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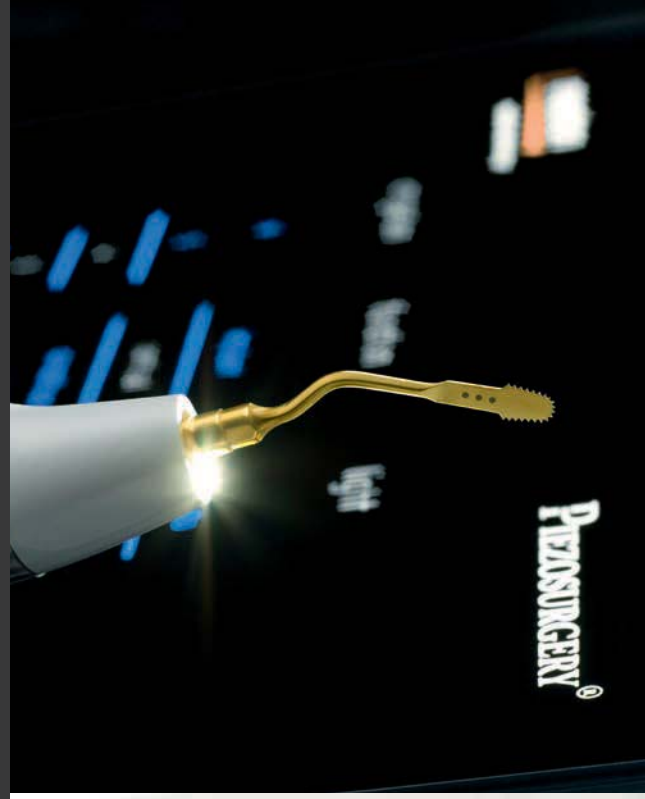
EXPERIENCE PIEZOSURGERY®



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 maximum 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 maximum 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. Thus PIEZOSURGERY® offers maximum 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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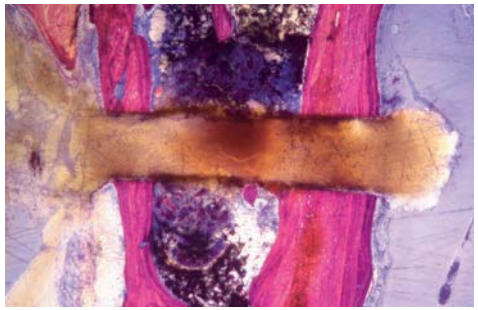
MACROVIBRATIONS

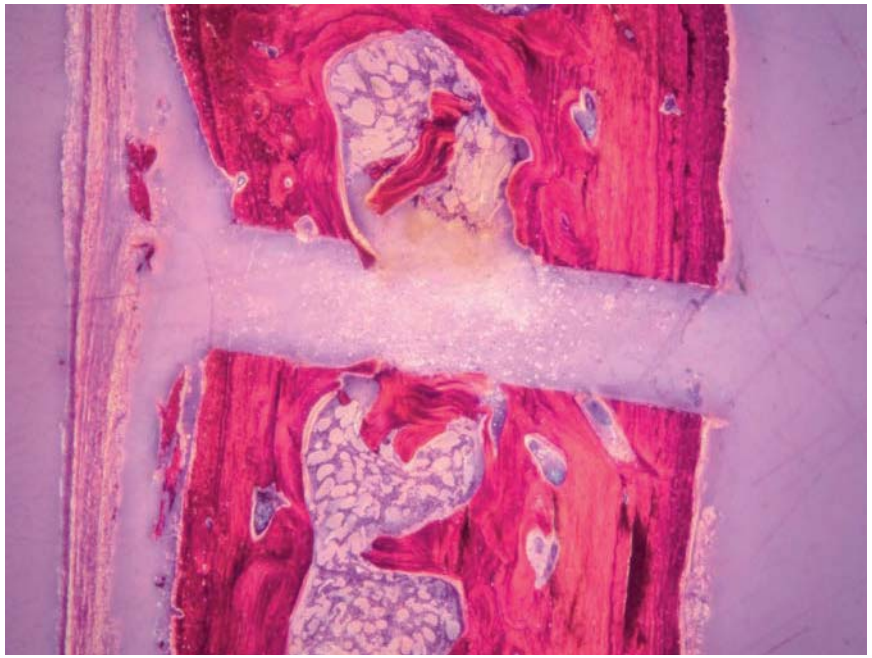
Bone bur



Bone saw

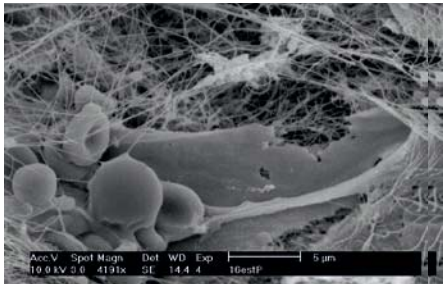
- limited surgical control
- lack of precision

MICROVIBRATIONS



PIEZOSURGERY®

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



HISTOLOGICAL RESULTS

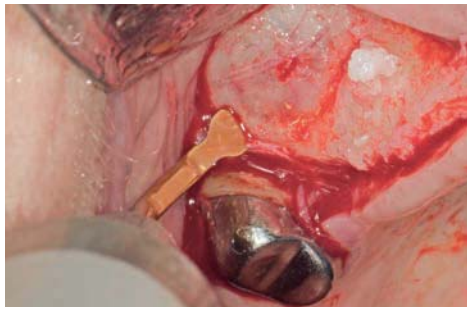
Comparative studies have demonstrated both the clinical and histological advantages of the PIEZOSURGERY® device.

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

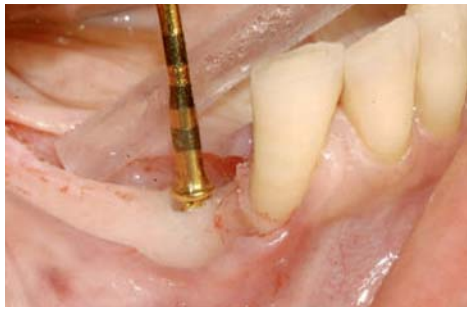
Clinical benefits of PIEZOSURGERY® technology

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)

REFERENCES

- Kühl S, Kirmeier R, Platzer S, Bianco N, Jakse N, Payer M. **Transcrestal maxillary sinus augmentation: Summers' versus a piezoelectric technique – an experimental cadaver study.** Clin. Oral Impl. Res. 2015-02-16 online; DOI: 10.1111/clr.12546.
- Baldi D, Menini M, Pera F, Ravera G, Pera P. **Sinus floor elevation using osteotomes or piezoelectric surgery.** Int J Oral Maxillofac Surg. 2011 May;40(5):497-503.
- Wallace SS , Tarnow DP, Froum SJ, Cho SC , Zadeh HH , Stoupel J, Del Fabbro M, Testori T. **Maxillary sinus elevation by lateral window approach: evolution of technology and technique.** J Evid Based Dent Pract. 2012 Sep;12(3 Suppl):161-71.
- 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
- 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

REFERENCES

- 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. **Ultrasonic implant site preparation using piezosurgery: a multicenter case series study analyzing 3,579 implants with a 1- to 3-year follow-up.** Int J Periodontics Restorative Dent. 2014 Jan-Feb; 34(1):11-18.
- Preti G, Martinasso G, Peirone B, Navone R, Manzella C, Muzio G, Russo C, Canuto RA, Schierano G. **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.** J Periodontol. 2007; 78(4):716-722
- Stacchi C, Vercellotti T, Torelli L, Furlan F, Di Lenarda R. **Changes in Implant Stability Using Different Site Preparation Techniques: Twist Drills versus Piezosurgery. A Single-Blinded, Randomized, Controlled Clinical Trial.** Clin Implant Dent Relat Res. 2013; 15(2):188-97
- Geha H, Gleizal A, Nimeskern N, Beziat JL. **Sensitivity of the Inferior Lip and Chin following Mandibular Bilateral Sagittal Split Osteotomy Using PIEZOSURGERY®.** Plast Reconstr Surg. 2006; 118(7):1598-1607
- Stacchi C, Costantinides F, Biasotto M, Di Lenarda R. **Relocation of a malpositioned maxillary implant with piezoelectric osteotomies: a case report.** Int J Periodontics Restorative Dent. 2008 Oct;28(5):489-95.

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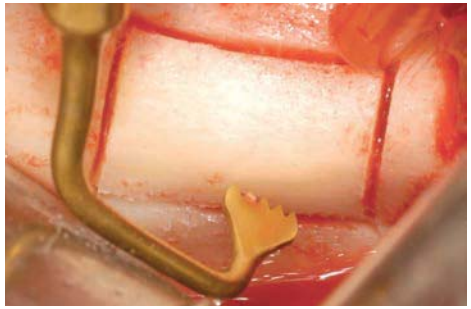
Whether it is about sinus lift or implant site preparation, about extraction or bone block grafting – one of the most important features you should demand from your operating device is safety.

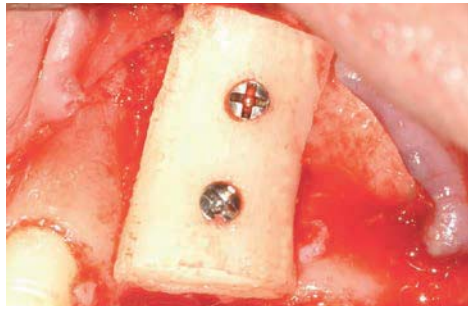
Its major strength is minimizing the risk of cutting soft tissue. These structures are not sensitive to the frequencies used by the PIEZOSURGERY® technology.

EXTRACTION/EXPLANTATION

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

BONE BLOCK GRAFTING





- maximum 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

REFERENCES

- 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
- 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.
- Marini E, Cisterna V, Messina AM. **The removal of a malpositioned implant in the anterior mandible using piezosurgery.** Oral Surg Oral Med Oral Pathol Oral Radiol. 2013 May;115(5):e1-5.
- 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.
- Sortino F, Pedullà 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.

REFERENCES

- Mouraret S, Houschyar KS, Hunter DJ, Smith AA, Jew OS, Girod S, Helms JA. **Cell viability after osteotomy and bone harvesting: comparison of piezoelectric surgery and conventional bur.** Int J Oral Maxillofac Surg. 2014 Aug; 43(8):966-71.
- Majewski P. **Piezoelectric surgery in autogenous bone block grafts.** Int J Periodontics Restorative Dent. 2014 May-Jun; 34(3):355-63.
- Gellrich NC , Held U, Schoen R, Pailing T, Schramm A, Bormann KH. **Alveolar zygomatic buttress: A new donor site for limited preimplant augmentation procedures.** J Oral Maxillofac Surg. 2007 Feb;65(2):275-80.
- Sivolella S, Berengo M, Scarin M, Mella F. Martinelli F. **Autogenous particulate bone collected with a piezo-electric surgical device and bone trap: a microbiological and histomorphometric study.** Arch Oral Biol. 2006; 51(10):883-891
- Boioli LT, Etrillard P, Vercellotti T, Tecucianu JF. **Piézochirurgie et aménagement osseux préimplantaire. Greffes par apposition de blocs d'os autogène avec prélèvement ramique.** Implant. 2005; 11(4):261-274
- 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

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 maximum of power and achieves perfect cutting efficacy in every situation – for surgeries which are time-efficient, secure and successful.

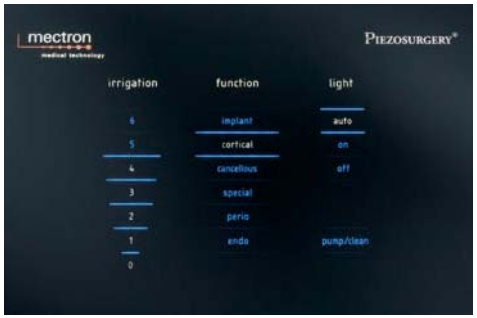
EXPERIENCE

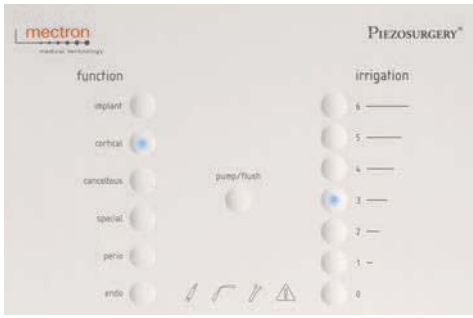
PIEZOSURGERY® *touch* and PIEZOSURGERY® *white* are already the fourth and fifth generation of the original PIEZOSURGERY® technique. mectron has been designing and manufacturing PIEZOSURGERY® devices since 2001. This experience, plus the input of surgeons worldwide, has been incorporated into our PIEZOSURGERY®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

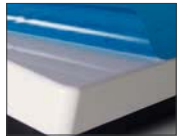
This feedback system is the heart of our PIEZOSURGERY® technology. It automatically detects each insert in a few hundredths of a second, continuously monitors and adjusts optimal insert movement and power levels to consistently provide the best cutting efficiency in every situation – allowing the clinician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

- **easy to adapt handpiece holder**
- **4 positions**
- **sterilizable**


mectron
function
implant
cortical
cancellous
special
perio
endo
surg/fluid
Piezosurgery
irrigation

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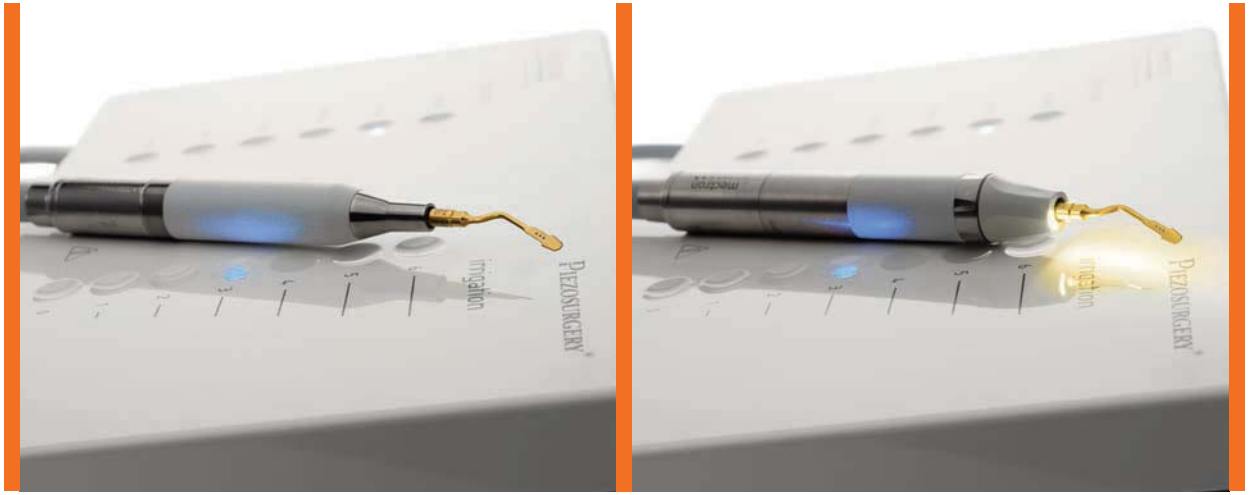
EXPERIENCE PROFITABILITY

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)

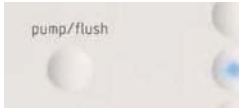
- recognizes deviations from standard functioning automatically
- stops power and liquid in less than 0,1 seconds
- shows cause of the interruption on the keyboard

FLEXIBILITY

- 360° function of the foot control

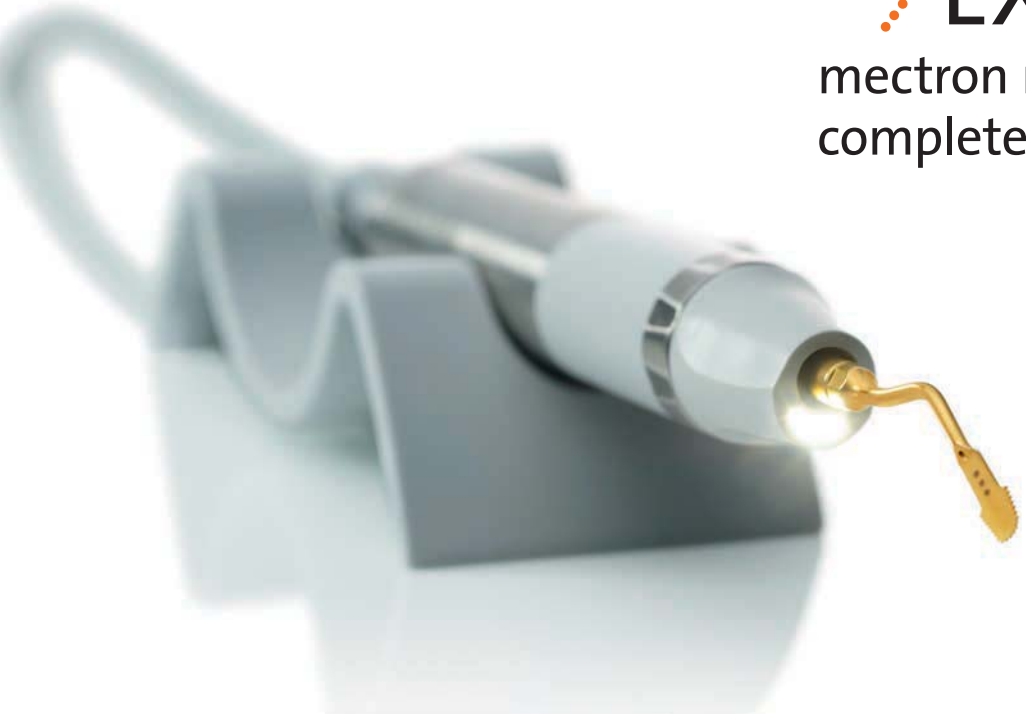
FLUSH FUNCTION

- started by a finger tip
- cleaning 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
- cleaning 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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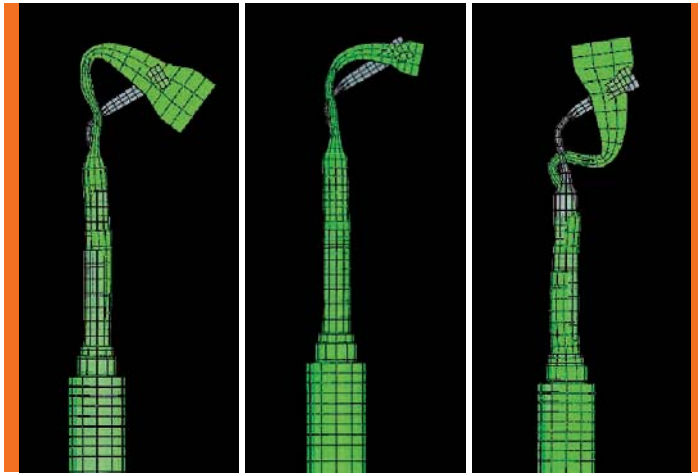
PIEZOSURGERY

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 90 high quality insert designs are now available to surgeons world-wide – and new inserts are released every year.

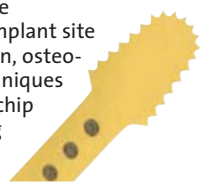


INSERT DEVELOPMENT

- **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

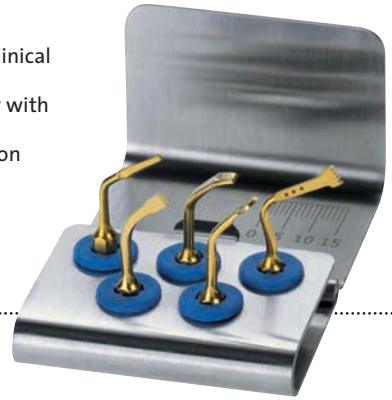
- diamond-coated surfaces for precise and controlled osteoplasty on bone structures
- preparation of difficult and delicate structures (ex: sinus augmentation, nerve lateralization)
- preparation of the final bone shape

BLUNT INSERTS

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

INSERT KITS

- set of inserts for clinical application
- stainless steel tray with depth markings
- ideal for sterilization and storage



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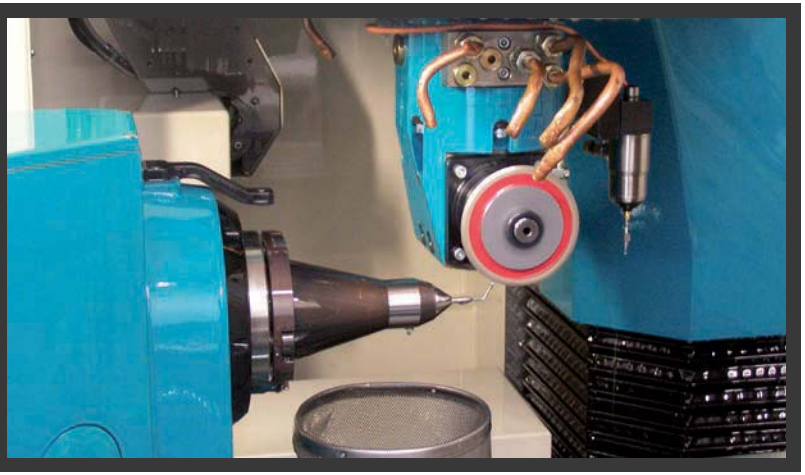
EXPERIENCE QUALITY

mectron guarantees the highest quality standards for every insert

PRECISION

A CNC controlled 5-dimensional sharpening machine cuts with an accuracy of up to 0.1 µm. 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.

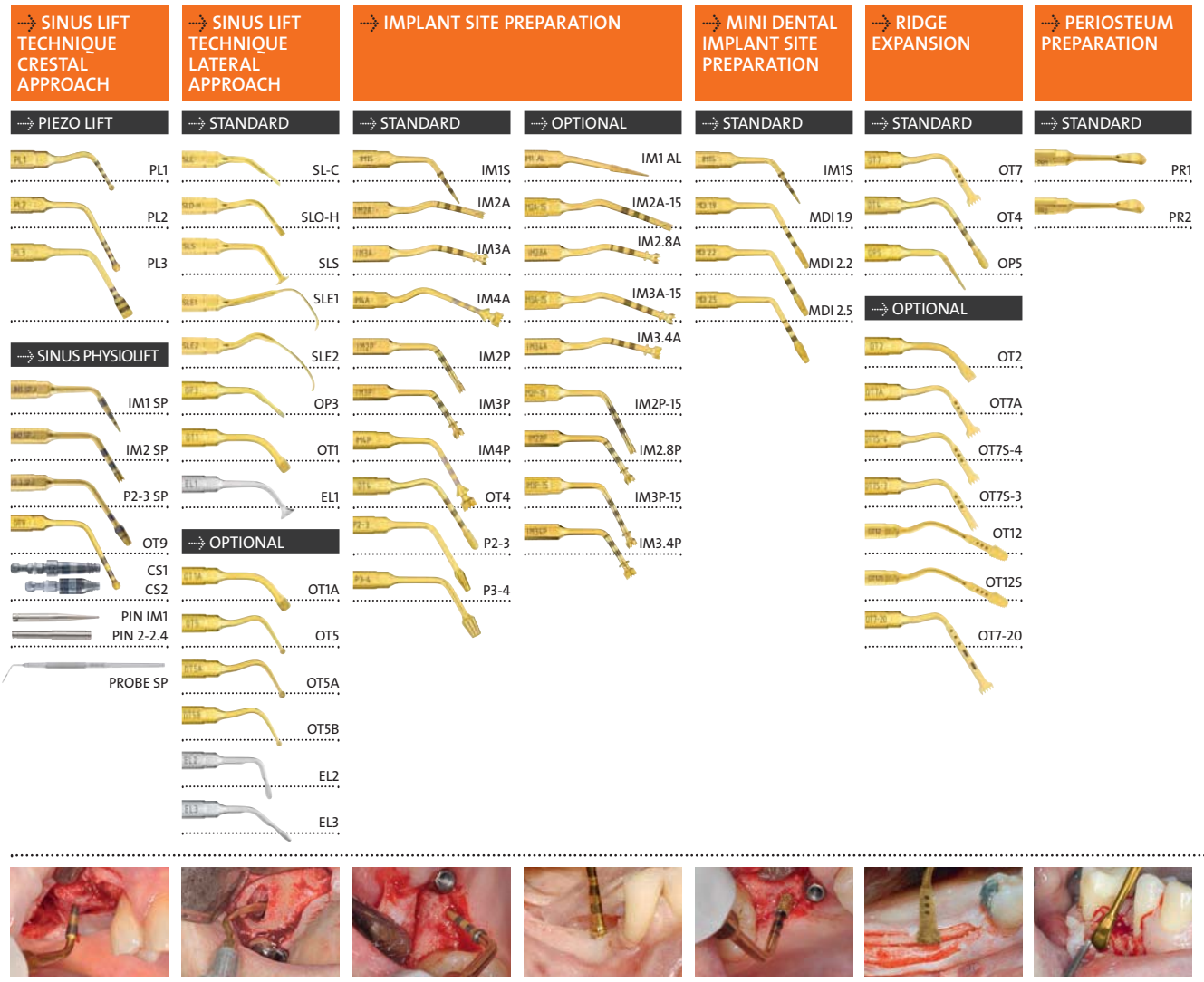
QUALITY CHECK

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 90 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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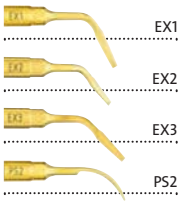
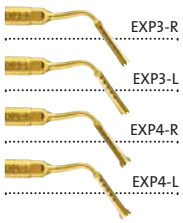
EXTRACTIONS

STANDARD



EXPLANTATION

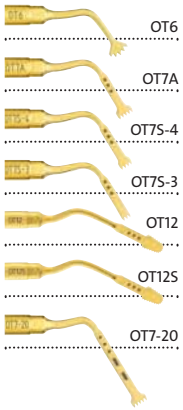
STANDARD



BONE BLOCK GRAFTING

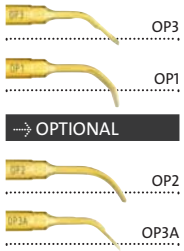
STANDARD

OPTIONAL



BONE CHIP GRAFTING/ BONE MODELING

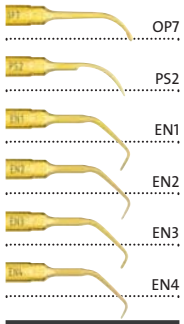
STANDARD



OPTIONAL

ENDODONTICS

STANDARD



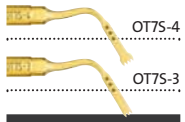
OPTIONAL

OSTEOTOMY CLOSE TO NERVES

STANDARD

CORTICOTOMY TECHNIQUE

STANDARD



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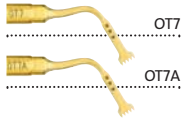
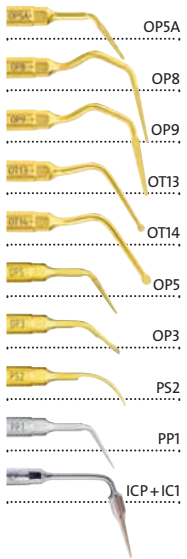
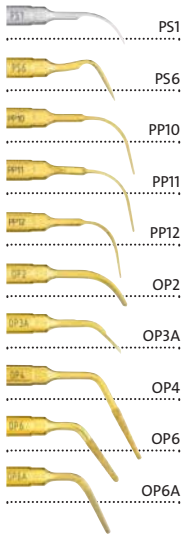


PERIODONTAL SURGERY

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

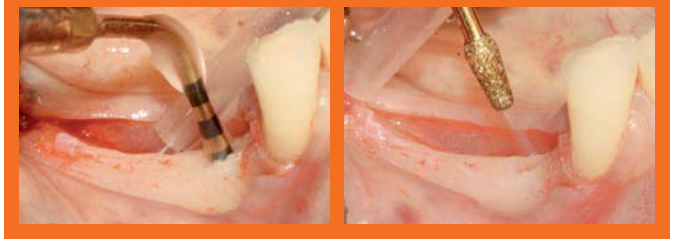
EXPERIENCE ULTRA-OSSEOINTEGRATION

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

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).

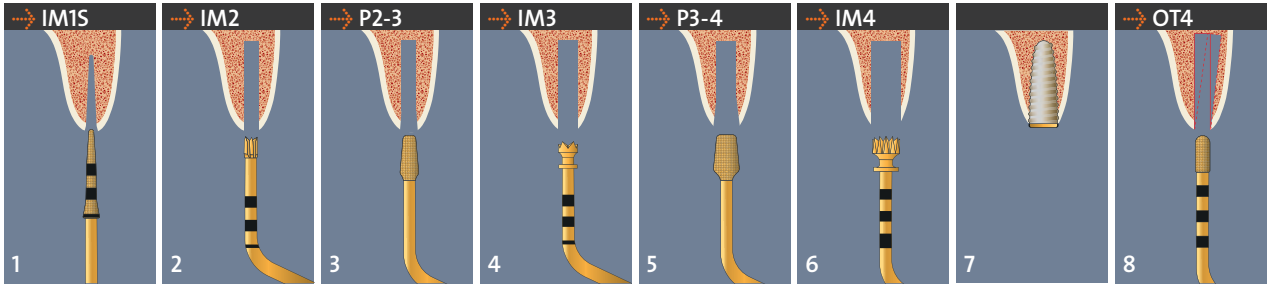

Cytokines and Growth Factors Involved in the Osseointegration of Oral Titanium Implants Positioned Using Piezoelectric Bone Surgery Versus a Drill Technique: A Pilot Study in Minipigs

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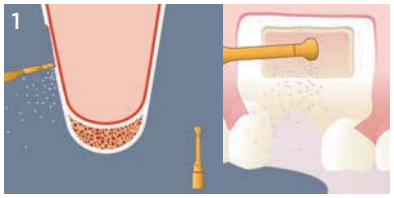
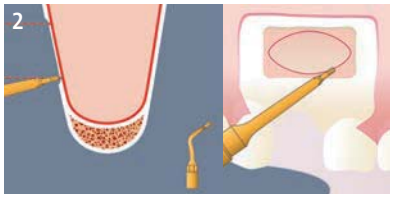
EXPERIENCE EFFICIENCY

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

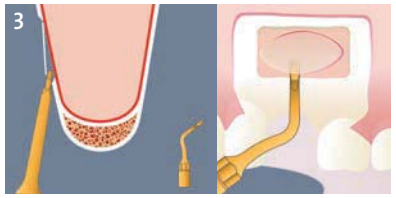
EROSION TECHNIQUE: THE MAXIMUM, EVIDENCE-BASED SAFETY



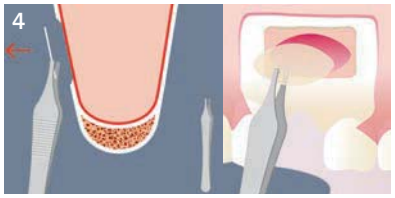
1 Insert SLC – osteoplasty of the sinus vestibular wall



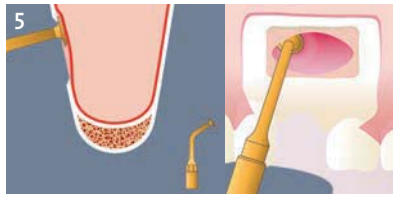
2 Insert SLO-H – bone window osteotomy



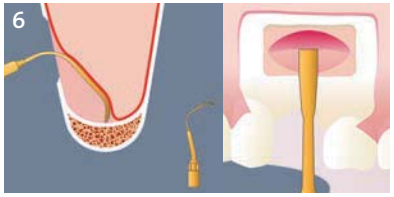
3 Insert SLO-H – bone window detachment



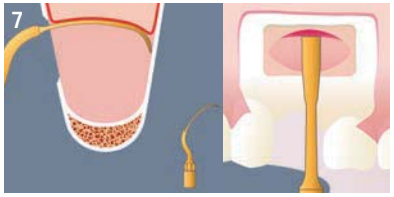
4 Surgical forceps – bone window removal



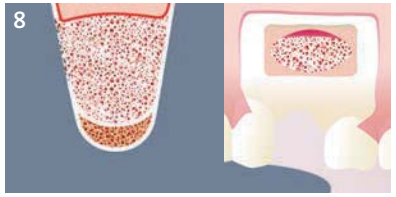
5 Insert SLS – sinus membrane separation



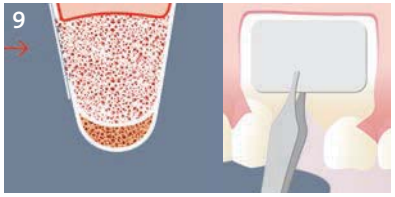
6 Insert SLE1 – sinus membrane elevation from the sinus floor



7 Insert SLE2 – sinus membrane elevation from the palatal wall

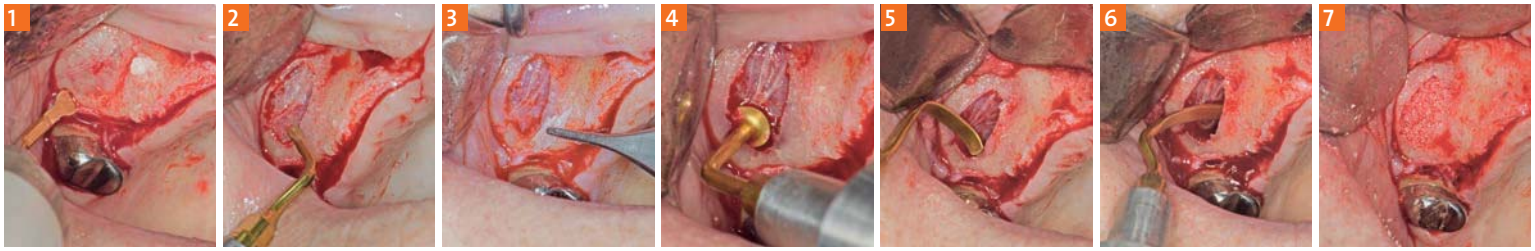


8 Bone grafting procedure



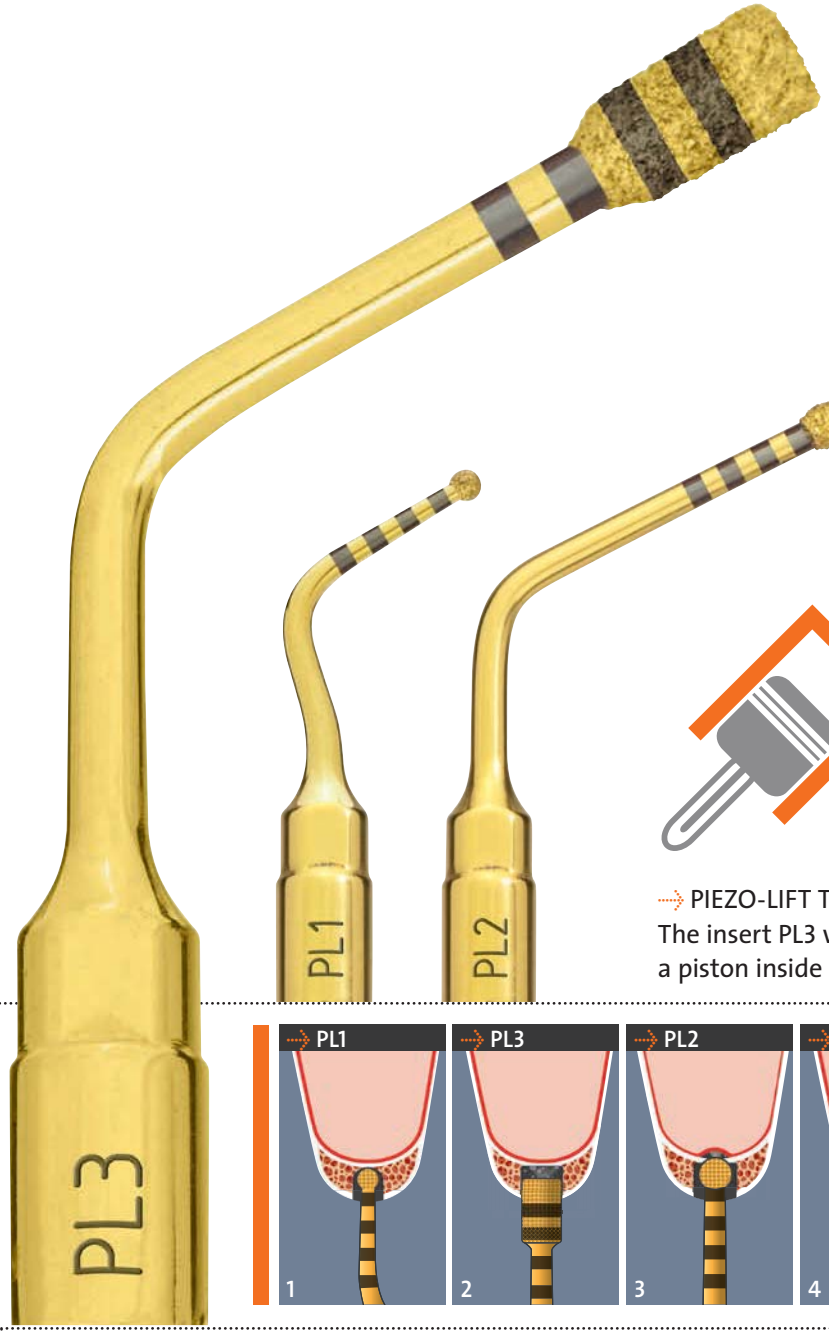
9 Membrane placement

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

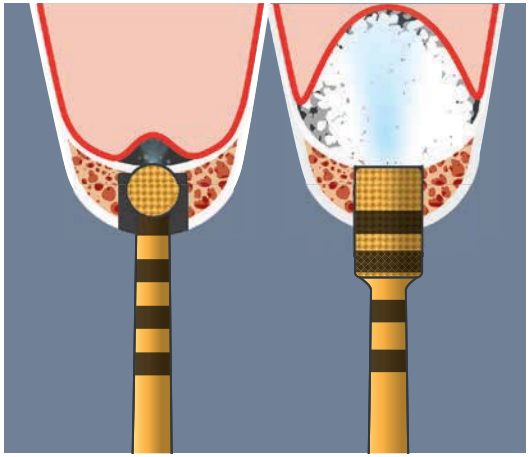


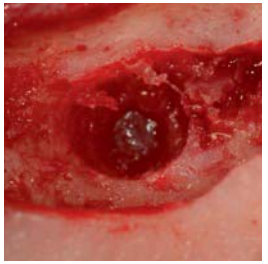
EXPERIENCE SAFETY

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

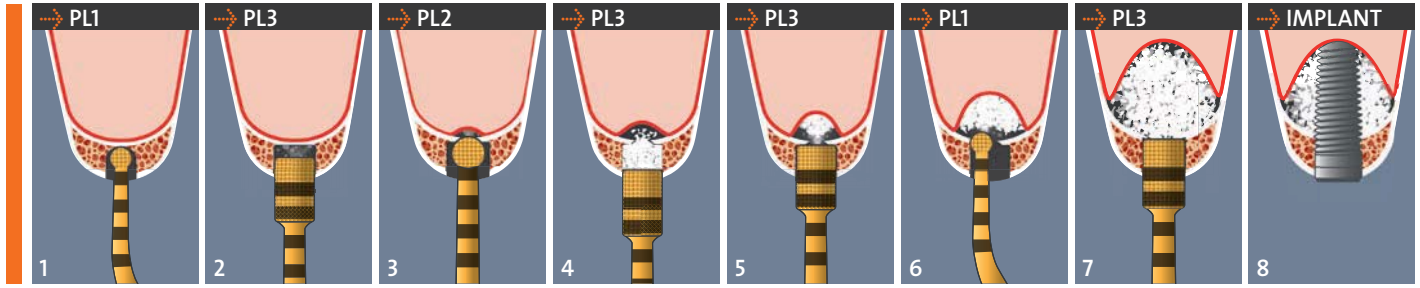
PIEZO-LIFT TECHNIQUE
The insert PL3 works like a piston inside a cylinder

New clinical protocol according to Tomaso Vercellotti





Bony ring of the sinus floor for maximal surgical security



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

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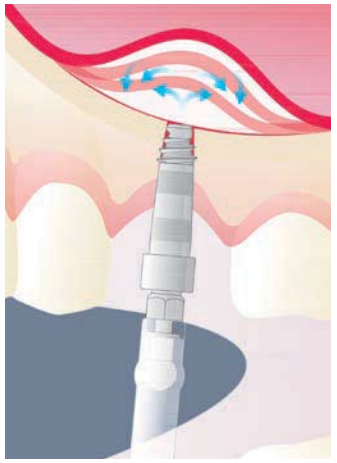
EXPERIENCE CONTROL

SINUS PHYSIOLIFT® II simplifies the crestal approach to sinus lift and give you perfect control during

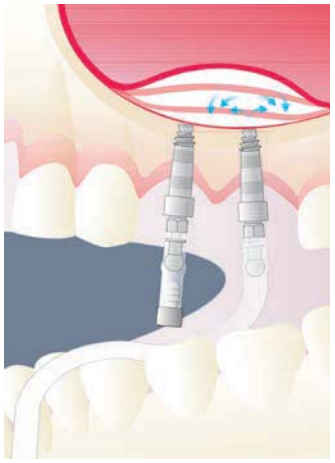
The SINUS PHYSIOLIFT® II controls the pressure in the sinus cavity!

- Elevation of the sinus membrane with micrometric precision by means of hydrodynamic pressure
- Watertight sinus elevators CS1 or CS2 for hydrodynamic sinus lift
- Atraumatic technique not requiring the use of hammer and osteotome
- Implant site preparation using PIEZOSURGERY® – the insert P2-3 SP allows to remove the sinus basal cortex with minimal risk of penetrating into sinus cavity due to its conical shape
- Multiple implant placement can be performed
- A flapless procedure can be performed in some cases

SINGLE IMPLANT SINUS LIFT



MULTIPLE IMPLANT SINUS LIFT



CRESTAL SINUS ELEVATOR CS1 AND CS2

Hollow screw elevator will be placed with a micromotor or a ratchet.

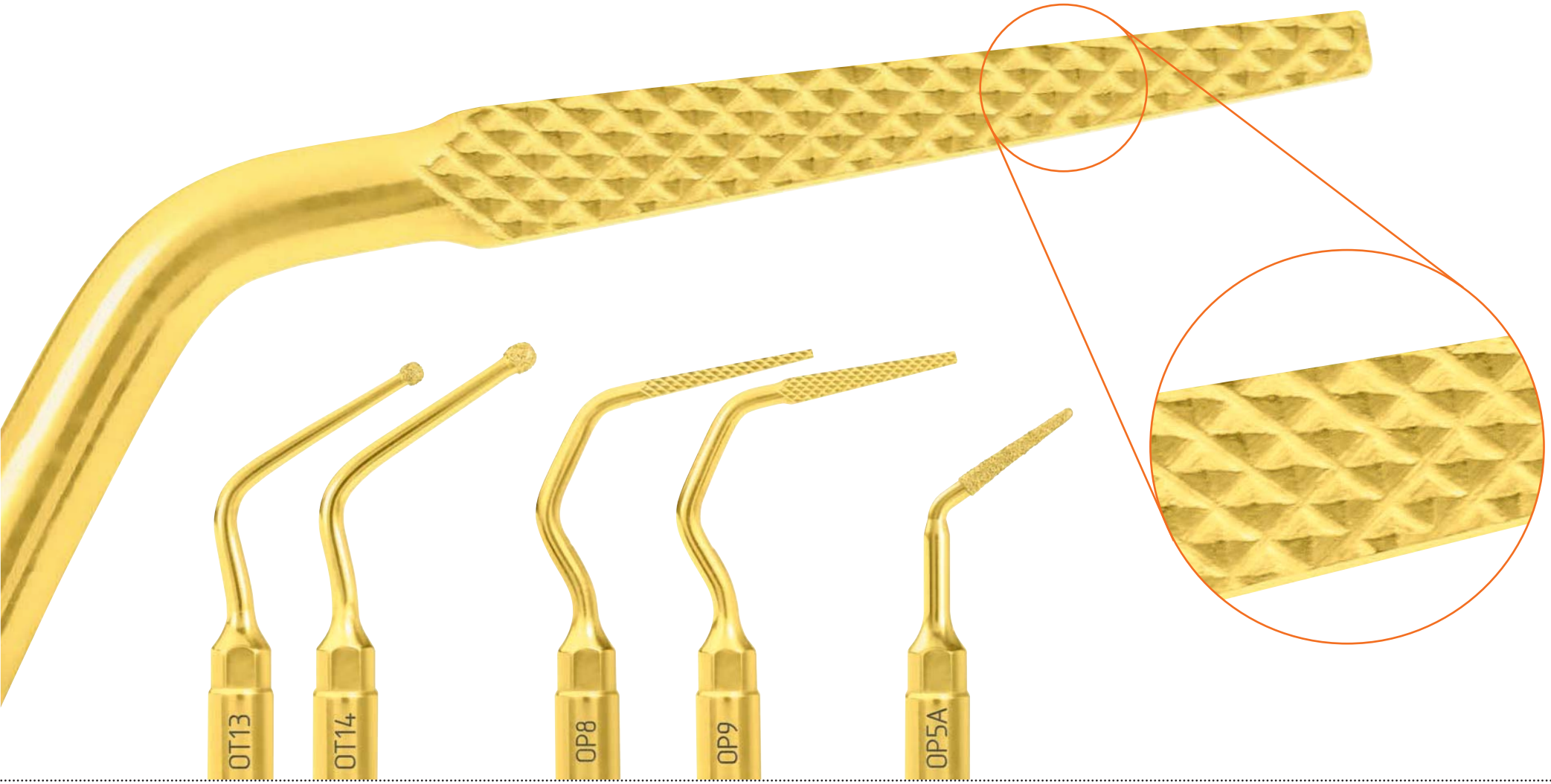
before sinus lift

after sinus lift

CLINICAL OUTCOME

The radiographic controls showed that the graft material was distributed evenly around the implants, suggesting the integrity of the membrane.*

* Sentineri R. **The Sinus Physiolift technique – Crestal sinus lift using screw elevators and hydrodynamic pressure.** EDI-Journal. 2010;3:72-77



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.

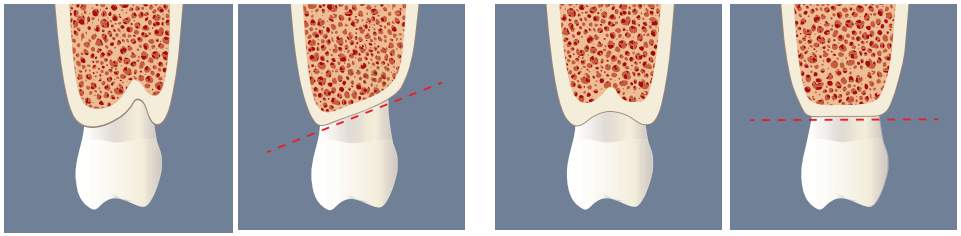
EXPERIENCE ACCESSIBILITY

mectron optimizes access for osseous resective surgery

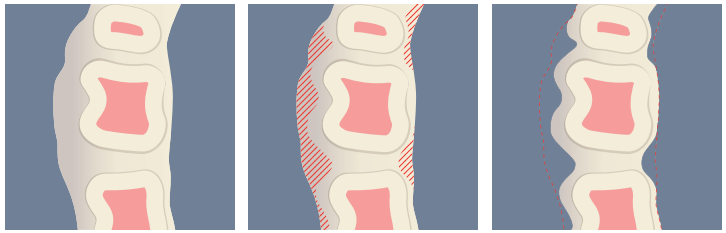
In collaboration with Professor Leonardo Trombelli and the University of Ferrara, Italy, mectron developed 5 inserts for osteoctomy and osteoplasty procedures in periodontal resective surgery.

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

PIEZOSURGERY® – HISTORY OF A SUCCESS

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.

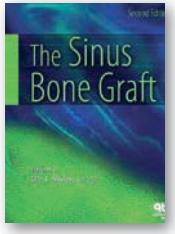
Stübinger S, Goethe JW. **Bone Healing After PIEZOSURGERY® and its influence on Clinical Applications.** Journal of Oral and Maxillofacial Surgery 2007, Sep;65(9):39.e7-39.e8.

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

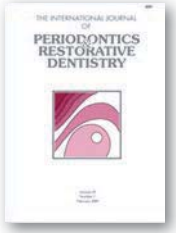
SIMPLICITY



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%.

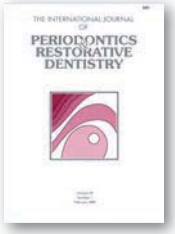
Wallace SS , Mazor Z, Froum SJ, Cho SC , Tarnow DP. **Schneiderian membrane perforation rate during sinus elevation using piezosurgery: clinical results of 100 consecutive cases.** Int J Periodontics Restorative Dent. 2007; 27(5):413-419

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 local anesthesia.

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

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®

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EXPERIENCE
EXPERIENCE

mectron has been defining the future of bone surgery for the past 20 years, and it's evidence-based

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.

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

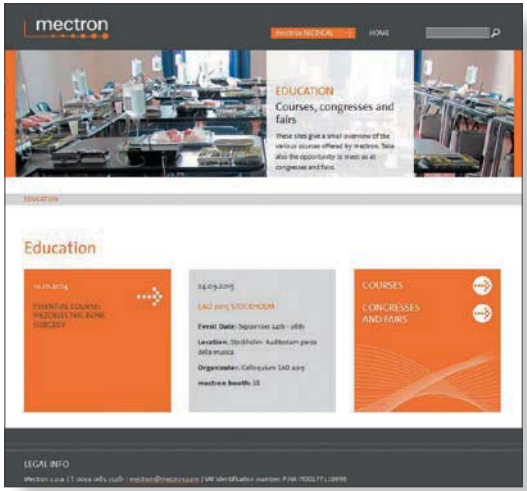
2017
- new LATERAL SINUS KIT – revisited technique for lateral sinus lift

* 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.

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.



PIEZOSURGERY.MECTRON.COM

Visit our website at piezosurgery.mectron.com and discover the latest surgical videos and clinical animations allowing an easy orientation about the possibilities PIEZOSURGERY® is offering.

WWW.PIEZO-NET.ORG

PIEZOSURGERY® Network is an international community of mectron PIEZOSURGERY® users interested to share their experiences and knowledge. The website presents clinical cases and informs about the latest clinical and technical developements.

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.

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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 LED-polymerization lights and ultrasonic scalers. mectron is your strong and reliable partner for almost every dental challenge – experience mectron.

LED-POLYMERISATION

ULTRASONIC SCALER

AIR-POLISHER

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