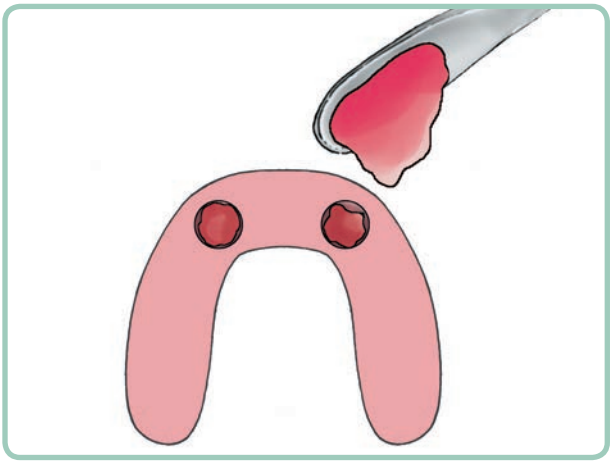
8.9 Place squared pieces of rubber dam over each abutment to avoid a direct contact between the soft tissue and the acrylic.



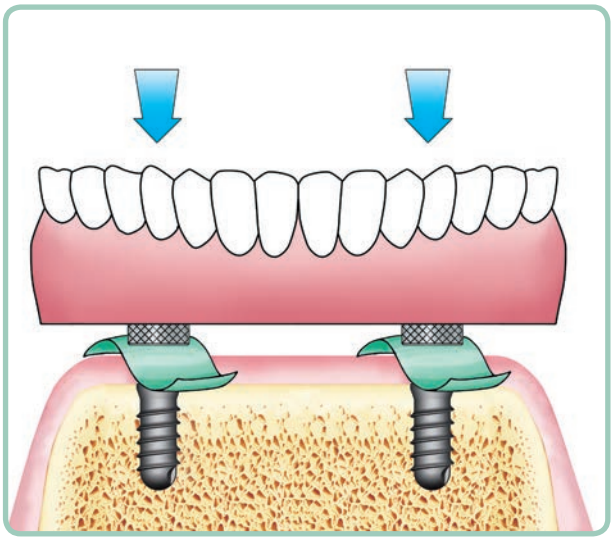
8.10 Place the housings onto the abutments' heads. Please remember that all housings should be incorporated at the same time into the prosthesis and not at different moments.



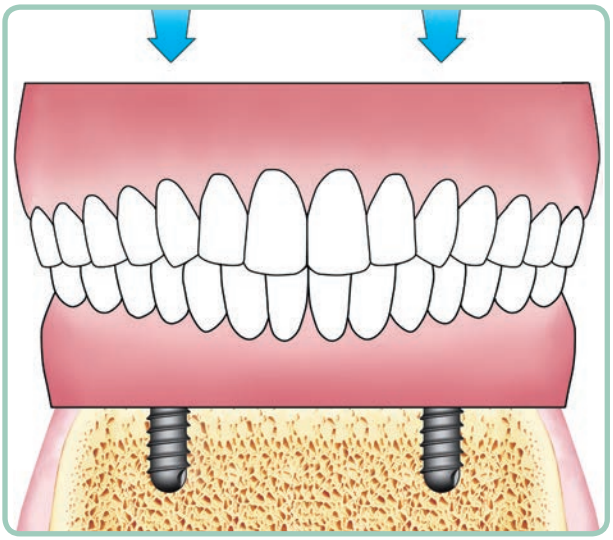
8.11 Apply acrylic to the housings.



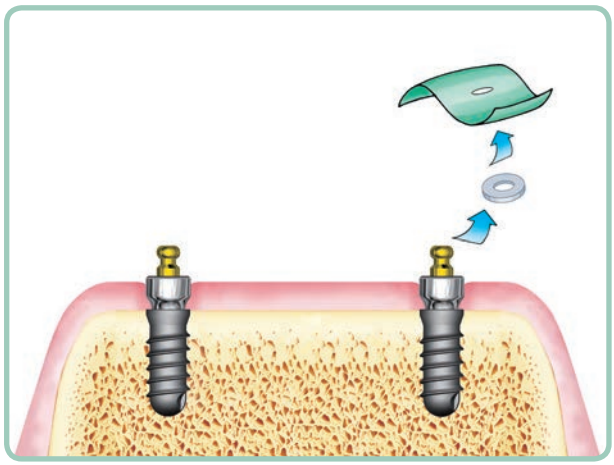
8.12 Place acrylic into the relief areas of the prosthesis.



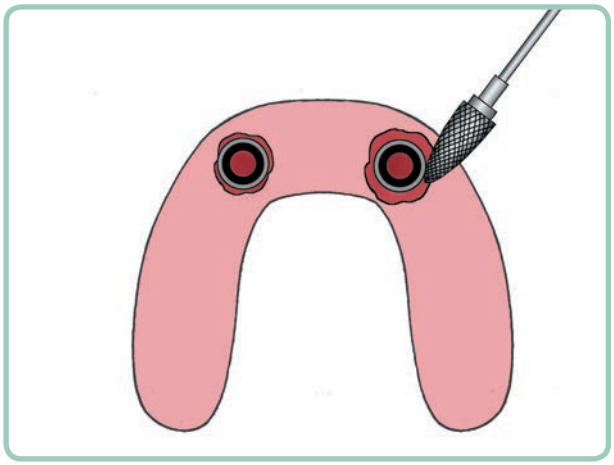
8.13 Place the prosthesis into position in the mouth.



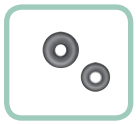
8.14 Have the patient close into proper occlusion.



8.15 After the polymerization of the acrylic has been completed, the prosthesis is removed from the patient's mouth. The housings, due to their highly retentive surface, are kept in the prosthesis. Remove the rubber dams and the spacer rings from the abutments.



8.16 Remove excess acrylic until the lower border of the housings is fully uncovered. Remove acrylic that could create impingement problems close to the implants. After polishing, the prosthesis is delivered to the patient.



REPLACING AN O-RING

When replacing an O-ring, remove the old O-ring from the metal housing and lubricate the new O-ring with silicone spray or Vaseline to facilitate placement within the metal housing. Insert the new O-ring into the housing by using plastic forceps. Use a round-shaped instrument which can enter into the hole of the O-ring to push it into its seat with small circular movements. To improve visibility we recommend to work using a magnifier with a magnification of at least 4x.

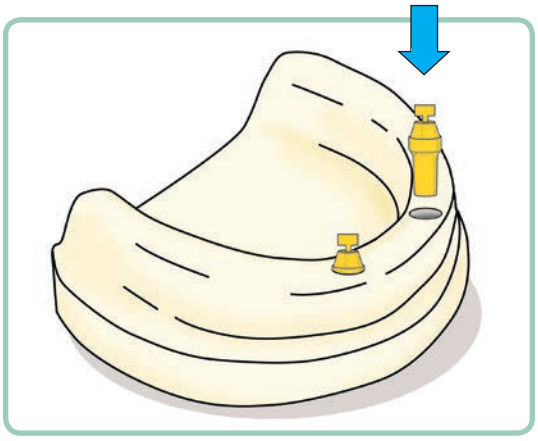
REPLACING AN INSERT

When replacing an insert, remove the old insert from the metal housing and insert a new one by means of the specific insert seating tool Cat. 156-1004-00. Place the insert onto the tip of this tool. Use the seating tool to push the insert all the way into the housing, until you hear a click indicating that it is properly locked into place. Check whether the insert is fully seated into the housing and that the border of the insert is flush with the border of the housing.

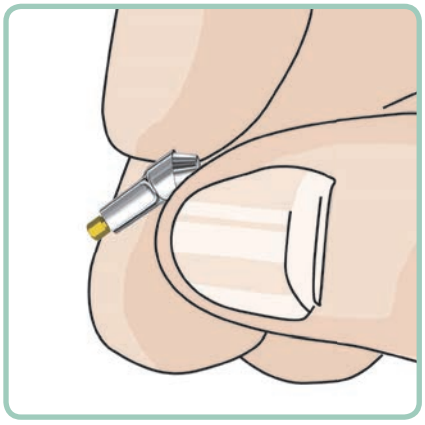
PROSTHESIS MAINTENANCE

Patients should be reviewed at least once every six months. Review should include assessment of prosthesis retention, replacement of damaged females (O-rings or inserts) or change of insert type, if the patient needs a different level of retention. In case of prosthesis relining, at the end of the procedure always replace the O-rings or the inserts. If a simple prosthesis relining procedure is insufficient and it is necessary to reincorporate the metal housings into the prosthesis, remove the housings with a small bur and replace them with new housings following the above-mentioned indications (points 8.8 – 8.16). Please remember that all the housings within the prosthesis should always be reincorporated together into the prosthesis and not only one or part of them.

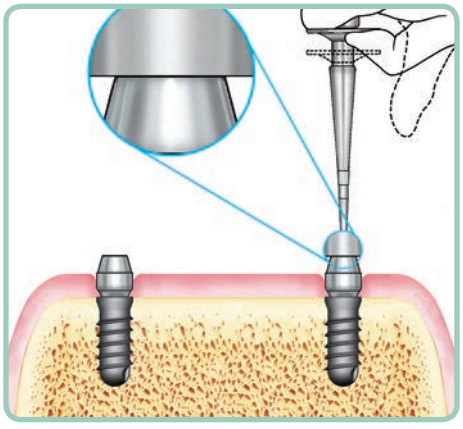
9) BAR-RETAINED OVERDENTURE AND SCREW-RETAINED PROSTHESIS



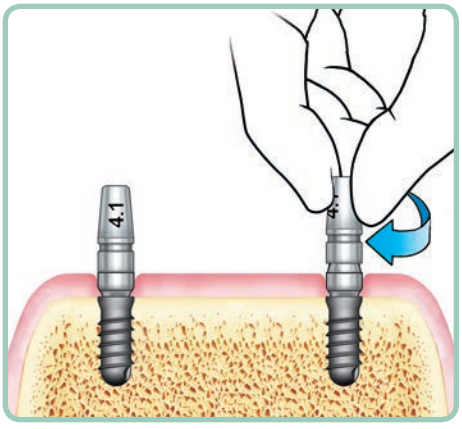
9.1 After the healing of soft tissues, take the impression with the conventional indirect technique using Standard transfers, send the impression to the lab and pour the dental cast (par. 1 and 2 of the prosthetic procedure). Plan the prosthetic restoration and select the appropriate abutments for screw-retained prosthesis according to the thickness of gingival tissues and inclination of implants, using the try-in abutments kit Cat. 160-0001-04.



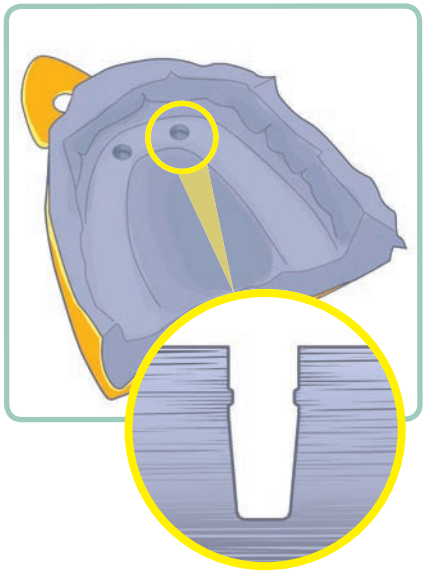
9.2 In case of **360° angled abutments for screw-retained prosthesis**, the procedure for permanently fixing the hexagon to the abutment body is like the one for **LEONE 360°** anatomical abutments (points 4.3 - 4.11 of the prosthetic procedure). Please remember that the abutments need to be secured on the dental cast by applying a sufficient number of percussions. Deliver the dental cast and the selected abutments to the dental office.



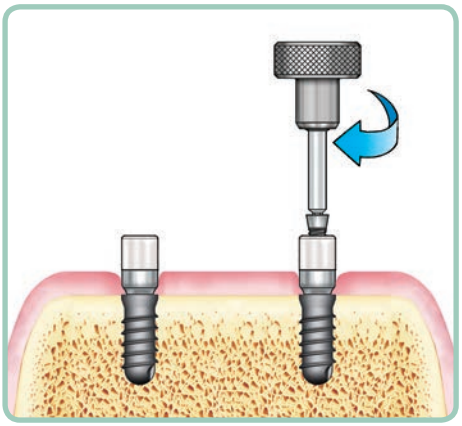
9.3 After the removal of the healing caps (point 7.5 of the surgical procedure), rinse and dry the implant's inner side, seat the abutments into the implants and apply an impulsive force onto the abutments' heads. To get a permanent connection of **straight abutments 2 consecutive percussions** with the proper abutment beater are recommended; on **angled abutments perform 5 consecutive percussions.**



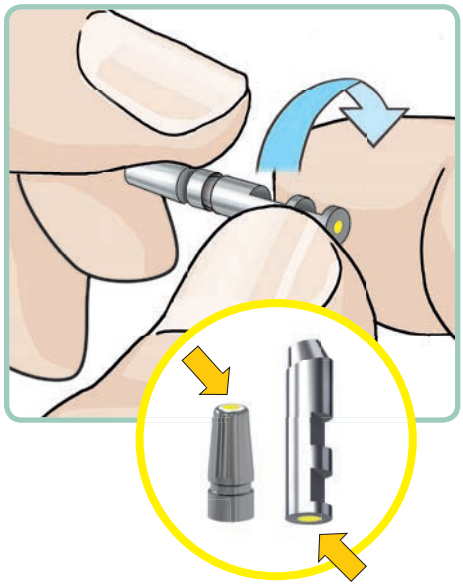
9.4 IMPRESSION TAKING ON ABUTMENT LEVEL
Hand-tighten the proper transfers for abutments onto the corresponding abutments all the way down.



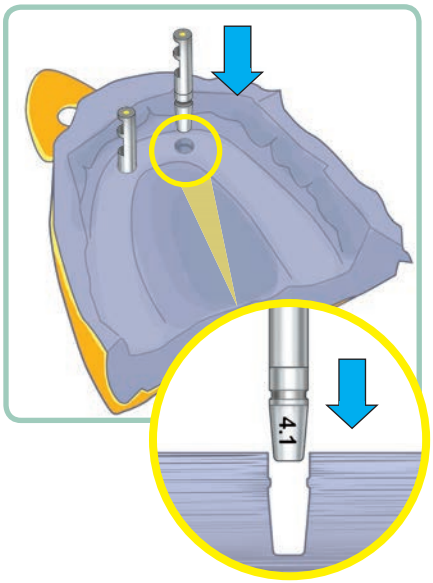
9.5 Take one-stage impression by using proper material and technique (a polyether material is recommended). The transfer's shape allows an easy removal of the impression. The transfers remain on the abutments, while the negative reproduction of their shape is created in the impression material.



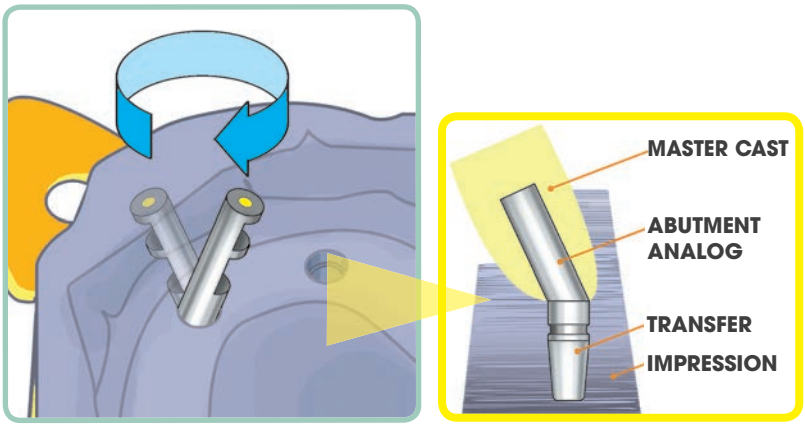
9.6 Unscrew the transfers by hand from the abutments, deliver the impression and the transfers to the lab and place the protective caps onto the abutments. The caps, included in the package of the transfers, are connected to the abutments with the standard connecting screws using the specific adapter Cat. 126-0002-00 mounted onto the hand screwdriver Cat. 156-1001-01. In case of pre-existing prosthesis, relieve it adequately corresponding to the abutments, so that it may be put in place with no pre-contacts.



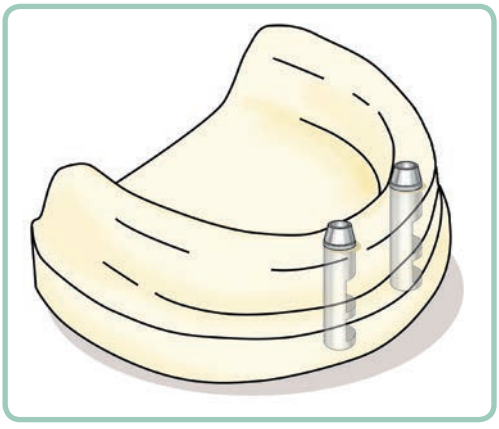
9.7 After checking the correct colour coding, screw the abutment analog into the relevant transfer all the way down.



9.8 Reposition the transfer coupled with the analog into its seating inside the impression. The specific shape of the transfer allows to easily perceive when a complete insertion is achieved.



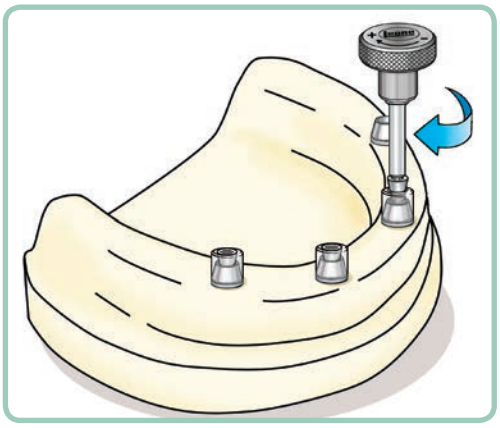
9.9 In case of angled abutment analog, the symmetrical geometry of the transfer allows to rotate the ensemble analog+transfer inside the impression; this way it is possible to determine the best angular position for pouring the cast.
Rotate clockwise to prevent parts from unscrewing.



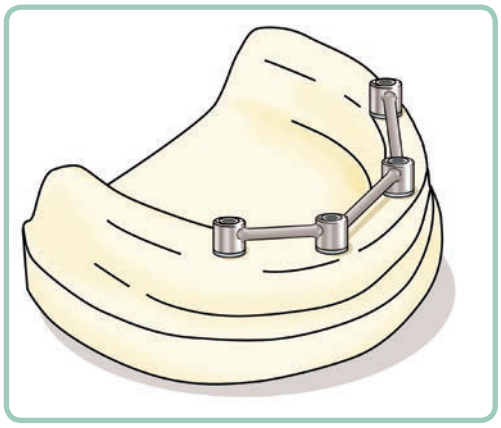
9.10 Pour a new master cast with the embedded abutment analogs. The use of a class 4 hard plaster is recommended.

a) RESTORATION WITH A TRADITIONAL BAR

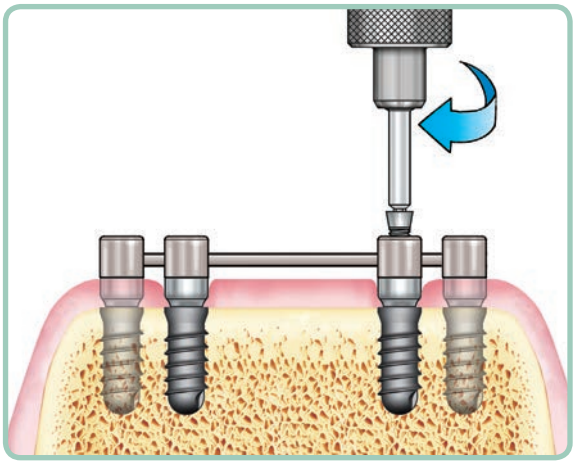
9.11a In case of restoration with a traditional bar (i.e. Dolder bar), standard burn-out copings may be used.



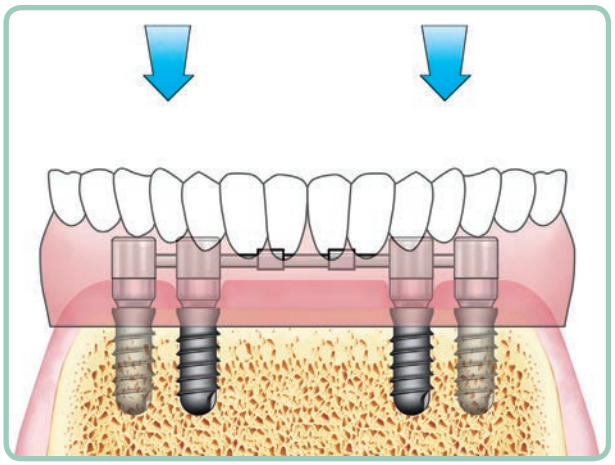
9.12a Connect the copings to the abutment analogs with the standard connecting screws using the specific adapter Cat. 126-0002-00 mounted onto the hand screwdriver Cat. 156-1001-01. Do not overtighten the screws on the standard burn-out copings.



9.13a Fabrication of the bar with different options:
1) use of standard burn-out copings;
2) CAD-CAM procedures.
When the bar is ready, make a new denture with a proper seating and proper attachments for the bar or adapt the pre-existing one. Send the prosthesis to the dental office.



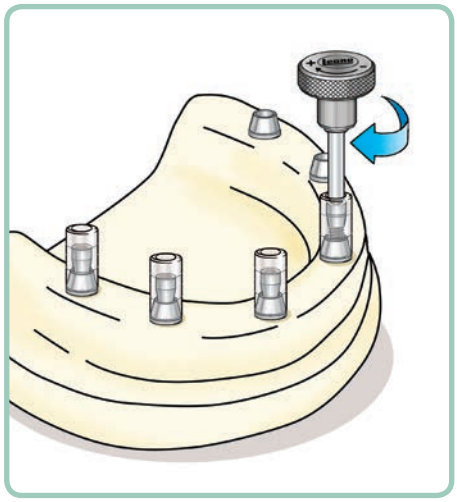
9.14a After the removal of the protective caps, seat the bar and fix it onto the abutments with the connecting screws.



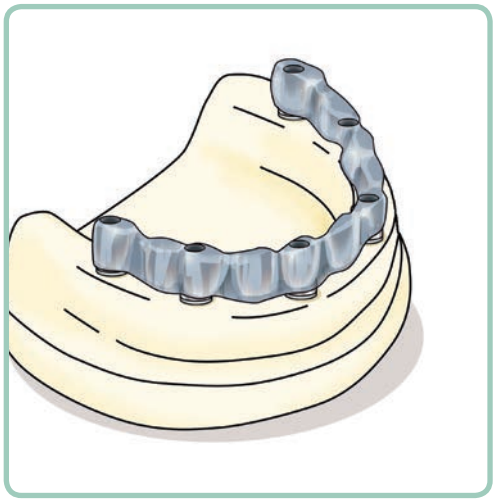
9.15a Clasp the prosthesis to the bar with the proper attachments.

b) RESTORATION WITH A SCREW-RETAINED PROSTHESIS

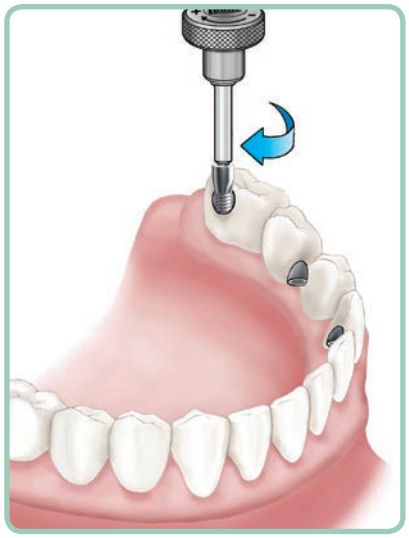
9.11b In case of restoration with a milled bar or a screw-retained bridge, high burn-out copings, titanium copings or long waxing screws Cat. 126-0020-05 may be used, which allow during framework's modelling, the preparation of a channel of adequate dimensions for the seating of the connecting screws.



9.12b In case of high burn-out copings, connect the copings to the abutment analogs with the high head connecting screws, using the specific adapter Cat. 126-0002-00 mounted onto the hand screwdriver Cat. 156-1001-01.



9.13b Fabrication of the framework with a traditional technique or CAD-CAM technique. It is possible to choose among different accessories:
1) use of high and/or standard burn-out copings;
2) use of titanium copings;
3) use of long waxing screws.
Prepare the final restoration. Send the prosthesis to the dental office.

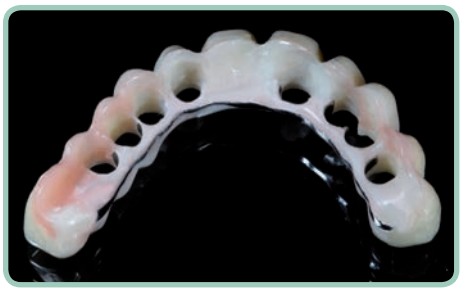


9.14b After the removal of the protective caps, seat the prosthesis and fix it onto the abutments with the connecting screws.

Use of titanium copings

There follows an example for the use of the titanium copings: fabrication of a screw-retained provisional prosthesis for an immediate loading procedure.

Titanium copings screwed onto the abutments seated on the dental cast and wax-up of the reinforcing framework.



Provisional prosthesis relieved in the area of the copings.

Provisional prosthesis seated on the dental cast: if necessary the height of the copings can be reduced accordingly.

In the mouth: fixing of the prosthesis to the titanium copings screwed onto the abutments in order to achieve a passive fit of the structure.

Titanium copings bonded to the finished provisional prosthesis.

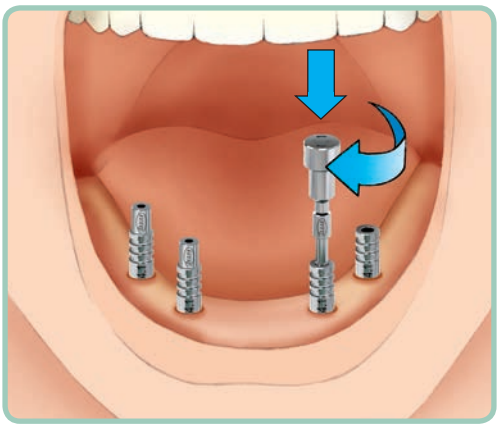
Screw-retained provisional prosthesis in the mouth.

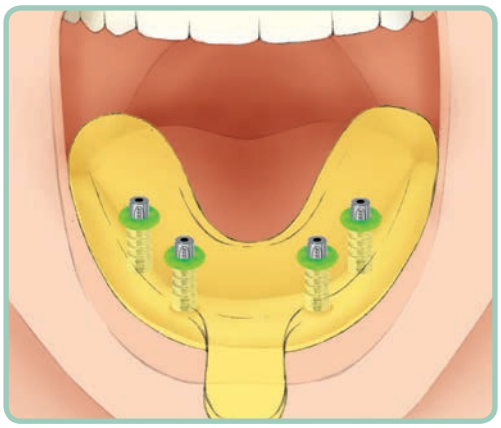
Use of welding units (syncrystallization technique)

The titanium copings, due to their adequate thickness, can be splinted together with a titanium wire through a welding process which can be performed intraorally or on the dental cast. Intraoral welding, performed with specific welding units using a technique called "syncrystallization", allows rigid splinting of implants with no risk of overheating of the peri-implant tissue and ensures a perfect passive fit of the structure. By rigidly splinting the implants together, this technique improves the predictability of immediate loading procedures.

ALL-ON-FOUR OR ALL-ON-SIX PROSTHESIS

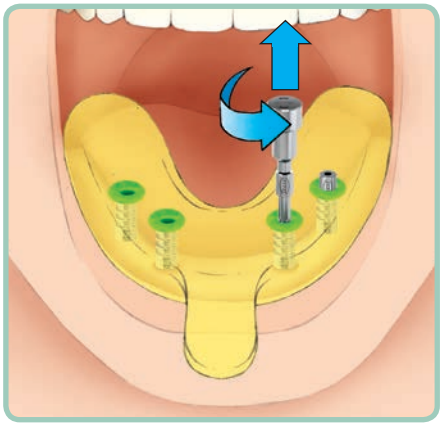
In case of severely atrophic edentulous jaws, in order to avoid complex surgical procedures, there exists the possibility to reduce the number of implants – usually to 4 or 6 – by tilting the two distal implants so that their implant heads emerge as posterior as possible. In this way a fixed, screw-retained prosthesis is produced, and if the preconditions are met, it may be associated with an immediate loading procedure.
The high stability of the Morse taper connection and the availability of angled abutments with high inclination make the **LEONE** implant system ideal for this type of solution.
To facilitate impression taking on not perfectly parallel abutments, specific transfers for pick-up technique have been developed.
Using pick-up transfers, the points 9.4. – 9.8 of the prosthetic procedure need to be replaced by the following steps:





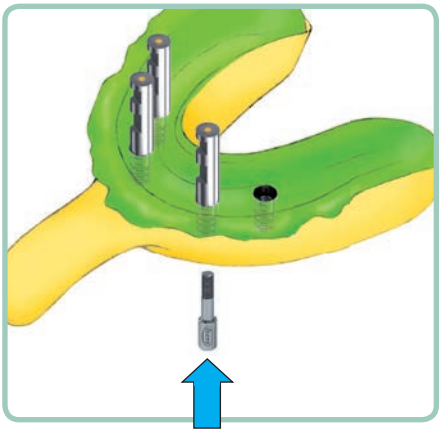
IMPRESSION TAKING ON ABUTMENT LEVEL WITH PICK-UP TECHNIQUE
Place the proper diameter pick-up transfers onto the abutments and tighten the pick-up screws Cat.126-0012-01 all the way down using the specific short screwdriver Cat.126-0002-01.

Use a custom open top impression tray and verify that the screw heads protrude through the openings or expose the screw heads before the impression material has set.



One-step impression taking using suitable materials and techniques. After the impression material has set, unscrew the pick-up screws and remove them from the transfers.

Remove the tray from the mouth: the pick-up transfers are kept in the impression. Deliver the impression and the pick-up screws to the laboratory. Place the protective caps onto the abutments (see point 9.6).



Place the proper diameter abutment analog onto each transfer and tighten the pick-up screws. Verify that the abutment analogs are completely seated onto the transfers.

10) MULTITECH ABUTMENTS: DIRECTIONS FOR USE

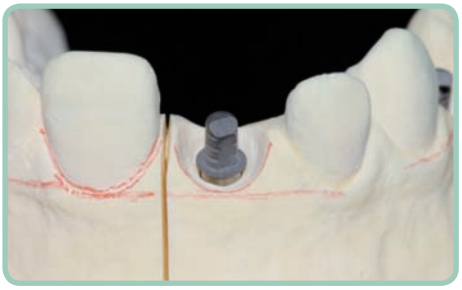
Always verify that the soft tissue conditioning allows for correct seating of the customized abutment into the implant. If the burn-out coping is used for the wax-up of the customized portion, use the healing cap of the Large prosthetic platform for soft tissue conditioning.

CAUTION*: in case the platform of the customized abutment is wider than the Large healing cap, a specific conditioning of the soft tissue shall be provided.*

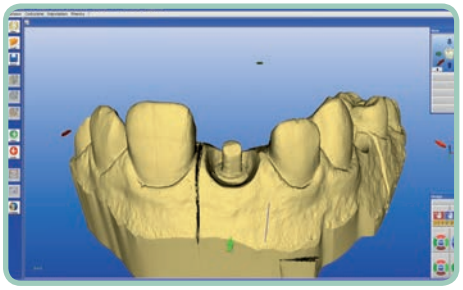
In case of **360° angled MultiTech abutments,** the procedure for permanently fixing the hexagon to the abutment body is like the one for **LEONE 360°** anatomical abutments (points 4.3 – 4.11 of the prosthetic procedure).

Fabrication of the customized abutment portion:

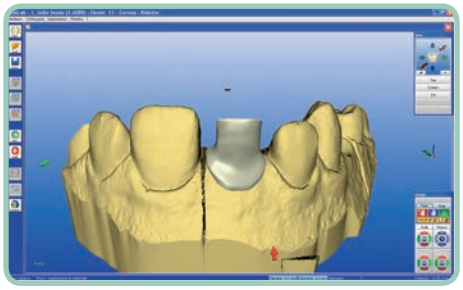
WITH CAD-CAM technology by taking a scan of the seated abutment on the dental cast and modelling of the customized abutment portion with a specific software. The fabrication is performed in the laboratory with a specific **Computer-Assisted Machine** or by a specialized production centre upon the receipt of the data file.



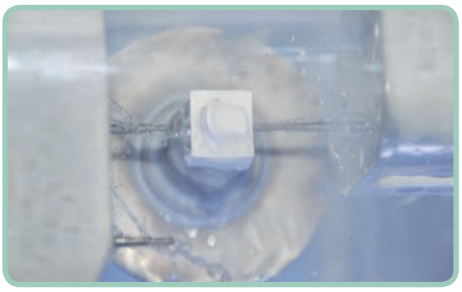
Dental cast and MultiTech



Scanning



Design

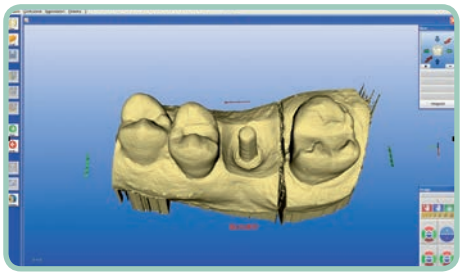


Milling with the CAM unit

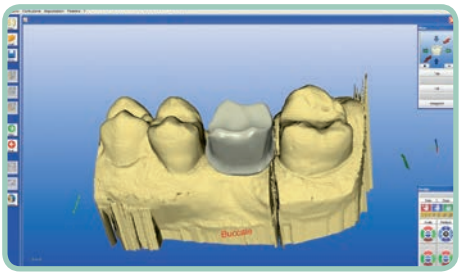
A sintering process is required when zirconia is used

Bonding of the customized portion onto the MultiTech abutment. In case of zirconia, NIMETIC CEM (3M Espe) or MULTILINK HYBRID ABUTMENT (Ivoclar Vivadent) is recommended

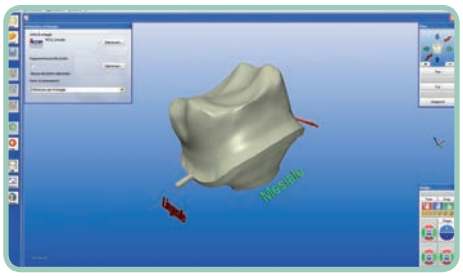
Dental cast and MultiTech



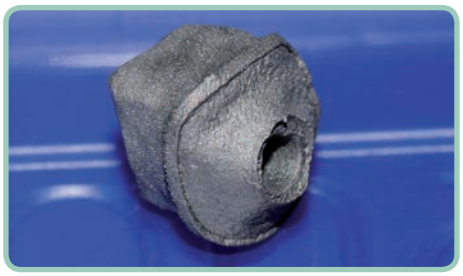
Scanning



Design



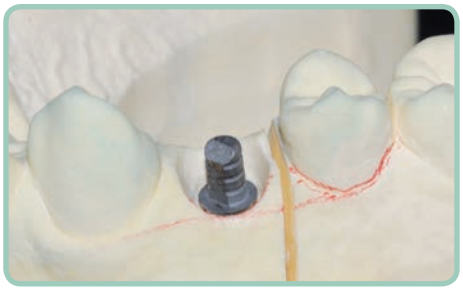
Delivery of the project to the milling center



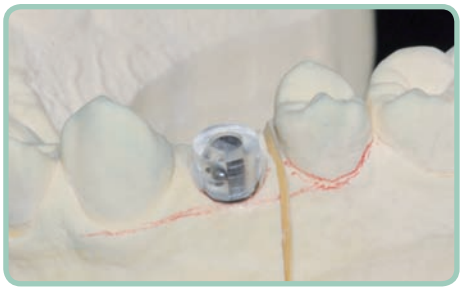
Receipt of the customized portion

Bonding of the customized work onto the MultiTech abutment. In case of metal, NIMETIC CEM (3M Espe) or transparent composite cement is recommended

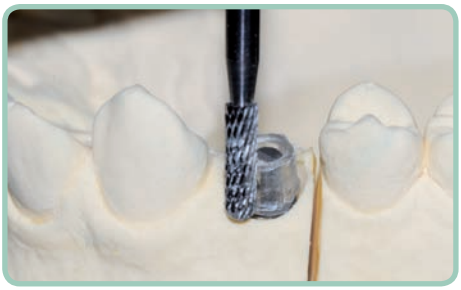
WITH THE TRADITIONAL METHOD by using a pre-fabricated burn-out coping placed on the abutment, adjustment of the coping, modelling with wax and/or acrylic and fabrication of one customized abutment portion through casting.



Dental cast and MultiTech



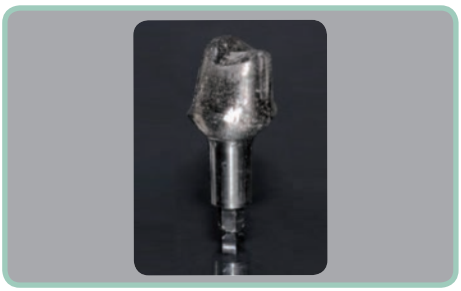
Seating of the burn-out coping on the MultiTech abutment



Adjustment of the burn-out coping

Waxing

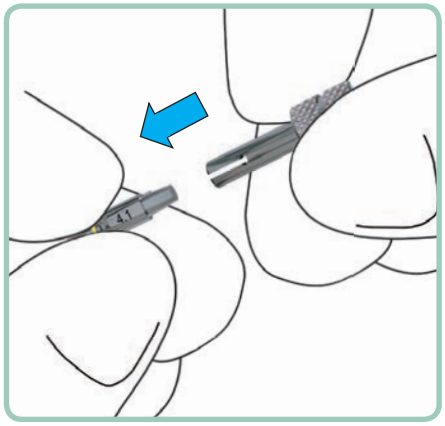
Casting



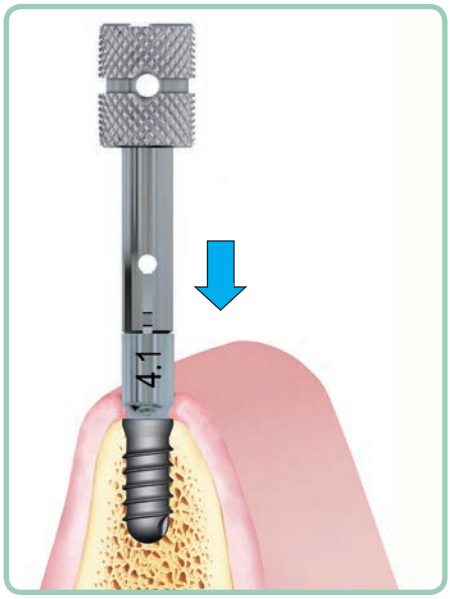
Bonding of the customized portion onto the MultiTech abutment. In case of metal, NIMETIC CEM (3M Espe) or transparent composite cement is recommended

11) INTRAORAL SCANNING AND USE OF THE TI-BASE ABUTMENTS

Digital impression taking

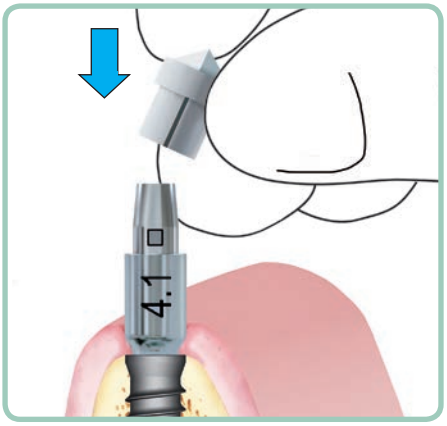


11.1 Connect the specific positioner to the top of the scan post.

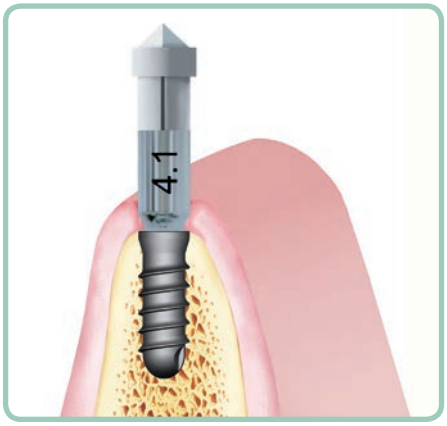


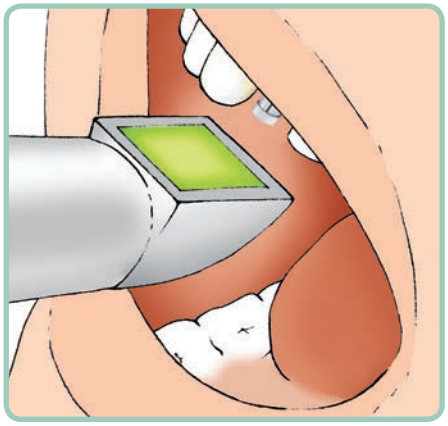
11.2 Place the scan post into the implant using the positioner: engage the hexagon and exert pressure on the scan post in order to verify complete seating.

11.3 Remove the scan post positioner.



11.4 Select the proper scan body (white or grey) depending on the intraoral scanner type. Place the scan body onto the scan post by aligning the markings and pushing it all the way down. Verify complete seating and that the markings on the scan body and the scan post line up.





11.5 Take the digital impression with the intraoral scanner. The procedure can also be carried out on the dental cast, by seating the scan post coupled with the scan body into the analog and digitizing the dental cast with a specific laboratory scanner. For further details on the procedure, please refer to the instructions associated with the QR code.

Fabrication of the prosthetic restoration

For information about the fabrication of the restoration using Ti-Base abutments, please refer to the instructions associated with the QR code.

CAUTION: *if a 3,3 mm diameter Ti-Base abutment is used, use the healing cap of the Large prosthetic platform for soft tissue conditioning.*

The continuous and rapid evolution of digital technology implies a constant updating of the procedures as well as of the associated components. Please refer to the online version of the prosthetic procedure and to the associated explainer videos for the relevant updates.

12) TEMPORARY ABUTMENTS: APPLICATION PROCEDURE

LEONE temporary abutments are prosthetic accessories designed to support an implant-retained temporary prosthesis.
The abutments are designed to be held in the oral cavity for a limited period of time, **no longer than 6 months**.
LEONE temporary abutments are made of an ultra-polymer - a polymer with extremely high mechanical characteristics - highly biocompatible and easily prepable. This material is radiotransparent and can be sterilized in the autoclave at 135°C (275°F).
The abutments can be utilized with both the direct and indirect techniques and, therefore, can be prepared directly in mouth or in the laboratory.
The temporary prosthetics must always be out of occlusion in order to reduce the effect of the masticatory load.
We do not suggest using Ø3,3 temporary abutments for single prosthetic rehabilitations.

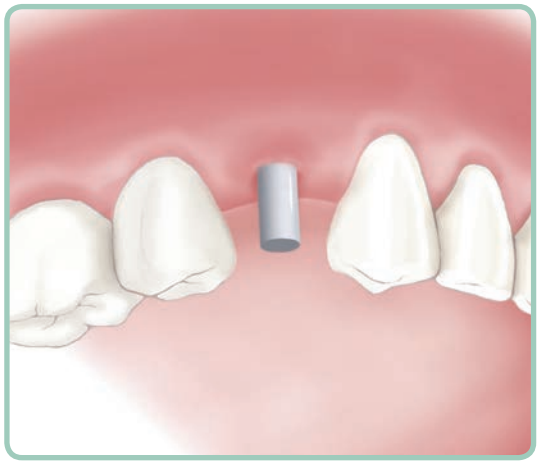
POSITIONING OF THE TEMPORARY ABUTMENT

12.1 Cylindrical temporary abutment made of PEEK.
Notice that it has the same implant-abutment connection design as the definitive titanium abutments.

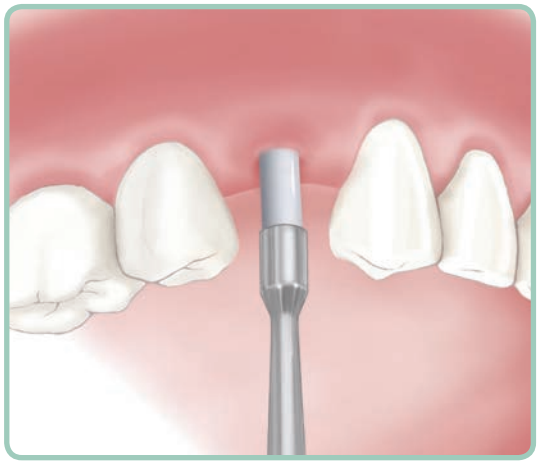
12.2a Connection of the abutment to the appropriate abutment handle, paying special attention to engage the internal hexagon.
Subsequent preparation of the abutment. We suggest to use coarse-grained diamond burs; we also suggest to use the burs at a low speed and with little pressure. Alternatively, it is possible to prepare the abutment directly in the patient's mouth.

12.2b When using an angled temporary abutment, it is necessary to create a step parallel to the axis of the cone. The specific beater will be placed on the step for a correct percussion of the abutment on the implant.

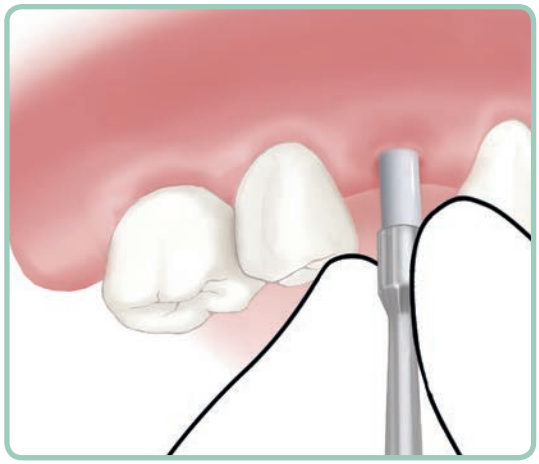
Removal of the abutment from the handle by using the special push-button. Any refinement to the abutment can be made on the dental cast or directly in the patient's mouth.
If preparing the abutment on the dental cast, please refer to the paragraph in the Prosthetic Procedure entitled "Indirect technique: preparation of the abutment".



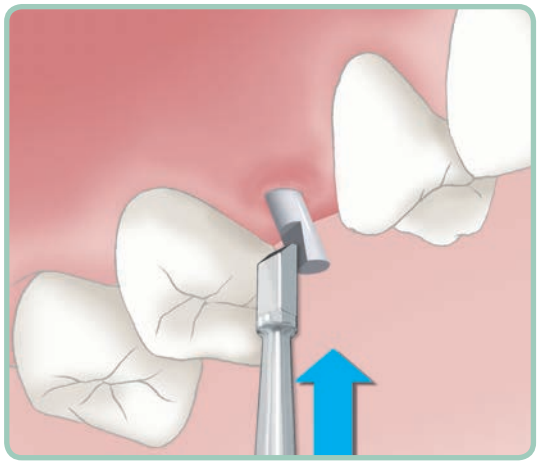
12.3 Insert the temporary abutment in the implant, paying special attention to engage the internal hexagon.



12.4a Apply an impulsive force on the abutment along the longitudinal axis of the implant with the special abutment beater. We advice using two consecutive percussions.



12.4b CAUTION*: due to the nature of the material, the seating tip of the abutment beater may tend to slide during the application of force.*
We suggest, in this case, to support the tip with your fingers during the operation.



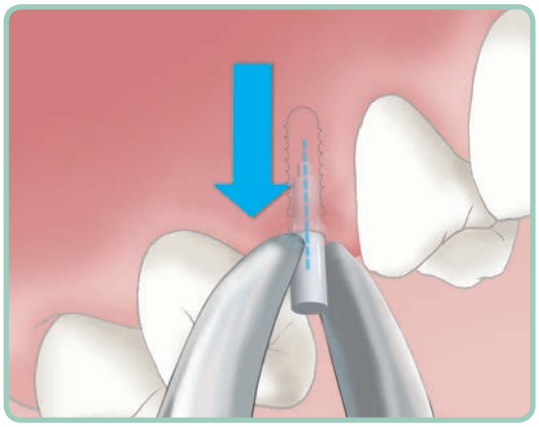
12.4c When using an angled temporary abutment, tapping must be performed with the special flat seating tip, Cat. 156-1008-06, taking care to incline the instrument along the implant axis.

We recommend using temporary cement to secure the temporary prosthesis to the abutment.

CAUTION*: do not cement the temporary crown extra-orally, but always attach it to the abutment after the abutment has been connected to the implant.*

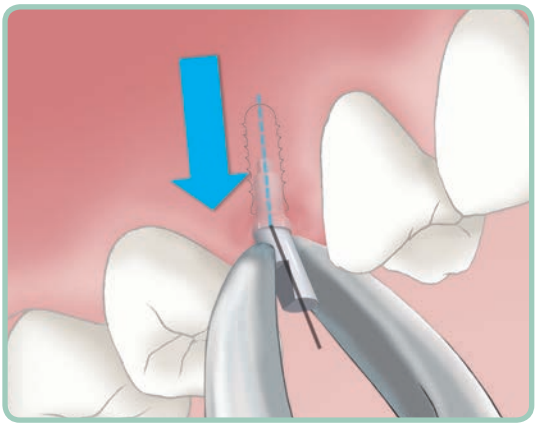
REMOVAL OF THE TEMPORARY ABUTMENT

If you intend to reposition the abutment after removing it from the implant, pay special care to avoid distortion during removal.
First, remove the temporary prosthesis from the abutment with a crown-removal instrument.



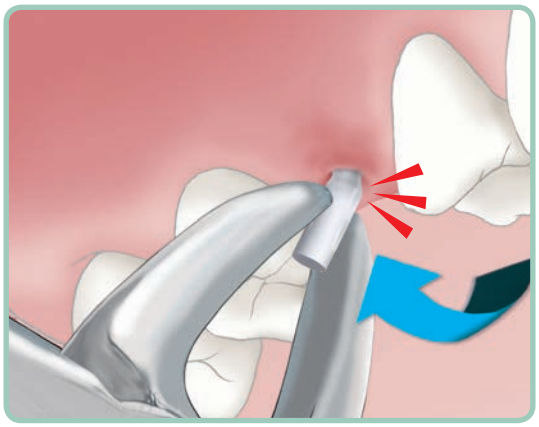
12.5a Using extraction pliers or other pliers with curved and gripping jaws, grasp the emergence of the abutment as close as possible to the gingival margin and apply a pulling force. We suggest to protect the opposing jaw by placing a finger between it and the abutment.

CAUTION: *it is important to avoid any twisting motion, even slight, in order to avoid damaging the apical hexagon.*



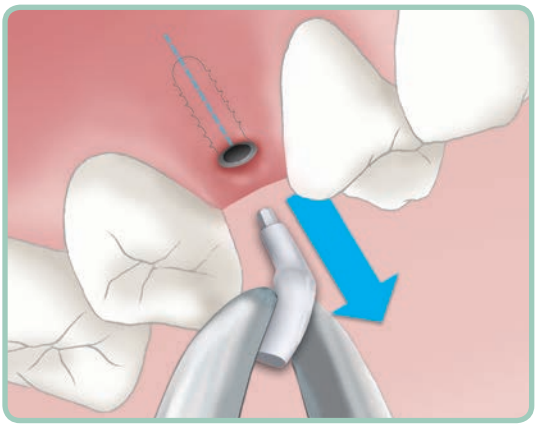
12.5b When using an angled temporary abutment, the pulling force should be applied along the implant axis and not along the emergence of the abutment.

As an alternative to the procedure above, after removing the temporary restoration, you can remove the abutment by simply rotating or bending it.
In both cases however, the abutment will be permanently distorted and impossible to reuse.
To better illustrate, the following is the removal procedure with bending.



12.6a Using the extraction pliers, grasp the emergence of the abutment as close as possible to the gingival margin and bend continuously.
Deform the abutment until you can appreciate a loss of tightness of the conical connection.

CAUTION: *it is important that the abutment is bent with a continuous movement and not with an alternate movement.*



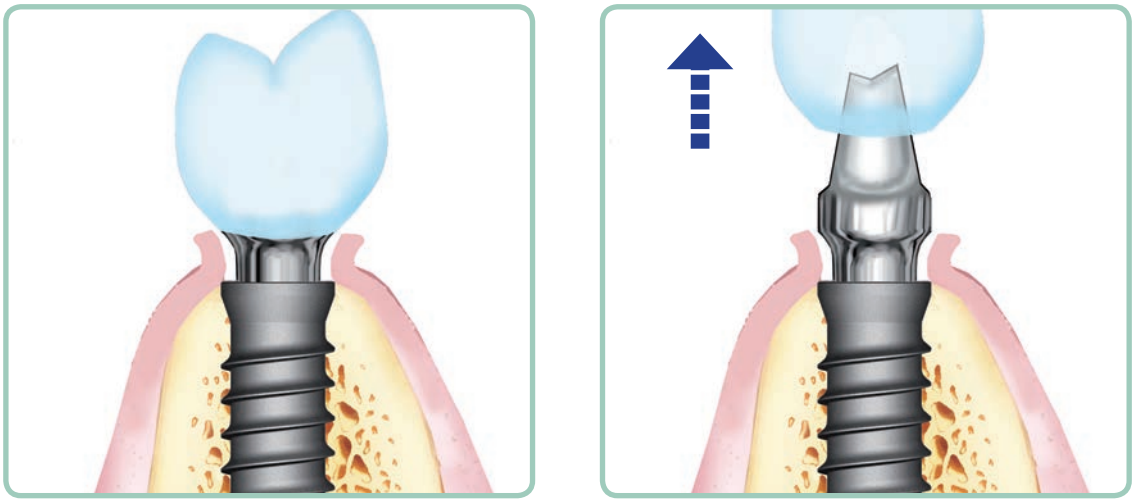
12.6b Once the abutment is sufficiently bent, remove it with a simple pull. We suggest to protect the opposing jaw by placing a finger between it and the abutment.

INSTRUCTIONS FOR THE REMOVAL OF LEONE ABUTMENTS

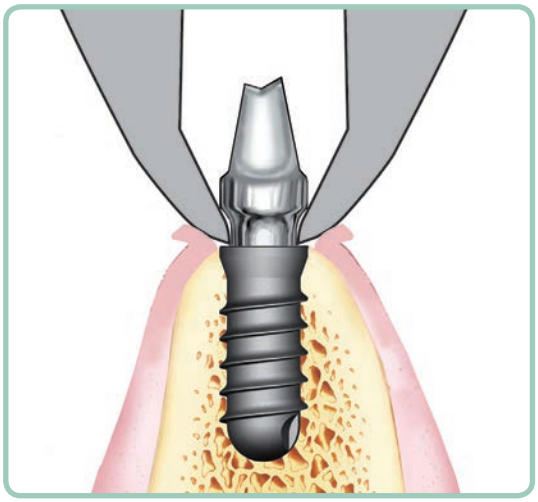
The Leone abutments are characterized by a self-locking taper connection that, fully seated, determines a very strong connection with the dental implant (cold welding). Occasionally there may be cases where you want to replace an abutment fixed to the implant with a new one of a different geometry, basically because of the necessity to change the type of prosthetic restoration. For use exclusively in cases like these an instrument for the removal of **LEONE** abutments has been developed, consisting in specifically modified extraction forceps. The instrument is based on the so-called "wedge effect", whereby an extraction force is developed as a result of the abutment's geometry, in particular its transmucosal portion.

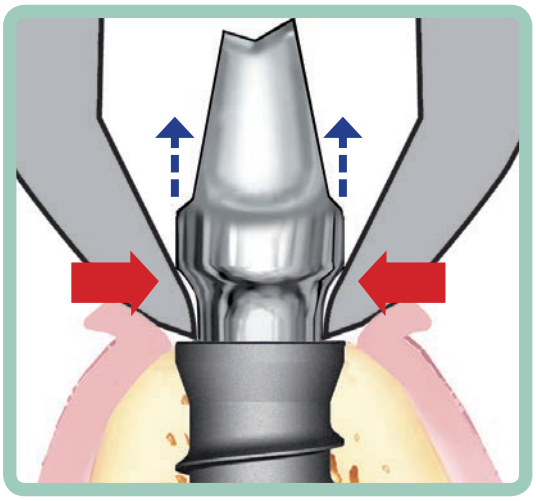
CAUTION:
for the proper functioning of the instrument the transmucosal portion of the abutment needs to be totally intact and not modified by the prosthetic preparation.

Two different instruments are available, one for abutments of the Standard prosthetic platform and one for the abutments of the Large prosthetic platform. Both are universal instruments in regard to the connection size, i.e. they can be used indifferently for Ø3,3 – Ø4,1 – Ø4,8 mm abutments.

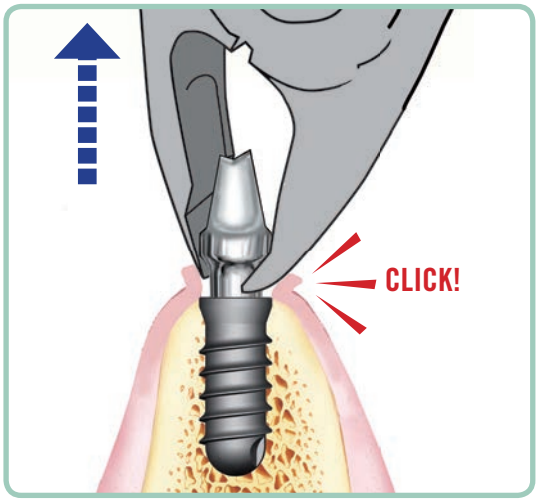


13.1 In order to use the instrument expose the top of the implant collar, preferably by means of a full-thickness flap. This way the device may get in contact with the top of the implant collar. This also allows for perfect visibility of the area and overcomes any potential obstacle associated with the soft tissue. For the proper functioning of the instrument remove, if present, the crown from the abutment, to avoid that it may prevent the beaks of the forceps from closing properly.





13.2a, b Place the beaks of the instrument at the level of the transmucosal portion of the abutment and in contact with the top of the implant collar; then, by closing the beaks, an extraction force is applied on the abutment. The abutment is pushed outward due to the "wedge effect", thanks to the specific angulation of the inner surface of the beaks.



13.3 Once established a firm grasp, continue to compress the forceps and push down towards the top of the implant collar: in this way the abutment is released from the implant with a clicking sound, due to the "wedge effect".
If this procedure is unsuccessful, once the beaks are in contact with the top of the implant collar, use a simultaneous pulling and twisting motion to promote removal.
During this procedure it is essential to ensure adequate protection for the opposing jaw, as the unlocking and removal of the abutment occur quite suddenly and the instrument could crash onto the opposing teeth.

CAUTION: *the described procedure causes damage to the abutment's taper connection which can no longer be used.*
The abutment needs to be replaced by a new one.