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EXPERIENCE PIEZOSURGERY®

EXPERIENCE PRECISION

PIEZOSURGERY® technology is a cut above

PIEZOSURGERY® is superior to saws and burs, not only in terms of intra-operative precision, but also in regard to tissue healing. Burs and saws cut bone, but they do not differentiate: any soft tissue getting in their way will also be cut.

The special ultrasonic microvibrations of the original PIEZOSURGERY® technique cut bone – and nothing else. No soft tissue is damaged, which allows you to work with a precision that facilitates not only surgery itself, but reduces postoperative discomfort for your patients at the same time.

Choose PIEZOSURGERY® technology for optimal precision and control – and minimal stress for you and your patients. Your perfect solution.

MICROMETRIC CUTS

PIEZOSURGERY® provides micrometric cuts for minimally invasive surgeries with optimal surgical precision and intra-operative tactile sensation.

SELECTIVE CUTS

PIEZOSURGERY® protects any kind of soft tissue. Nerves, vessels and membranes will not be injured while cutting bone, offering safety for surgeons and patients.

CAVITATION EFFECT

PIEZOSURGERY® offers maximum intra-operative visibility. The cavitation effect of the ultrasonic movements leads to a blood-free surgical site.

THE PATIENT'S BENEFIT

- soft tissue will be protected, f.e. in lateral sinus lift surgery the risk of perforation is reduced over 80%
- less swelling after surgery with PIEZOSURGERY®
- faster and better osseointegration after implant site preparation with PIEZOSURGERY®
- faster and less traumatic post-operative recovery

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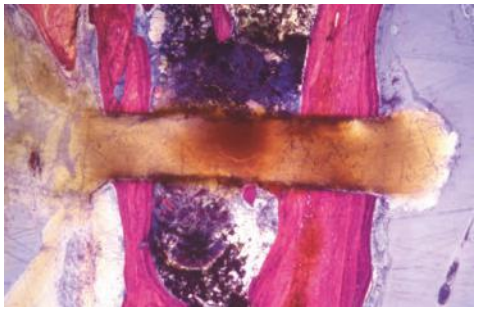
MACROVIBRATIONS

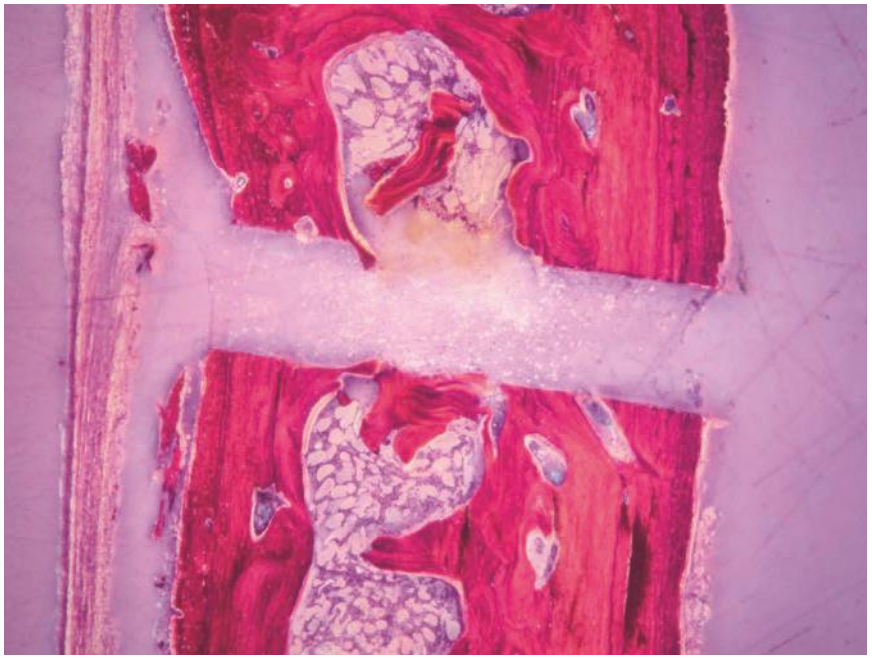
Bone bur



Bone saw

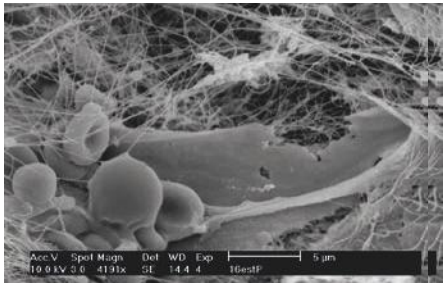
- limited surgical control
- lack of precision

MICROVIBRATIONS



PIEZOSURGERY®

- high surgical control
- precision and safety
- clinical and histological advantages



HISTOLOGICAL RESULTS

Comparative studies have demonstrated both the clinical and histological advantages of the PIEZOSURGERY® device.

Gleizal A, Li S, Pialat JB, Béziat JL. **Transcriptional expression of calvarial bone after treatment with low-intensity ultrasound: An in vitro study.** Ultrasound Med Biol. 2006; 32(10):1569-1574

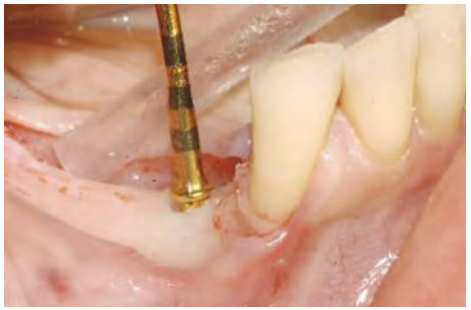
EXPERIENCE SAFETY

Clinical benefits of PIEZOSURGERY® technology

SINUS LIFT TECHNIQUE

- safer opening of the lateral window
- fewer membrane perforations
- safe detachment of the membrane
- fewer post-operative complications

IMPLANT SITE PREPARATION



- safe preparation respecting to the inferior alveolar nerve
- less post-operative inflammation
- faster healing and higher primary stability
- possibility of immediate post-extractive implant site prep
- possibility of differential implant site prep (correction of the axis)

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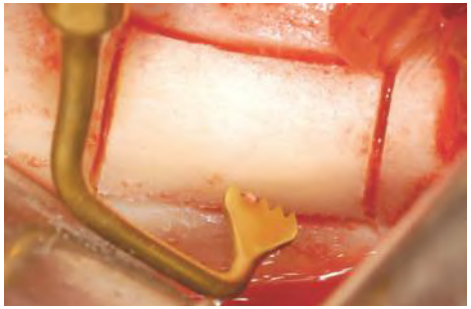
Whether it is about sinus lift or implant site preparation, about extraction or bone block grafting – one of the most important features you should demand from your operating device is safety.

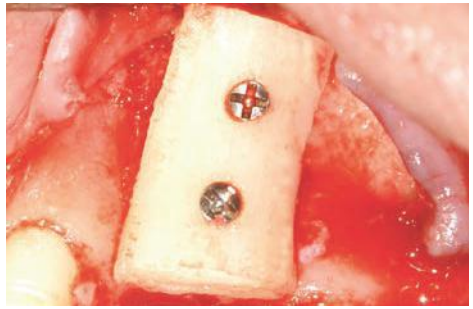
Its major strength is minimizing the risk of cutting soft tissue. These structures are not sensitive to the frequencies used by the PIEZOSURGERY® technology.

EXTRACTION/EXPLANTATION

- bone preservation in impacted or ankylosed root and third molar extractions
- safe in proximity to the inferior alveolar nerve in wisdom tooth extraction
- reduced amount of facial swelling and trismus 24 hours after surgery
- immediate implant site preparation

BONE BLOCK GRAFTING





- optimal surgical control in bone grafting from mandibular ramus and chin
- absence of necrosis on the surface of the cut
- presence of nucleated osteocytes, indicative of the atraumatic effect

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EXPERIENCE PERFORMANCE

mectron re-defines bone surgery once again with the PIEZOSURGERY® devices

When mectron introduced PIEZOSURGERY® in 2001, the technology was revolutionary for bone surgery: a device providing precision, safety, perfect ergonomics and the highest quality to surgeons all around the world. The new technology immediately became state-of-the-art for bone surgery devices.

Having set this benchmark, we improved the technology in the following years - with a strong focus on ergonomics. The outcome: two devices offering a perfect balance between cutting performance and safety – PIEZOSURGERY® *touch* and PIEZOSURGERY® *white*.

WORKING EFFICIENCY

Providing the optimal ratio between power and security is one of the key success factors of every surgery. Thanks to its intelligent electronic feedback-system the original mectron PIEZOSURGERY® technology provides the ideal power and achieves perfect cutting efficacy in every situation – for surgeries which are time-efficient, secure and successful.

Beziat J-L, Vercellotti T, Gleizal A. **What is Piezosurgery? Two-years experience in craniomaxillofacial surgery.** Rev Stomatol Chir Maxillofac. 2007 Apr;108 (2):101-7. Epub 2007 Mar 13.

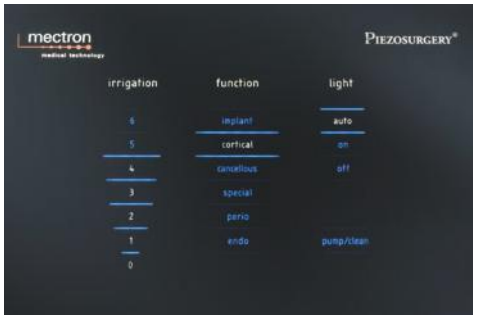
EXPERIENCE

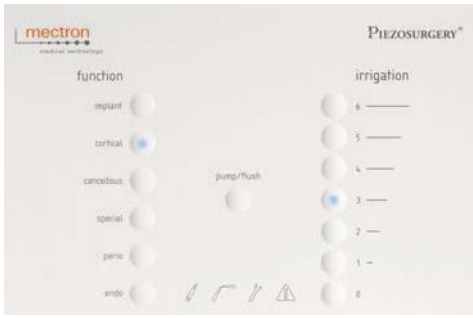
PIEZOSURGERY® *touch* and PIEZOSURGERY® *white* are already the fourth and fifth generation of the original PIEZOSURGERY® technique. mectron has been designing and manufacturing PIEZOSURGERY® devices since 2001. This experience, plus the input of surgeons worldwide, has been incorporated into our PIEZOSURGERY® devices.

PIEZOSURGERY® LETS YOU FOCUS 100% ON SURGERY

STEP 1: tap on the surgery type. **STEP 2:** choose the irrigation type. **STEP 3**: start surgery. It is as simple as that. No further insert specific adjustments are required – the fine tuning and indication for each insert is automatically achieved by the PIEZOSURGERY® electronic feedback system.

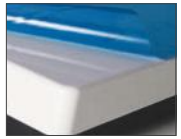
This feedback system is the heart of our PIEZOSURGERY® technology. It automatically detects each insert in a few hundredths of a second, continuously monitors and adjusts optimal insert movement and power levels to consistently provide the best cutting efficiency in every situation – allowing the clinician to focus on surgery and deliver the best possible surgical outcomes.





FLEXIBLE IRRIGATION SYSTEM

- the irrigation system works with cost-effective standard parts
- peristaltic pump tubing is reusable
- standard connections for tubing

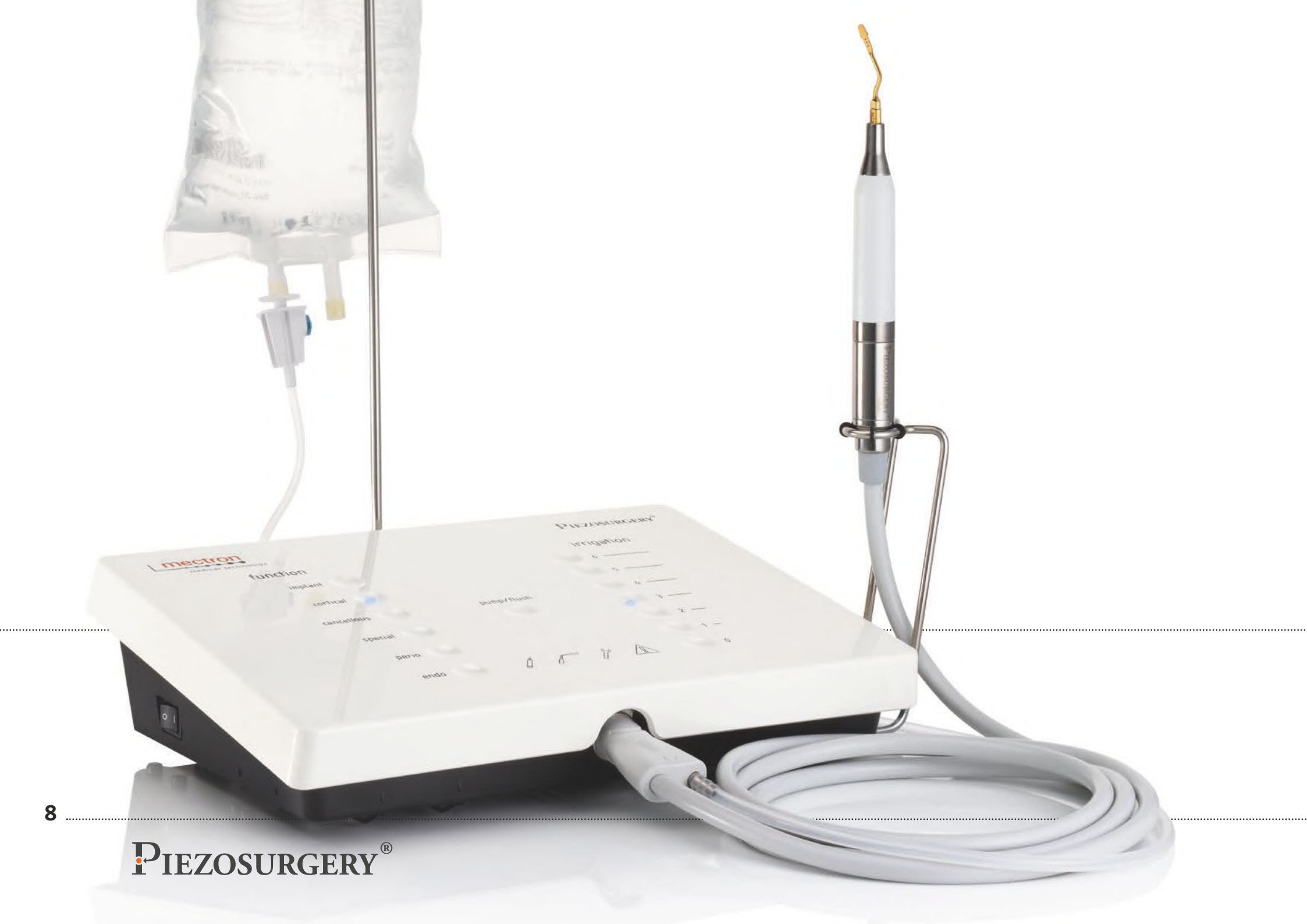


STERILE PROTECTION FOILS

The exclusive touch display of PIEZOSURGERY® *touch* and PIEZOSURGERY® *white* can be protected with a dedicated, individually packaged, sterile transparent foil. Thanks to these invisible shields, no dirt, scratches or fingerprints will affect your keyboard.

FLEXIBLE HAND-PIECE POSITION

- **easy to adapt handpiece holder**
- **4 positions**
- **sterilizable**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function
implant
cortical
cancellous
special
perio
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pump/flush
PIEZOSURGERY
irrigation

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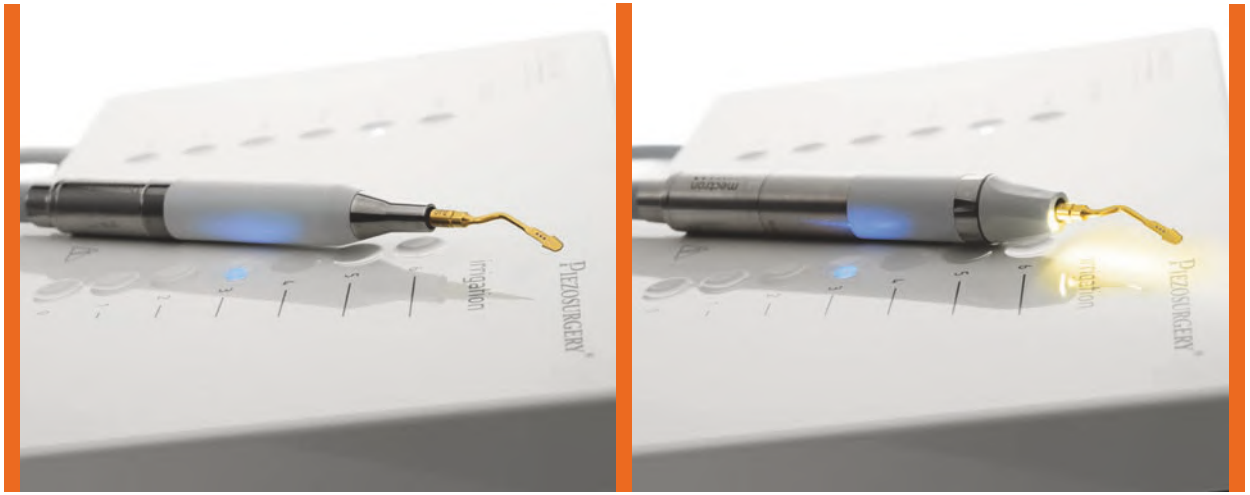
EXPERIENCE PROFITABILITY

Get started in bone surgery with the PIEZOSURGERY® *white*

PIEZOSURGERY® *white* is your perfect introduction into bone surgery with PIEZOSURGERY®: The PIEZOSURGERY® *white* offers the ultimate in treatment safety, materials especially selected for ease in cleaning, disinfection and sterilization, and cost-effective standard parts for greatest economy.

If you have always wanted to use the revolutionary PIEZOSURGERY® technology, but were held back by budget constraints – here is your chance to take your bone surgery to the next level.



APC (AUTOMATIC PROTECTION CONTROL)

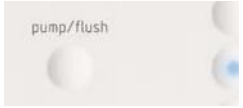
- recognizes deviations from standard functioning automatically
- stops power and liquid in less than 0,1 seconds
- shows cause of the interruption on the keyboard

FLEXIBILITY

- 360° function of the foot control

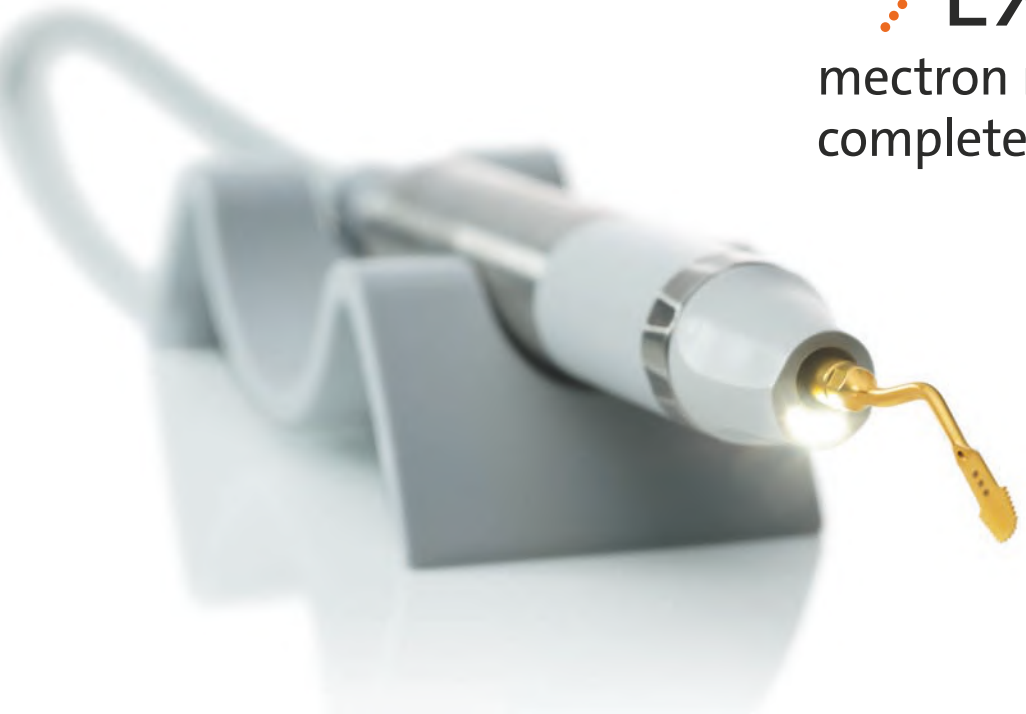
FLUSH FUNCTION

- started by a finger tip
- flushing cycle for the device's main irrigation tubes



HANDPIECE

- choice between handpiece with or without LED light
- handpiece and handpiece cord (including the irrigation line) are fully sterilizable together
- handpiece cord is extremely flexible



EXPERIENCE PERFECTION

mectron raises the standard for bone surgery to a completely new level with the PIEZOSURGERY® *touch*

The actual benchmark in bone surgery comes with 100% perfection in every detail. With simple, intuitive settings at the touch of your fingers, PIEZOSURGERY® *touch* is an extension of your body and maximizes your surgical skills to help ensure precise, safe, flawless surgical outcomes.

The PIEZOSURGERY® *touch* device has several innovative features including a black glass touch surface, handpieces with swivel LED lights for optimum visibility, a more compact and versatile console, and a new and improved computerized feedback system. For ease of use, this device also features intuitive setting controls as well as four handpiece holder configurations.

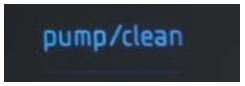
All it takes is a touch. You will experience the most comfortable device in bone surgery.

HANDPIECE WITH LED

- swivel-type LED-light can be directed to the insert tip
- choice between automatic, and permanent light or switched off
- mobile handpiece holder allows flexible positioning, sterilizable

AUTOMATIC CLEAN FUNCTION

- controlled by the foot pedal
- flushing cycle for the device's main irrigation tubes



FOOT PEDAL

- 360° function of the foot control
- high weight for fix positioning
- thanks to the U-bolt easy to move

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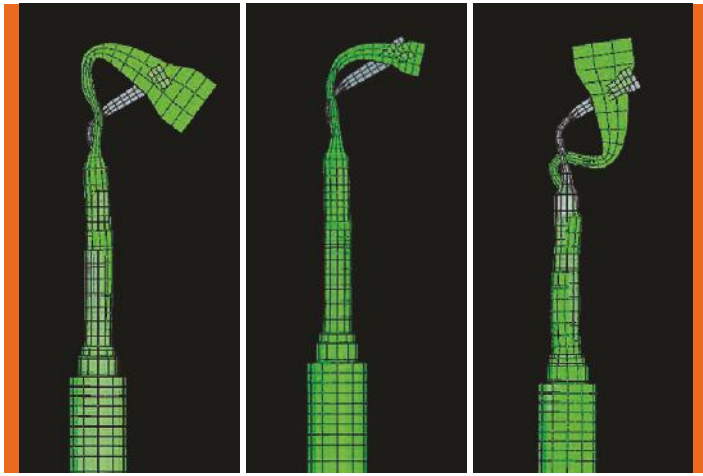
EXPERIENCE INNOVATION

mectron continually develops new inserts – with clinicians, for clinicians

Who would have better ideas and suggestions for new surgical inserts than surgeons themselves? All PIEZOSURGERY® inserts are developed in response to specific clinical needs and result from collaborations with universities and clinical practitioners. Our rigorous insert development process includes finite elements analyses, computer simulations, serial prototyping, and extensive laboratory and clinical research.

The perfect example of our expertise is the world's thinnest osteotomy insert with only 0.25 mm thickness. The best proof of our expertise is over 85 high quality insert designs are now available to surgeons world-wide – and new inserts are released every year.

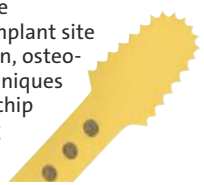


INSERT DEVELOPMENT

- **1.** close collaboration with universities for the development of inserts
- **2.** computer simulation of shape and insert movement. The finite elements method allows precise prognoses of insert movements
- **3.** extensive clinical testing – feedback from experienced practitioners

SHARP INSERTS

- gentle and effective bone cutting action
- fine and well-defined cutting line
- used for implant site preparation, osteo-tomy techniques and bone chip harvesting



SMOOTHING INSERTS

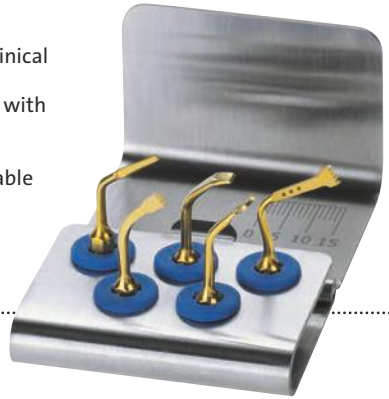
- diamond-coated surfaces for precise and controlled osteoplasty on bone structures
- preparation of difficult and delicate structures (ex: sinus augmentation, nerve lateralization)
- preparation of the final bone shape

BLUNT INSERTS

- soft tissue preparation (ex: Schneiderian membrane)
- root planing in periodontology

INSERT SETS

- set of inserts for clinical application
- stainless steel tray with depth markings
- ideal for storage
- tray fully autoclavable



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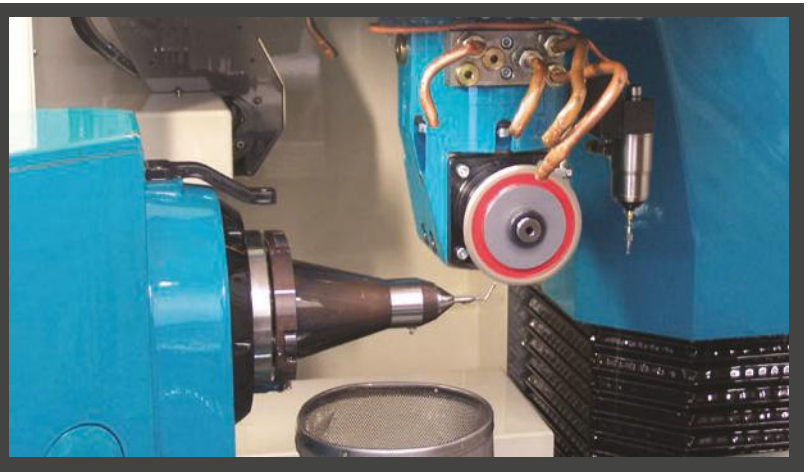
EXPERIENCE QUALITY

mectron guarantees the highest quality standards for every insert

PRECISION

A CNC controlled 5-dimensional sharpening machine cuts with an accuracy of up to 0,01 mm. The whole cutting process for a single insert lasts up to 12 min.



PIEZOSURGERY®'s unique cutting action results from the application of ultrasonic modulated vibrations to a surgical insert. To deliver the best surgical performance, the insert and handpiece must vibrate in unison up to 36,000 times per second. To withstand such enormous strain, all inserts are individually crafted from forged stainless steel and designed to couple with the handpiece perfectly for optimal tuning.

PIEZOSURGERY®'s proprietary, 12-step insert manufacturing process lasts several months and employs the finest materials and most advanced technological processes to guarantee that all inserts meet the highest quality and cutting efficiency standards.

DIAMOND COATING

Depending on the indication, the inserts are coated with specially selected diamonds. The granulometry of the diamond coating is adapted to the respective treatment.

TITANIUM NITRIDE COATING

A coating of titanium nitride, applied to inserts, increases the hardness of the surface, avoids corrosion and therefore increases working life.

LABELING

Each insert is labeled gently by a laser.

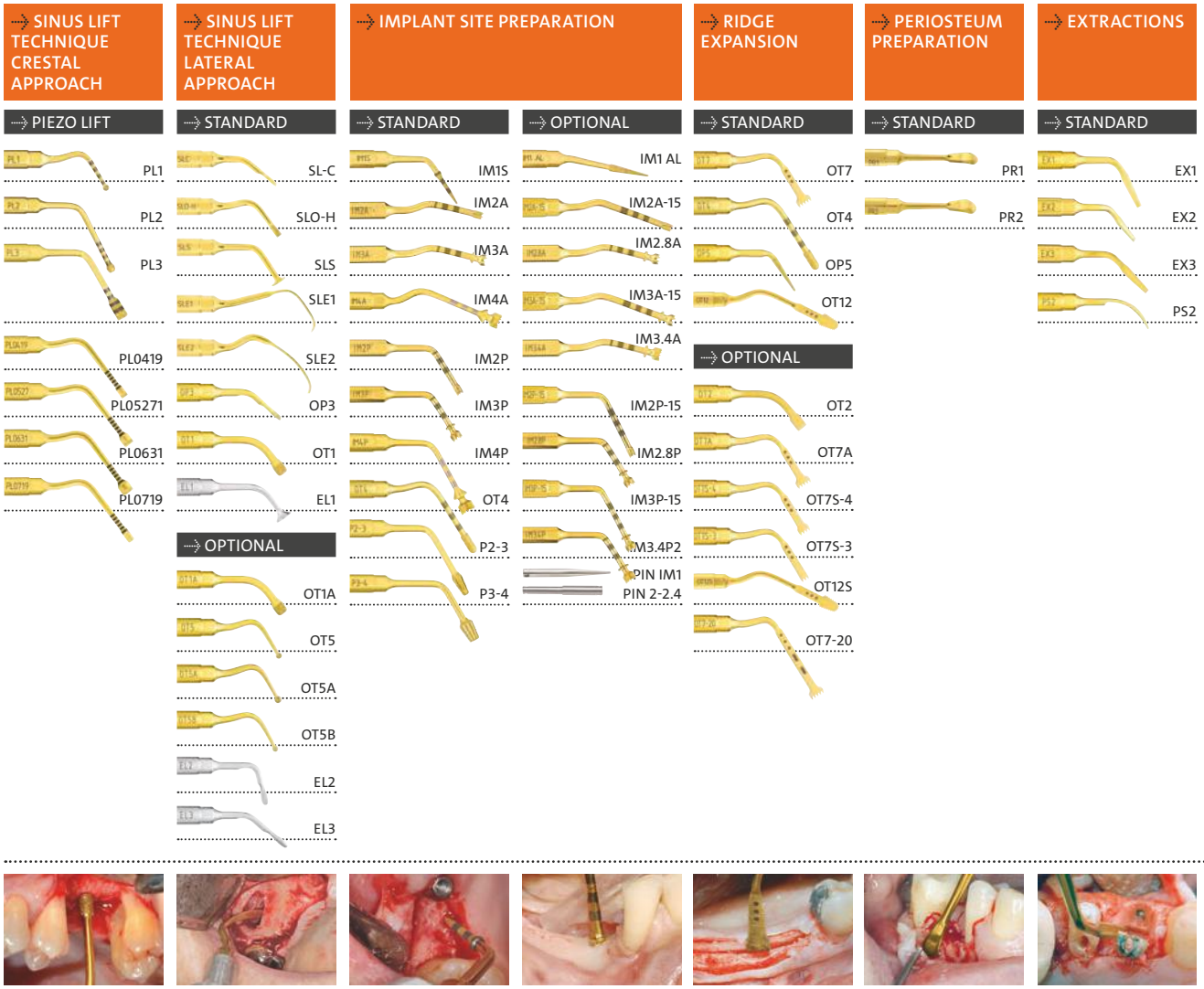
QUALITY CHECK

Each insert is checked in detail before getting an OK for sales.

EXPERIENCE SURGICAL CHOICES

PIEZOSURGERY® has dedicated inserts for a wide variety of clinical applications

PIEZOSURGERY® has over 85 inserts specifically designed in many applications in oral surgery and implantology, from sinus lift to ridge splitting, extractions and even orthognathic procedures.



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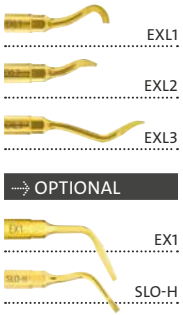
THIRD MOLAR EXTRACTION

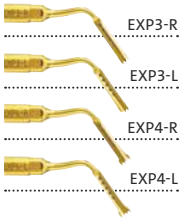
STANDARD



OPTIONAL

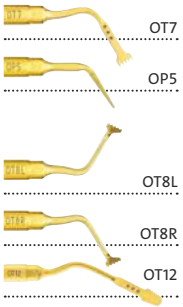
EXPLANTATION

STANDARD



BONE BLOCK GRAFTING

STANDARD



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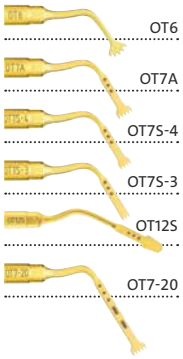
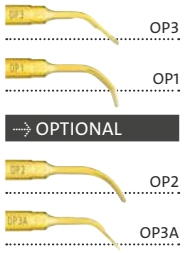


BONE CHIP GRAFTING/ BONE MODELING

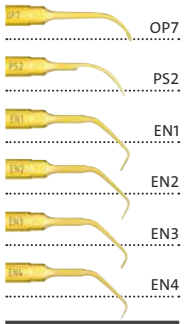
STANDARD



OPTIONAL

ENDODONTICS

STANDARD



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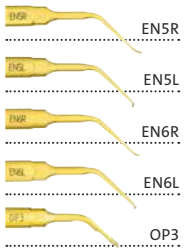
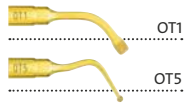


OSTEOTOMY CLOSE TO NERVES

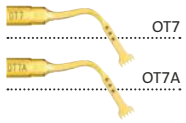
STANDARD



CORTICOTOMY TECHNIQUE

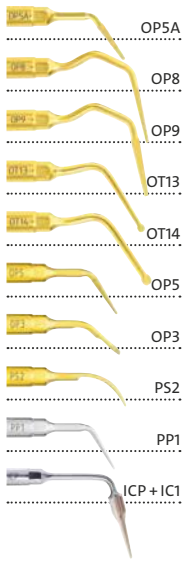
STANDARD

OPTIONAL

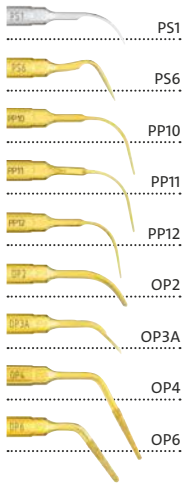


PERIODONTAL SURGERY

STANDARD

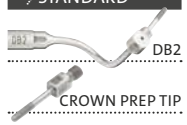


OPTIONAL



CROWN PREPARATION

STANDARD



Ø 1,2 mm	TA12D90*
	TA12D60*
Ø 1,4 mm	TA14D120*
	TA14D90*
	TA14D60*
Ø 1,6 mm	TA16D120*
	TA16D90*
	TA16D60*

Ø 1,2 mm	TF12D90*
	TF12D60*
Ø 1,6 mm	TF16D90*
	TF16D60*

* D120, D90, D60 = diamond coating

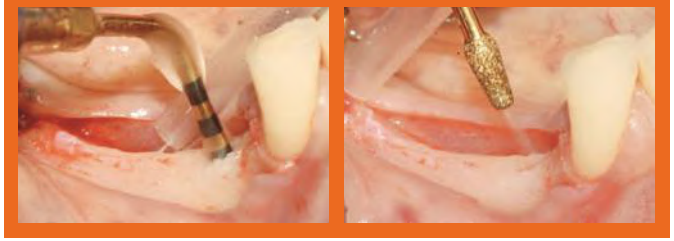
EXPERIENCE ULTRA-OSSEOINTEGRATION

PIEZOSURGERY® induces new bone formation, leading to faster osseointegration of dental implants

Implant site preparation with PIEZOSURGERY®, the revolutionary technique – safe and precise.

- faster osseointegration: reduction of inflammatory cells and the more active neo-osteogenesis compared to drilled sites
- high intraoperatory control: the particular shape of the implant inserts allows a perfect control of the site preparation
- preparation of 2, 2.8, 3, 3.4 and 4 mm: site preparation with PIEZOSURGERY® allows placement of all common implants

CLINICAL HANDLING



1 initial pilot osteotomy
OPTIONAL: check the preparation axis with alignment PIN IM1S
2 pilot osteotomy in anterior or posterior region
OPTIONAL: check the preparation axis with alignment PIN 2-2.4
3 to optimize concentricity of implant site preparation between Ø 2 and Ø 3 mm, preparation of the cortical basal bone
4 to enlarge or to finalize the implant site preparation; insert with double irrigation for optimum cooling

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IN LITERATURE

Ultrasonic implant site preparation using PIEZOSURGERY®: a multicenter case series study analyzing 3,579 implants with a 1- to 3-year follow-up.

Vercellotti T, Stacchi C, Russo C, Rebaudi A, Vincenzi G, Pratella U, Baldi D, Mozzati M, Monagheddu C, Sentineri R, Cuneo T, Di Alberti L, Carossa S, Schierano G.; Int J Periodontics Restorative Dent. 2014 Jan-Feb;34(1):11-8. doi: 10.11607/prd.1860

Abstract

This multicenter case series introduces an innovative ultrasonic implant site preparation (UISP) technique as an alternative to the use of traditional rotary instruments. A total of 3,579 implants were inserted in 1,885 subjects, and the sites were prepared using a specific ultrasonic device with a 1- to 3-year follow-up. No surgical complications related to the UISP protocol were reported for any of the implant sites. Seventy-eight implants (59 maxillary, 19 mandibular) failed within 5 months of insertion, for an overall osseointegration percentage of 97.82% (97.14% maxilla, 98.75% mandible). Three maxillary implants failed after 3 years of loading, with an overall implant survival rate of 97.74% (96.99% maxilla, 98.75% mandible).

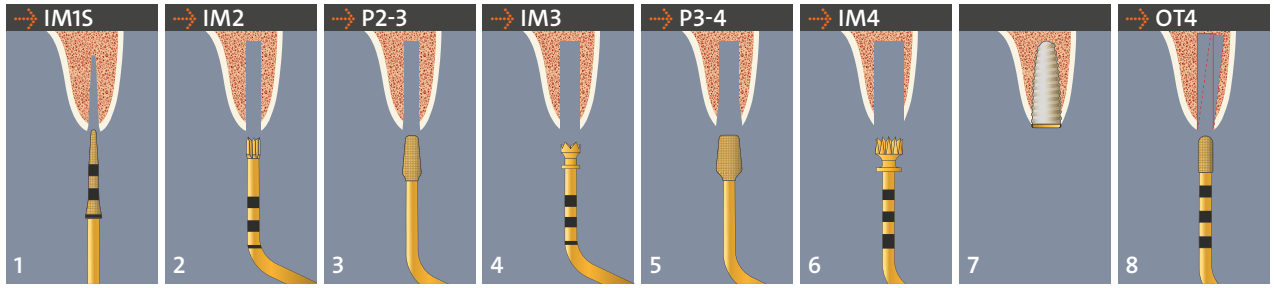

Cytokines and Growth Factors Involved in the Osseointegration of Oral Titanium Implants Positioned Using Piezoelectric Bone Surgery Versus a Drill Technique: A Pilot Study in Minipigs

Cytokines and Growth Factors Involved in the Osseointegration of Oral Titanium Implants Positioned using Piezoelectric Bone Surgery Versus a Drill Technique: A Pilot Study in Minipigs.

Preti G, Martinasso G, Peirone B, Navone R, Manzella C, Muzio G, Russo C, Canuto RA, Schierano G.; J Periodontol. 2007; 78(4):716-722

Conclusion

Piezoelectric bone surgery appears to be more efficient in the first phases of bone healing; it induced an earlier increase in BMPs, controlled the inflammatory process better, and stimulated bone remodeling as early as 56 days post-treatment.



5 to optimize concentricity of implant site preparation between Ø 3 and Ø 4 mm, preparation of the cortical basal bone
6 to finalize the implant site preparation; insert with double irrigation to avoid overheating
7 implant positioning
8 **OPTIONAL:** to correct pilot osteotomy axis (differential implant site preparation), to finalize the implant site preparation close to the alveolar nerve

- reduce the risk of membrane perforation
- SLC insert to perform the osteoplasty of the sinus vestibular wall with optimal safety and unparalleled intra-operative control
- high-efficiency and safe SLO-H osteotomy insert
- thin SLS membrane separator, more efficient than the old generation „elephant paw shaped“
- elevators (SLE1, SLE2) with sharp terminal part to cut Sharpey’s fibers from the endosteum with the optimal safety. The endosteum will be protected thanks to the convexity of the tips
- insert SLE1 to start the sinus membrane elevation from the sinus floor
- insert SLE2 to finalize the sinus membrane elevation from the palatal wall

REFERENCES

- Vercellotti T, De Paoli S, Nevins M. **The Piezoelectric Bony Window Osteotomy and Sinus Membrane Elevation: Introduction of a New Technique for Simplification of the Sinus Augmentation Procedure.** Int J Periodontics Restorative Dent 2001; 21(6): 561-567
- Vercellotti T. **Letter to the Editor Clinical Oral Implants Research**, Volume 20, Issue 5, Date: May 2009, Pages: 531-532
- Vercellotti T, Lang Niklaus P. **“Piezosurgery in a DailyPractice”** - Forum Implantologicum : Volume 8 , Issue 1
- Stacchi C, Vercellotti T, Toschetti A, Speroni S, Salgarello S, Di Lenarda R. **Intra-operative complications during sinus floor elevation using two different ultrasonic approaches. A two-center, randomized, controlled clinical trial.** Clin Implant Dent Rel Res. 2013 Aug 22. [Epub ahead of print]
- Stacchi C, Andolsek F, Berton F, Navarra CO, Perinetti G, Di Lenarda R. **Intra-operative complications during sinus floor elevation with lateral approach: a systematic review.** Clin Oral Implants Res., submitted

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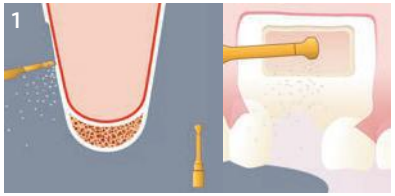
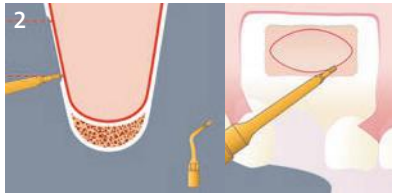
EXPERIENCE EFFICIENCY

Sinus lift by lateral approach* with PIEZOSURGERY® – after 15 years we re-define the protocol

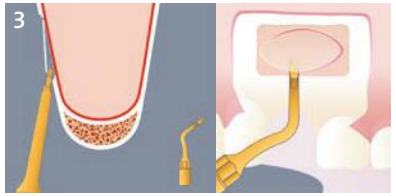
EROSION TECHNIQUE: THE EVIDENCE-BASED SAFETY



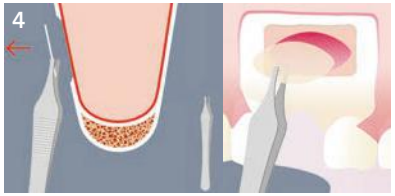
1 Insert SLC – osteoplasty of the sinus vestibular wall



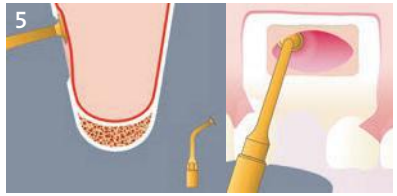
2 Insert SLO-H – bone window osteotomy



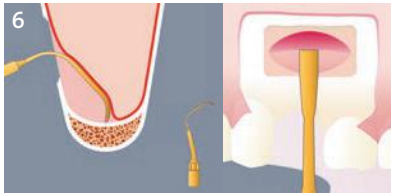
3 Insert SLO-H – bone window detachment



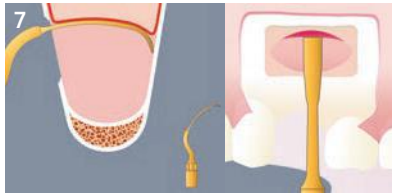
4 Surgical forceps – bone window removal



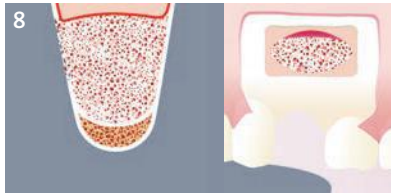
5 Insert SLS – sinus membrane separation



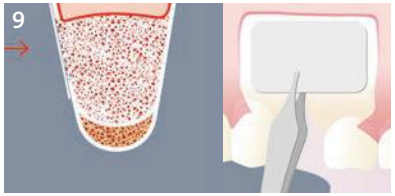
6 Insert SLE1 – sinus membrane elevation from the sinus floor



7 Insert SLE2 – sinus membrane elevation from the palatal wall

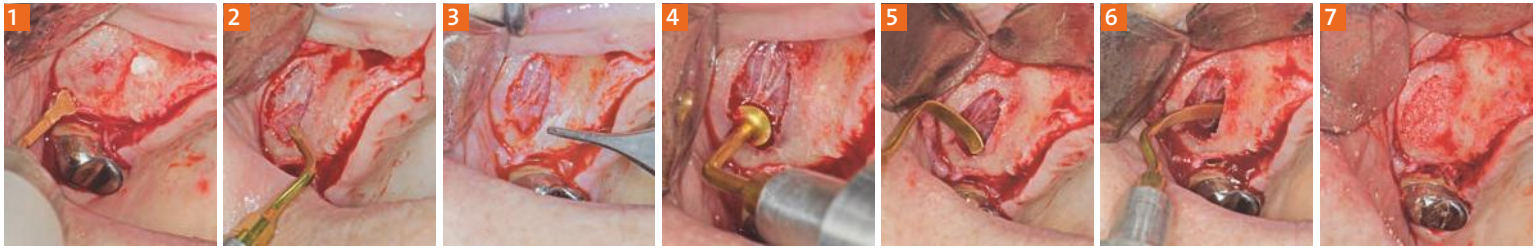


8 Bone grafting procedure



9 Membrane placement

REVISITED SINUS LIFT BY LATERAL APPROACH



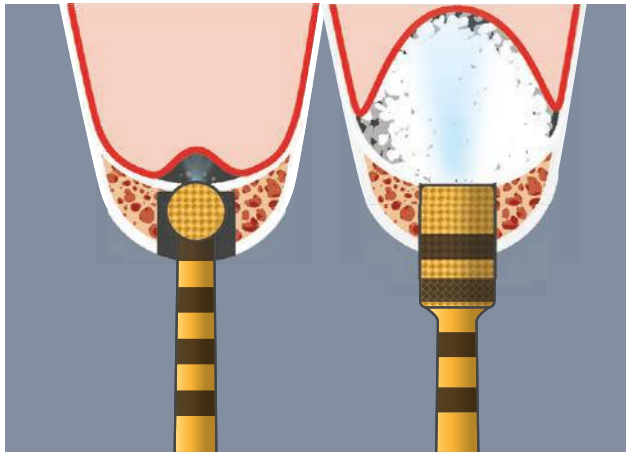
1 sinus vestibular wall consumption and sinus cavity identification (dark colour)
2 bony window osteotomy
3 bony window removal
4 sinus membrane separation from the bony window margins
5 beginning of the sinus membrane elevation from the sinus floor
6 finalization of the sinus membrane elevation from the palatal wall
7 bone grafting procedure

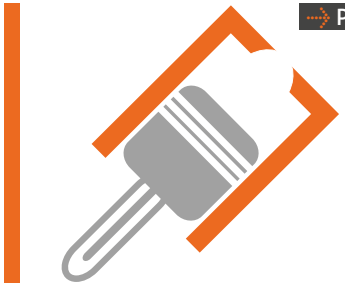
* inserts developed in collaboration with Prof. Tomaso Vercellotti and Dr. Philippe Russe

EXPERIENCE SAFETY

The PIEZO-LIFT technique facilitates sinus lift, by crestal approach

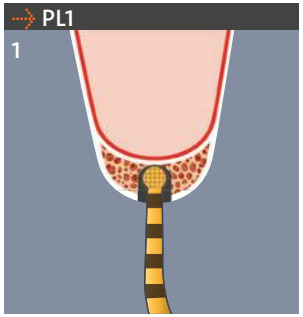
Clinical protocol according to Tomaso Vercellotti



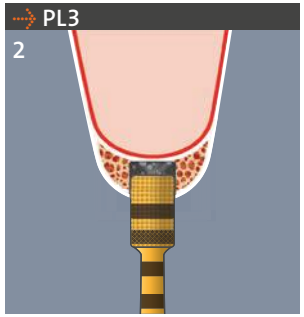


PIEZO-LIFT TECHNIQUE

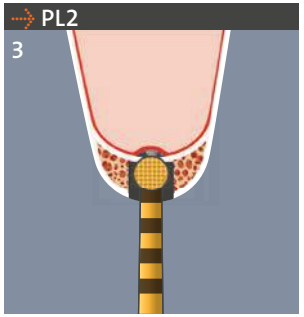
The insert PL3 works like a piston inside a cylinder



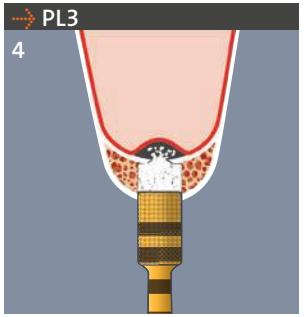
1 Achieving the sinus floor



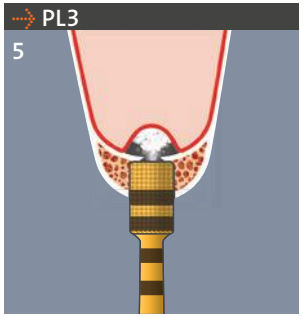
2 Cylindrical bone cavity preparation



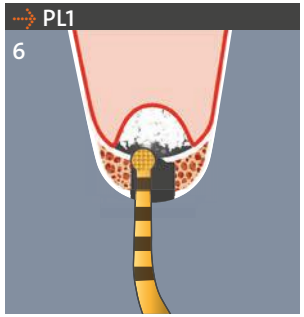
3 Erosion of the floor and PIEZO-LIFT of membrane



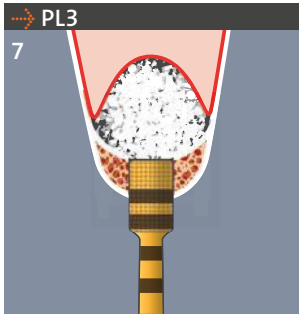
4 PIEZO-LIFT using cavitation effect



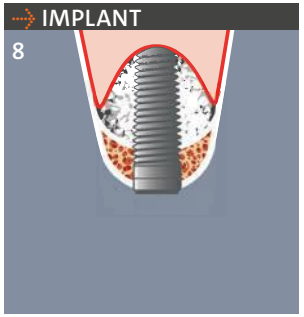
5 Safe sinus lift



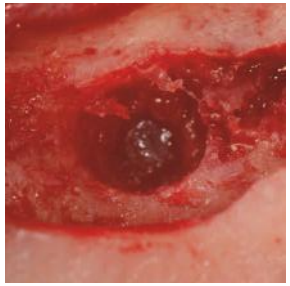
6 Removal of the saftey bony ring



7 PIEZO-LIFT technique



8 Implant placement



SURGICAL SECURITY

Bony ring of the sinus floor for optimal surgical security

PIEZO-LIFT SET

EXPERIENCE PREDICTABILITY

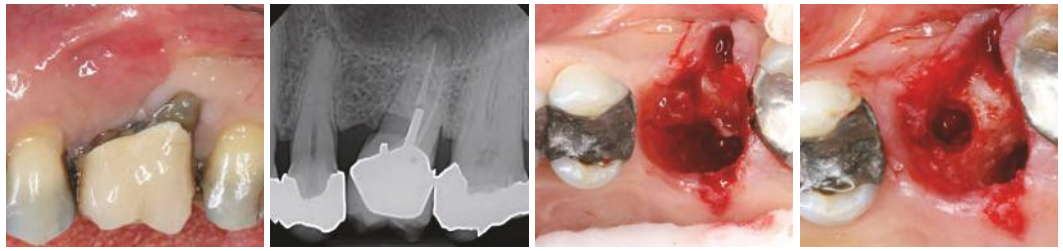
Crestal Sinus Lift combining manual and PIEZOSURGERY® technique

The most crucial part of the crestal sinus lift is to access the sinus floor and to elevate the Schneiderian membrane without perforation.

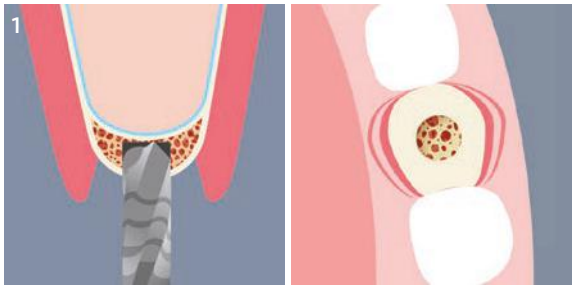
PIEZOSURGERY® is well known for it's protection of soft tissue including the Schneiderian membrane. Combining the benefits of osteotomes and PIEZOSURGERY® can lead to precise sinus lift surgery.

A set of 4 inserts, developed with the support of Dr. Edgar El Chaar, New York, allows the gentle removal of bone from the sinus floor. A bone ring is left with intact Schneiderian membrane, which then can be gently lifted with osteotomes.

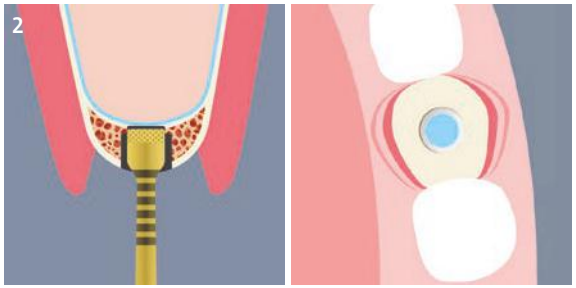
CASE REPORT



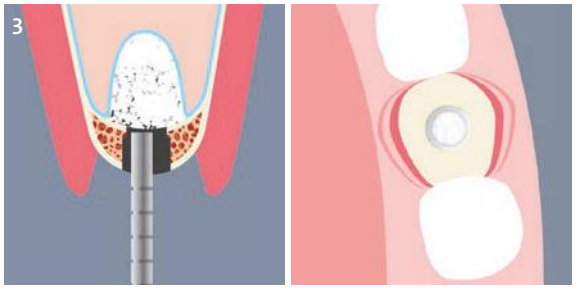
MANUAL PIEZO LIFT STEP-BY-STEP



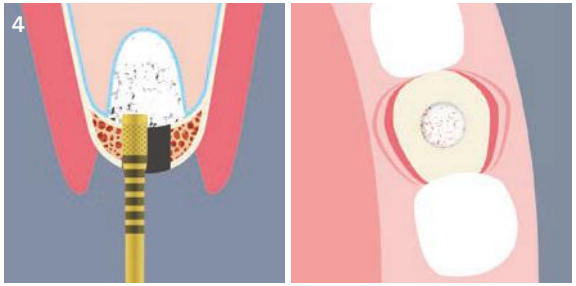
1 Sinus floor approach



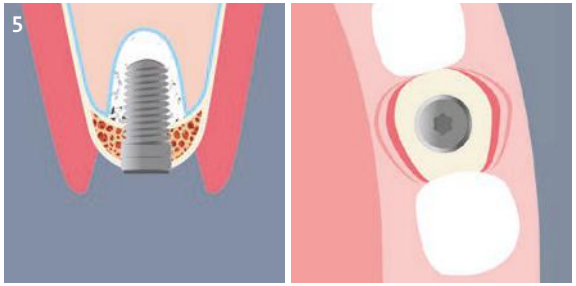
2 Sinus floor removal and membrane detachment



3 Sinus lift and bone grafting



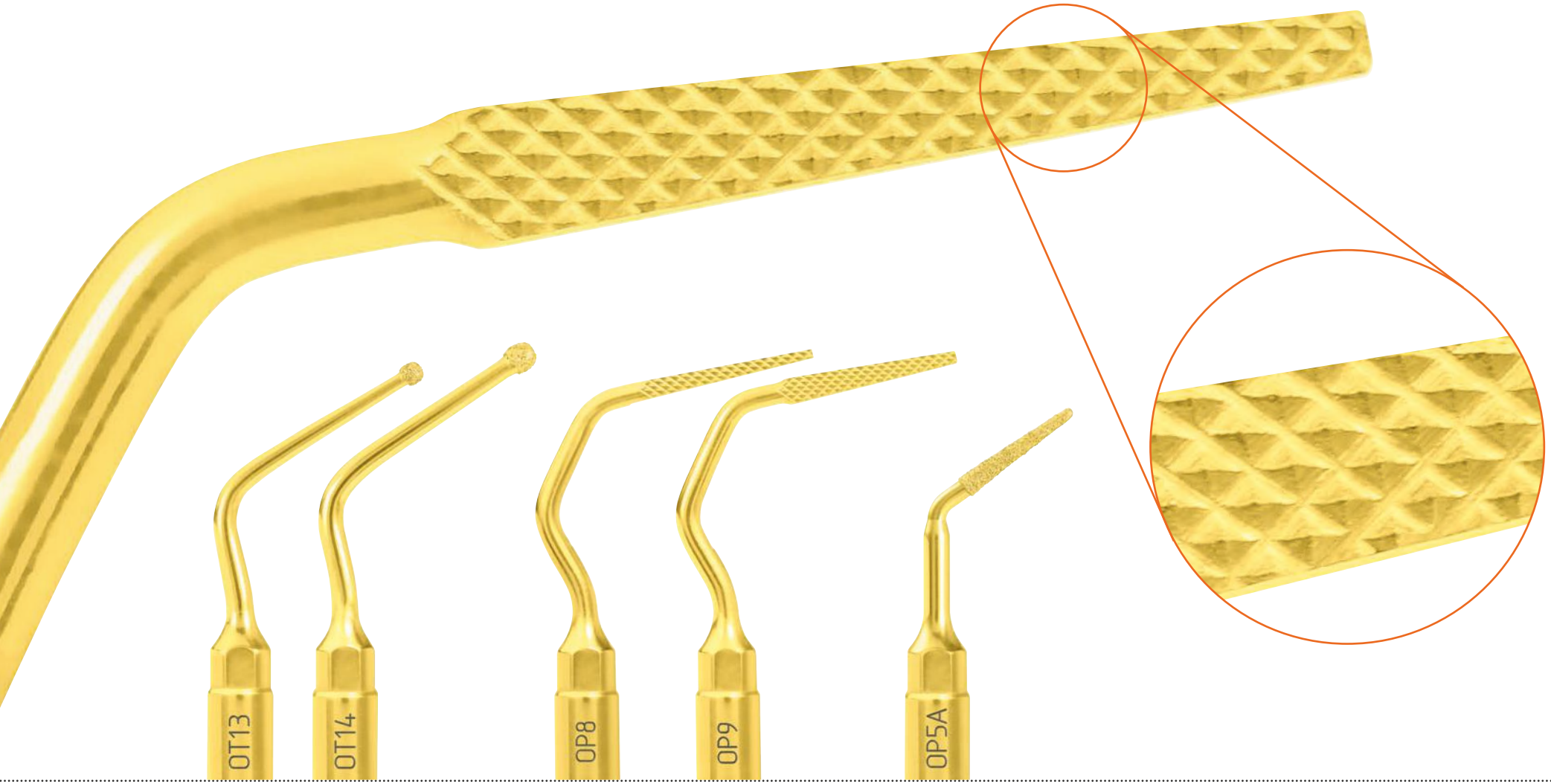
4 Safety bone ring removal



5 Implant placement

After extracting the tooth, the osteotomy was prepared up to the last one needed for the specific diameter of the selected implant, in this case a Straumann BLX 5.0 mm. Based on the quality of the bone the last drill was 3.7 mm. The sinus floor perforation was performed with the PIEZOSURGERY® insert PL0631 remaining at the same time a bony ring which prevents the osteotomes from accidentaly perforating the Schneiderian membrane. Using an osteotome of 3.2 mm the bone graft was inserted and the Schneiderian membrane elevated.

Finally before placing the implant the bony ring was removed using the side cutting insert PL0719.



INSERTS OT13 AND OT14

Spherical inserts (Ø 1.8 and 2.3 mm), facilitating the surgical procedure in preparing buccal and lingual cortical bone. Their diamond coating of D150 allows an effective but still controlled bone modeling.

INSERTS OP8 AND OP9

Wedge-shaped perio files (respectively from 1.3 to 0.7 mm and from 2 to 1 mm thickness), with only 2 working surfaces, they allow interproximal osteoplasty without damaging adjacent root surfaces.

INSERT OP5A

Lanceolate shaped insert with a D90 diamond coating. It can be used for root planning and debridement as well as in inter-proximal spaces where perio files cannot properly access.

CRISS-CROSS SURFACE

The criss-cross surface works like a perio file. It allows very efficient bone remodeling and a longer life span of the insert.

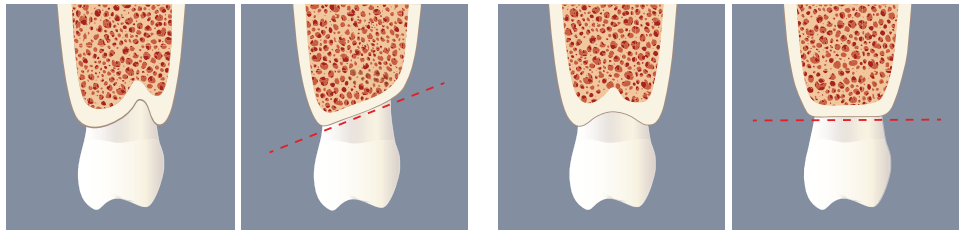
EXPERIENCE ACCESSIBILITY

mectron optimizes access for osseous resective surgery

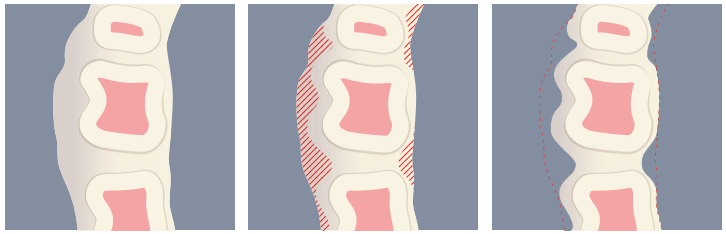
In collaboration with Professor Leonardo Trombelli and the University of Ferrara, Italy, mectron developed 5 inserts for osteoctomy and osteoplasty procedures in periodontal resective surgery.

The combination of inserts with special shapes and dimensions makes it possible to perform controlled remodeling of the bony profile, avoiding the risk of damaging dental structures or other anatomically important structures. The precision and minimal invasiveness of PIEZOSURGERY® make these inserts a perfect tool for surgeons during the most delicate osteoplasty procedures in periodontal surgery.

INTERPROXIMAL BONY DEFECTS



VESTIBULAR AND LINGUAL OSTEOPLASTY



CLINICAL CASE

1 vestibular view
2 occlusal view
3 preparation of bone defect with OT14
4+5 interproximal bone osteoplasty with OP8 and OP9
6 tunneling procedure with insert OP5A
7 interdental brush passage

EXPERIENCE
OPTIMIZED POWER

How mectron speeds up the extraction of wisdom tooth

Piezoelectric wisdom tooth extraction is less traumatic and the healing process is more favourable [1-4].

mectron now introduces the first piezoelectric lever to facilitate the luxation manoeuvre and sometimes even third molar root extraction, especially when ankylosed.

This occurs when the manual force the operator exerts on the handpiece is added to the hammering action (typical of the mectron PIEZOSURGERY®) which propagates from the lever into the deep periodontium. Additionally, proper use of the piezoelectric lever can significantly reduce operating time.

- BETTER VISIBILITY
- MAXIMUM INTRAOPERATIVE CONTROL
- FASTER THIRD MOLAR EXTRACTION

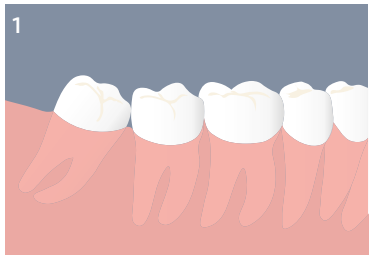
The efficiency of these levers was evaluated in a randomised, controlled study, comparing them to manual levers [5], where they showed strongly reduced extraction times.

EXTRACTION TIME IN MINUTES [5]	PIEZOSURGERY® Test Group	Conventional technique control group	p value
total	4.6 ± 4.5	10.2 ± 13.1	.049
maxillary molar	2.7 ± 2.3	5.4 ± 9.4	.816
mandibular molar	6.5 ± 5.4	15.1 ± 14.8	.002

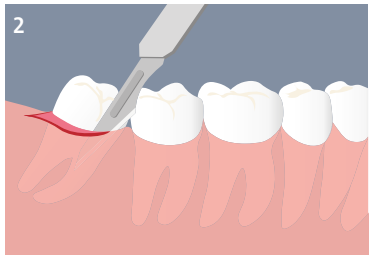
PIEZOSURGERY®

1 Spinato S., Rebaudi A., Bernardello F., Bertoldi C., Zaffe D. Piezosurgical treatment of crestal bone: quantitative comparison of post-extractive socket outcomes with those of traditional treatment. Clin Oral Implants Res. 2015-01-30 online; DOI: 10.1111/clr.12555.
2 Piersanti L, Dilorenzo M, Monaco G, Marchetti C. Piezosurgery or Conventional Rotatory Instruments for Inferior Third Molar Extractions? J Oral Maxillofac Surg. 2014 Sep;72(9):1647-52.
3 Rullo R, Addabbo F, Papaccio G, D'Aquino R, Festa VM. Piezoelectric device vs. conventional rotative instruments in impacted third molar surgery: relationships between surgical difficulty and postoperative pain with histological evaluations. J Craniomaxillofac Surg. 2013 Mar;41(2):e33-8.

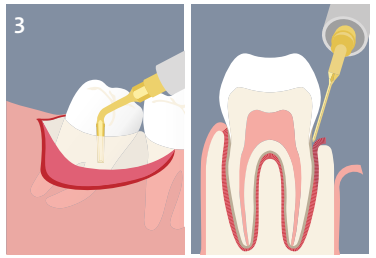
THIRD MOLAR EXTRACTION - CLINICAL PROCEDURE



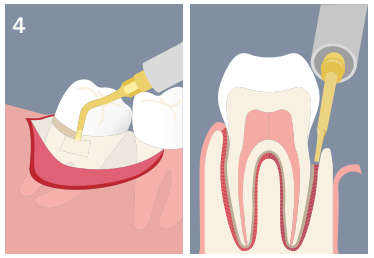
1 Initial situation



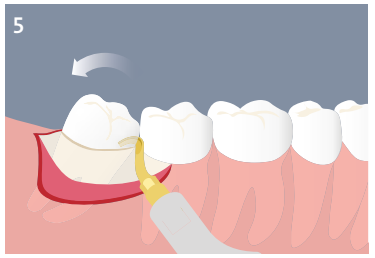
2 Flap detachment



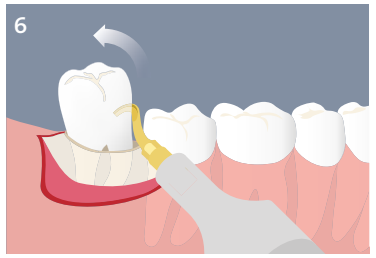
3 Syndesmotomy with EX1 insert



4 Pericoronal osteotomy with SLO-H insert

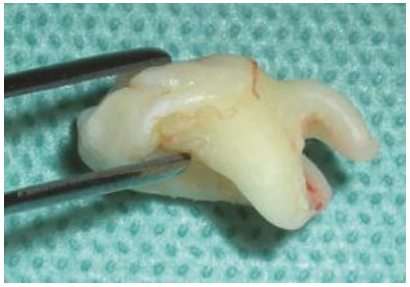


5 Tooth luxation with EXL1 lever



6 Extraction manoeuvre

EXTRACTION 1.8



CLINICAL APPLICATIONS

- Lever EXL1 is highly versatile, enabling luxation and simultaneous root extraction in a single manoeuvre.
- Lever EXL2 (the shorter lever) has a smaller radius but makes it possible to apply greater force.
- Lever EXL3 is mainly for alveolar debridement and/or removing radicular fragments from the extractive alveolus.

4 Sortino F, Pedulla E, Masoli V. The piezoelectric and rotatory osteotomy technique in impacted third molar surgery: comparison of postoperative recovery. J Oral Maxillofac Surg. 2008 Dec;66(12):2444-8.
5 Fontanella, F., Grusovin, M. G., Gavatta, M., & Vercellotti, T. (2020). Clinical efficacy of a new fully piezoelectric technique for third molar root extraction without using manual tools: a clinical randomized controlled study. Quintessence international (Berlin, Germany : 1985), 51(5), 406–414. https://doi.org/10.3290/j.qi.a44370

EXPERIENCE SCIENTIFIC EVIDENCE

As more than 250 studies prove the advantages of the original PIEZOSURGERY® method

For over 20 years we have had ongoing collaborations with clinical practitioners and research institutions worldwide. PIEZOSURGERY® technology is supported by more than 250 clinical and scientific studies; you will not find this substantiation with devices other than PIEZOSURGERY®.

We invite you to educate yourself on the benefits of our technology by reviewing the extensive peer-reviewed literature. Selected examples of the breadth of benefits associated with PIEZOSURGERY® are collected in our Scientific Abstracts, available for download at www.mectron.com.

PIEZOSURGERY®

* You will find a selection of clinical and scientifical studies about mectron PIEZOSURGERY® in the brochure „Scientific Abstracts – 18 years of clinical research“.
A downloadable version is available at the mectron website www.mectron.com.

mectron
medical technology

BONE HEALING

As bone healing is not disturbed by the PIEZOSURGERY®, but even seems to be improved, this method will have a major influence on new minimally invasive bone surgery techniques with special regard to biomechanics.

Stübinger S, Goethe JW.
Bone Healing After PIEZOSURGERY® and its influence on Clinical Applications.
Journal of Oral and Maxillofacial Surgery 2007, Sep;65(9):39.e7-39.e8.

SENSITIVITY

When using the PIEZOSURGERY® technique, on the other hand, the effort required to make a cut is very slight. This means that greater precision is achieved, guaranteed by the microvibrations of the insert.

Boioli LT, Vercellotti T, Tecucianu JF.
La chirurgie piézoélectrique: Une alternative aux techniques classiques de chirurgie osseuse.
Inf Dent. 2004;86(41):2887-2893

SIMPLICITY

The revolutionary properties of piezoelectric surgery have simplified many common osseous surgical procedures, including sinus bone grafting.

Vercellotti T, Nevins M, Jensen Ole T.
Piezoelectric Bone Surgery for Sinus Bone Grafting. The Sinus Bone Graft, Second Edition.
Edited by Ole T. Jensen, Quintessence Books. 2006; 23:273-279

SECURITY

The membrane perforation rate in this series of 100 consecutive cases using the piezoelectric technique has been reduced from the average reported rate of 30% with rotary instrumentation to 7%.

Wallace SS , Mazor Z, Froum SJ, Cho SC , Tarnow DP.
Schneiderian membrane perforation rate during sinus elevation using PIEZOSURGERY®: clinical results of 100 consecutive cases.
Int J Periodontics Restorative Dent. 2007; 27(5):413-419

EFFECTIVITY

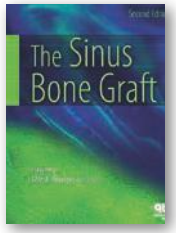
The morphometrical analysis revealed a statistically significant more voluminous size of the particles collected with PIEZOSURGERY® than rotating drills.

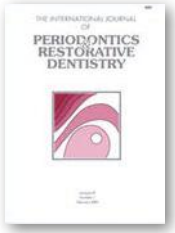
Chiriac G, Herten M, Schwarz F, Rothamel D, Becker J.
Autogenous bone chips: influence of a new piezoelectric device (PIEZOSURGERY®) on chips morphology, cell viability and differentiation.
J Clin Periodontol. 2005; 32(9):994-999

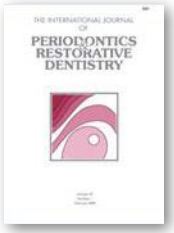
PATIENT COMFORT

Microvibration and reduced noise minimize a patient's psychologic stress and fear during osteotomy under localanesthesia.

Sohn DS, Ahn MR, Lee WH, Yeo DS, Lim SY.
Piezoelectric osteotomy for intraoral harvesting of bone blocks.
Int J Periodontics Restorative Dent. 2007; 27(2):127-131







EXPERIENCE HISTORY OF A SUCCESS

How mectron has been defining the future of bone surgery for more than 20 years

1997 · 1998 · 1999 · 2000 · 2001 · 2002 · 2003 · 2004 · 2005 · 2006 · 2007 · 2008

1997

- mectron and Prof. Tomaso Vercellotti developed the idea of piezoelectric bone surgery
- mectron produces the first prototype devices
- first extraction treatments

1998

- first lateral sinus lift treatments

1999

- Prof. Tomaso Vercellotti introduced the name PIEZOSURGERY® for the new method
- first bone splitting treatments in the maxilla

2000

- first bone splitting in the mandible
- first case studies about ridge expansion are published*
- **mectron starts serial production of the PIEZOSURGERY® device**

2001

- first crestal sinus lift
- Piezosurgery® I, the world-wide first unit of piezoelectric bone surgery, is presented by mectron at IDS
- over 20 inserts are available
- first study about sinus lift with PIEZOSURGERY® presented

2002

- development of periodontal resection surgeries
- first bone block grafting treatments

2004

- **more powerful and better ergonomics – mectron presents the 2nd generation of the PIEZOSURGERY® device**
- first orthodontic microsurgery treatments

2005

- more than 30 scientific studies about PIEZOSURGERY® are published
- the first competitive units are launched
- first implant site preparation treatments using PIEZOSURGERY®

2007

- mectron presents the innovative inserts for implant site preparation, at the same time the first study about the inserts is published

2009

PIEZOSURGERY® 3 – the third generation is presented

2010

SINUS PHYSIOLIFT® kit for crestal sinus lift is presented

2011

PIEZOSURGERY® *touch* opens a new era in piezoelectric bone surgery

2013

exclusive inserts for explantation of cylindric and tapered implants presented

2015

PIEZOSURGERY® *white* - the new entry level unit presented

introduction of piezoelectric periosteum preparation

2016

PIEZO-LIFT revolutionary technique for crestal sinus lift is presented

2017

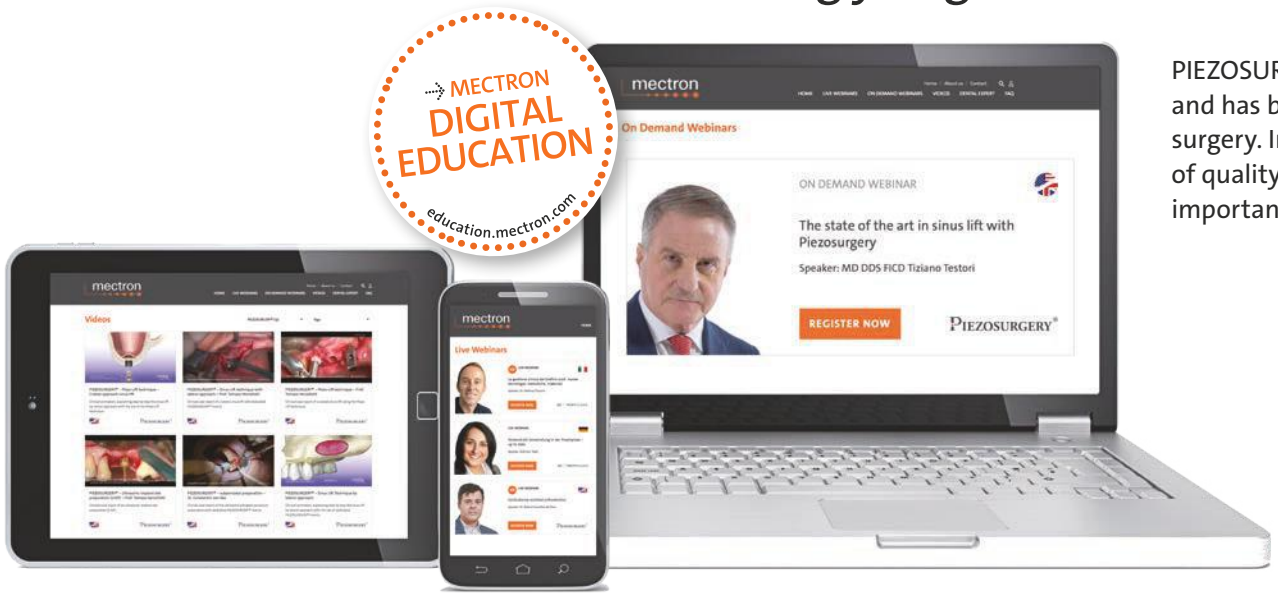
new LATERAL SINUS KIT – revisited technique for lateral sinus lift

2022

mectron introduces the first piezoelectric lever to facilitate the luxation manoeuvre and sometimes even third molar root extraction, especially when ankylosed.

EXPERIENCE EDUCATION

mectron is committed to ensuring you get the best knowledge of PIEZOSURGERY® method



PIEZOSURGERY® has caused a paradigm shift in osseous surgery and has become the new standard of care in oral and periodontal surgery. In addition to its revolutionary technology, its unique level of quality and its optimal ergonomic features, there is yet one more important factor to success with PIEZOSURGERY® technology: you.

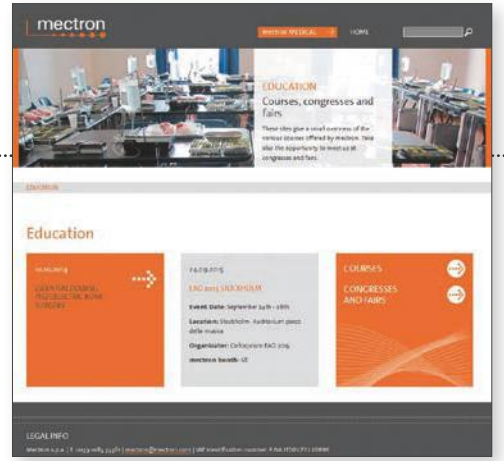
EDUCATION.MECTRON.COM

We are happy to share with you our online education platform. It will allow you to attend free of charge our live and on-demand educational webinars and view our clinical video library. A fantastic possibility to take a deeper view on clinical opportunities helpful for your daily practice. Visit our mectron education platform and register to receive notifications about upcoming webinars.

Free of charge registration
education.mectron.com

WWW.MECTRON.COM/EDUCATION

On www.mectron.com we offer you even more seminars: In the section courses and workshops you will find different seminars on PIEZOSURGERY® in English. Please contact your mectron partner for the courses in your local language – you will find the contact address in the dealer list on our website.



PIEZOSURGERY®

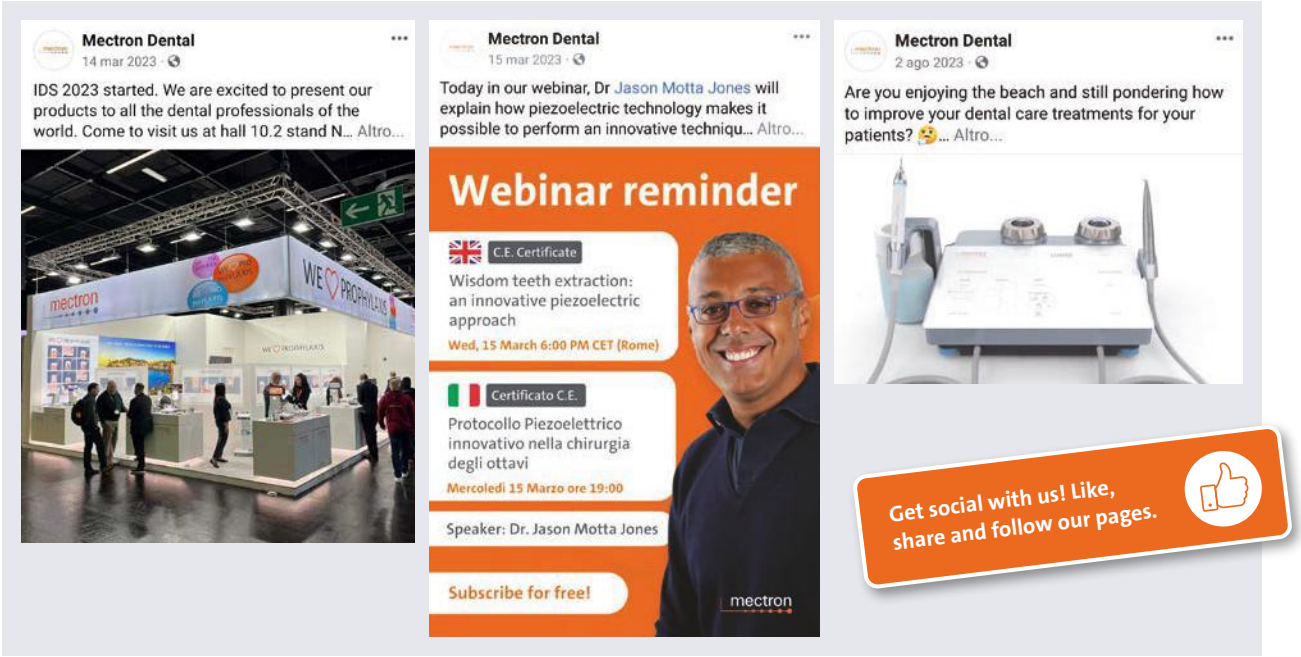
EXPERIENCE SOCIAL MEDIA

FOLLOW US ON OUR YOUTUBE CHANNEL

Don't miss out on our clinical videos, 3D animations, interviews with our dental experts from around the world and much more!

FOLLOW US ON FACEBOOK AND LINKEDIN

Follow us on social media to keep up to date with our latest news, product releases, upcoming events and more.



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FACEBOOK

LINKEDIN

EXPERIENCE MECTRON

mectron has products for a wide range of other dental needs

We offer a broad spectrum of other dental products from air-polishing to curing lights and ultrasonic scalers. mectron is your strong and reliable partner for almost every dental challenge – experience mectron.

PHOTOPOLYMERIZATION

ULTRASOUND SCALING

PIEZOSURGERY®

mectron
medical technology

COMBI *touch*: features and advantages

1 ultra slim LED handpiece with circular light. Only 55 grams
2 from one powder to another with just one click
3 clogging protection thanks to a permanent stream of light air
4 flexible, soft and atraumatic subgingival perio tip specially designed to manage the deepest periodontal pockets
5 heated water to a physiologically comfortable temperature
6 the air and water tubes will be cleaned automatically
7 SOFT MODE function for an ultra gentle scaling

AIR-POLISHING

WATCH THE VIDEO

PROPHYLAXIS POWDERS

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www.mectron.com or mectron@mectron.com

The images shown are for illustration purposes only and may not be an exact representation of the product.
Please consult product labels and manual for indications, contraindications, hazards, warnings, cautions.
Please contact your local sales representative for product availability.

The following products are registered under MDR 2017/745. For graphic reasons the styling of the product names might be different. The registered product names correspond as following:
- PIEZOSURGERY touch PIEZOSURGERY® *touch*
- PIEZOSURGERY white PIEZOSURGERY® *white*

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