A MESSAGE FROM OUR CEO

Giuseppe Vercellotti, PhD
President & CEO

As I take the helm of Piezosurgery Incorporated, I am humbled by what has been accomplished in the 17 years since my father, Dr. Tomaso Vercellotti, and mectron's engineers - Domenico Vercellotti and Fernando Bianchetti - invented Piezosurgery®.

Over the years, **more than 2000 clinical and scientific papers** have been published on Piezosurgery®, we have been **awarded over 35 U.S. and international patents**, and we have had the privilege of working with thousands of **leading clinicians** worldwide.

I am proud of having witnessed the development of Piezosurgery® from its first inception in my father's practice to becoming a true paradigm shift in bone surgery and I look forward to building upon our history of success to further strengthen our position as a **market leader**.

My commitment as Piezosurgery Incorporated's Chief Executive is to continue offering **new and improved clinical solutions** to dental professionals in the United States and Canada, and to forge **strong long-term partnerships** with both existing users and new adopters of our technology to ensure we maximize return on investment for each and every customer.

I am confident that, when you will take the time to learn more about Piezosurgery® and our company, you will realize how our technology and our service can benefit your daily practice. We are committed to assisting you in delivering consistently better patient outcomes for years to come.

Our Product Specialists, Customer Service professionals and I hope you will join the growing Piezosurgery® family and look forward to assisting you accomplish new and greater professional goals.

Giuseppe Vercellotti, PhD
President & CEO

PIEZOSURGERY® INCORPORATED

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PIEZOSURGERY® *by* mectron

PIEZOSURGERY® INCORPORATED

THE NEW STANDARD OF CARE.

PIEZOSURGERY® - consistently improving surgical outcomes.

PIEZOSURGERY® has caused a paradigm shift in osseous surgery and is becoming the new standard of care in oral and periodontal surgery.

We invite you to learn about our technology, which gives you maximum intra-operatory precision and control – and minimal stress for you and your patients. Once you learn more, we know PIEZOSURGERY® will become an intrical element in your daily practice, as it has for thousands of leading clinicians worldwide.

MAXIMIZE SURGICAL PRECISION

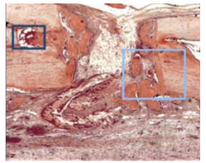
Maximum surgical precision and intra-operative tactile sensation for minimally invasive surgeries thanks to micrometric cuts.

CUT BONE, NOT SOFT TISSUES

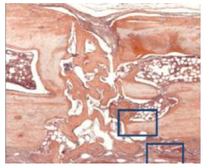
Our patented ultrasonic modulated frequency is designed to cut bone and not soft tissues. This provides maximum safety for surgeons and patients.

MAXIMIZE INTRA-OPERATORY VISIBILITY

Maximum intra-operative visibility thanks to cavitation effect inducing temporary hemostasis.



Bone bur



PIEZOSURGERY®

PIEZOSURGERY® uniquely promotes bone healing while cutting.

Several clinical and histological studies have shown that PIEZOSURGERY® is superior to saws and burs not only in terms of intra-operative precision and safety, but also in regard to tissue healing. When a surgeon uses PIEZOSURGERY® instead of conventional instruments, there is a significant acceleration in the healing response: inflammation is more controlled, there is a significant early increase in bone morphogenetic proteins (BMPs) levels, and faster new bone formation[1].

Because PIEZOSURGERY® respects soft tissues and reduces intra-operative bleeding, the overall iatrogenic trauma is reduced, with immediate, tangible patient benefits. Patients don't loose as much blood, don't experience as much post-operative swelling, and overall report reduced discomfort associated with the surgical procedure.

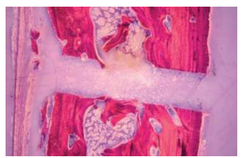
WHY PIEZOSURGERY®?

Saws and burs limit your intra-operative control and may cause damage to bone and soft tissues. Additionally, the friction caused by their movement can lead to tissue overheating and necrosis.

PIEZOSURGERY® allows surgeons to have maximum control through its microvibrations, thus achieving extreme precision and safety.

Bone bur

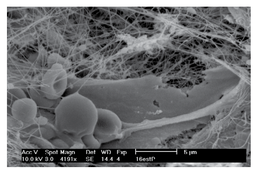
Bone saw



PIEZOSURGERY®

IMPROVE BONE HEALING WITH THE USE OF PIEZOSURGERY®[1]

- reduction in the number of inflammatory cells and cytokines at the surgical site.
- promotion of BMP release and neo-osteogenesis.
- faster healing and bone remodeling.



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

IMPROVED PATIENT OUTCOMES

- fewer surgical complications compared to traditional surgical instruments.
- less swelling after surgery with PIEZOSURGERY®.
- faster and better osseointegration after implant site preparation.
- faster and less traumatic post-operative recovery.

[1] Vercellotti et al. Int J Periodontics Restorative Dent 2005;25:543–549.
Preti et al. J Periodontol 2007;78:716-722.

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PIEZOSURGERY® INCORPORATED

IT'S ALL ABOUT THE TECHNOLOGY.

PIEZOSURGERY® has been revolutionizing numerous surgical procedures.

Since we first developed PIEZOSURGERY®, our devices have been revolutionizing osseous surgery in a variety of clinical specialties. Our tecnology's many applications in dentistry, implantology, and oral surgery range from extractions to orthognathic procedures. In all clinical applications, PIEZOSURGERY® delivers great cutting efficiency, maximum intraoperatory control and visibility, and utmost safety when working in proximity to delicate anatomical structures such as nerves, membranes, and blood vessels.

Perform surgeries you did not think possible.

PIEZOSURGERY® has caused a paradigm shift in dentistry and oral implantology. This technology, simplifies numerous surgical procedures and even allows clinicians to perform procedures that were simply not possible using conventional instruments.

ORAL SURGERY


Extraction for immediate implant placement


Ankylotic tooth extraction


Dysgnathic surgery


Impacted third molar extraction


Impacted tooth extraction

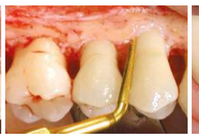

Distraction osteogenesis


Cyst removal


Implant removal

PERIODONTAL SURGERY


Root planing

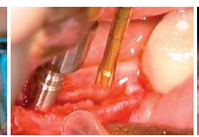

Root debridement

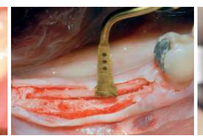

Crown lengthening


Osteoplasty

IMPLANTOLOGY


Lateral sinus lift

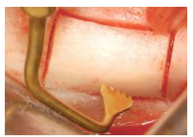

Implant site preparation


Ridge expansion


Nerve lateralization


Crestal sinus lift


Bone chips harvesting


Bone block harvesting

ENDODONTIC SURGERY


Peri-apical access


Retrograde preparation of the root canal

ORTHODONTIC SURGERY


Corticotomy


Impacted tooth exposure

PIEZOSURGERY® by mectron

PIEZOSURGERY® INCORPORATED

PIEZOSURGERY® TOUCH.

The 4th generation of the original, unrivaled, evidence-based technology.

PIEZOSURGERY® *touch* responds to the need of simplicity and efficiency that the most demanding surgeons expect from the latest technology.

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 screen, 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.

PIEZOSURGERY® *touch* allows you to focus 100% on surgery.

A touch of your finger is all you need to select cutting and irrigation settings. No further insert specific adjustments are required – the fine tuning for each insert and indication is performed automatically by PIEZOSURGERY® *touch*'s electronic feedback-system.

The exclusive feedback system automatically 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.

Thanks to its intelligent electronic feedback system, the original PIEZOSURGERY® technology provides maximum power and perfect cutting efficacy in every situation without ever compromising soft tissue safety – for surgeries which are time-efficient, safe, and successful.

SIMPLE MAINTENANCE

- sterilizable, all-in-one LED-handpiece and cord system
- sterilizable, internal irrigation line, with no disposable components
- innovative handpiece cord connector ensuring easy plug-in

PRECISION IRRIGATION

- compact, quiet built-in peristaltic pump
- reusable peristaltic pump tubing
- sterilizable infusion set provided with each handpiece

INFECTION CONTROL

Our exclusive glass display can be protected with dedicated sterile transparent foils. The foils protect the device and ensure sterility, surgery after surgery.

FEEDBACK-SYSTEM

- constant and optimal tuning of insert movement
- automatically detects if more or less power is necessary and adjusts it accordingly

US PATENTS 8,109,931, 808,295, 8,002,783, 6,695,847, D539,909, D539,908, D509,899, D509,588.

PIEZOSURGERY® by mectron

PIEZOSURGERY® INCORPORATED

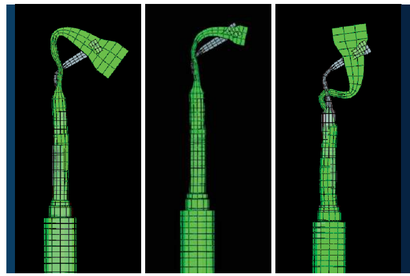
ONGOING CUTTING EDGE INNOVATION.

Developing the new standard of care would be nothing without an ongoing commitment to having the best clinical solutions.

Our ongoing commitment to empowering clinicians to deliver consistently better patient care underlies the continuous development of new insert designs.

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.

Thanks to clinical experience and our cutting-edge technological know-how, over 70 PIEZOSURGERY® insert designs are now available to surgeons worldwide – and new inserts are released every year.



INSERT DEVELOPMENT

1. inserts are developed in close collaboration with prestigious universities.
2. finite elements analyses and computer simulations are carried out for all inserts, ensuring safety and durability.
3. extensive laboratory and clinical testing prior to release on the market.

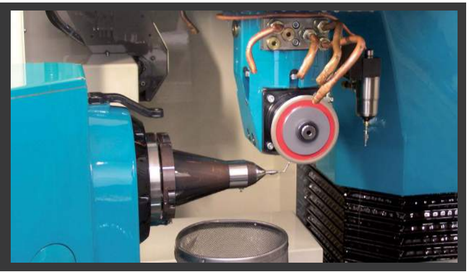
PIEZOSURGERY® INSERTS: BUILT TO LAST.

PIEZOSURGERY®'s inserts are individually-crafted, sophisticated surgical instruments.

PRECISION

PIEZOSURGERY® inserts are individually crafted using a CNC controlled 5-dimensional sharpening machine, which 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 an 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.

CUT EFFICIENTLY

- effective and safe SHARP inserts
- fine and uniform cutting
- used for osteotomy, osteoplasty and implant site preparation

CUT SAFELY CLOSE TO NERVES

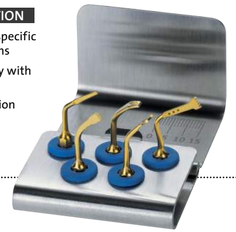
- diamond-coated SMOOTHING inserts for precise and controlled operation on bone structures
- safe osteotomy close to delicate anatomical structures such as Schneiderian membrane and nerves

CLINICAL VERSATILITY

- BLUNT inserts for soft tissue preparation
- root planing in periodontology

EASY ORGANIZATION

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



SURGICAL OPTIONS

Depending on their clinical application, inserts are coated with specially selected diamonds.

Different diamond sizes ensure optimal surgical performance in each clinical application.

LONG-LASTING

A coating of titanium nitride, applied to all cutting inserts, increases their surface hardness, thus reducing corrosion and increasing an insert's working life.

QUALITY YOU CAN COUNT ON

Lot numbers are laser etched on each insert, ensuring traceability pursuant to the highest quality control standards.

INDIVIDUAL QUALITY INSPECTION

Each insert is visually inspected by a Quality Control representative to guarantee that surgeons worldwide will receive only the best performing instruments.

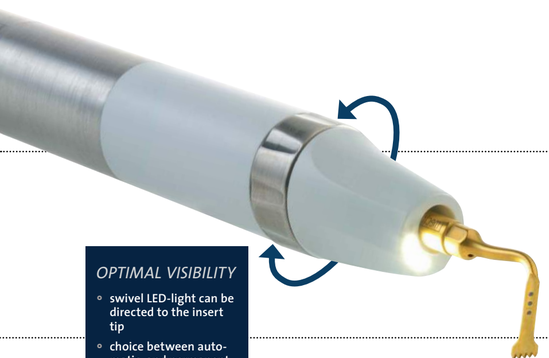
PIEZOSURGERY® by mectron

PIEZOSURGERY® INCORPORATED

SURGICAL CHOICES.

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

Our technology is designed to empower surgeons to perform more and better surgeries. PIEZOSURGERY® has over 70 inserts specifically designed for use in many applications in oral surgery and implantology, from sinus lift to ridge splitting, extractions and even orthognathic procedures.



OPTIMAL VISIBILITY

- swivel LED-light can be directed to the insert tip
- choice between automatic, and permanent light or switched off

SINUS LIFT TECHNIQUE CRESTAL APPROACH

STANDARD

IM1 SP
IM2P
OT9
CS1
PIN IM1
PIN 2-2.4

SINUS LIFT TECHNIQUE LATERAL APPROACH

STANDARD

OP3
OT1
EL1

OPTIONAL

OT1A
OT5
OT5A
OT5B
EL2
EL3

RIDGE EXPANSION

STANDARD

OT7
OT4
OP5

OPTIONAL

OT2
OT7A
OT7S-4
OT7S-3
OT7-20

EXTRACTION

STANDARD

EX1
EX2
EX3
PS2

BONE BLOCK GRAFTING

STANDARD

OT7
OP5
OT8L
OT8R

OPTIONAL

OT6
OT7A
OT7S-4
OT7S-3
OT7-20

PARTICULATE BONE GRAFTING/ BONE MODELING

STANDARD

OP3
OP1

OPTIONAL

OP2
OP3A

IMPLANT SITE PREPARATION

STANDARD

IM1S
IM2A
IM3A
IM4A
IM2P
IM3P
IM4P
OT4
P2-3
P3-4

OPTIONAL

IM1 AL
IM2A-15
IM3A-15
IM2P-15
IM3P-15

MINI DENTAL IMPLANT SITE PREPARATION

STANDARD

IM1S
MDI 1.9
MDI 2.2
MDI 2.5

DENTAL IMPLANT REMOVAL (EXPLANTATION)

STANDARD

EXP3-R
EXP3-L
EXP4-R
EXP4-L

APICOECTOMY

STANDARD

OP7
PS2
EN1
EN2
EN3
EN4

OPTIONAL

EN5R
EN5L
EN6R
EN6L
OP3

OSTEOTOMY CLOSE TO NERVES

STANDARD

OT1
OT5

CORTICOTOMY TECHNIQUE

STANDARD

OT2
OT7
OT7A
OT7S-4
OT7S-3

PERIODONTAL SURGERY

STANDARD

PS2
OP5
OP3
PP1

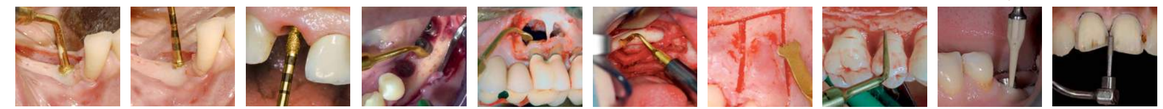
OPTIONAL

PS1
PS6
PP10
PP11
PP12
OP2
OP3A
OP4
OP6
OP6A
ICP + IC1

CROWN PREPARATION

STANDARD

DB2
TA12D60
TA14D60
TA16D60
TA12D90
TA14D90
TA16D90
TA14D120
TA16D120



PIEZOSURGERY® by mectron

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 due to the reduction of inflammatory cells and increased neo-osteogenesis compared to sites prepared with conventional drills.
- high intraoperatory control: our patented[1] implantology inserts with double irrigation allow a perfect control of the site preparation.
- implant site preparation with PIEZOSURGERY® allows placement of all dental implants requiring osteotomies of 2, 3 and 4mm.

STEP-BY-STEP IMPLANT SITE PREPARATION TECHNIQUE

1 initial pilot osteotomy
OPTIONAL: verify the pilot osteotomy axis with alignment PIN IM1S
2 pilot osteotomy in anterior or posterior region
OPTIONAL: verify the pilot osteotomy axis with alignment PIN 2-2.4
3 preparation of the cortical basal bone from 2 to 3 mm to ease progressive implant site enlargement
4 enlargement or finalization of the implant site using a 3mm insert with double irrigation for optimum cooling

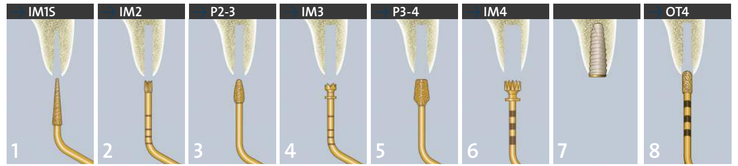
[1]US PATENTS 8,109,931, 808,295, D539,909, D539,908, D509,588.

PIEZOSURGERY® by mectron

IN LITERATURE

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



5 preparation of the cortical basal bone from 3 to 4 mm to ease progressive implant site enlargement
6 finalization of the implant site using a 4 mm insert with double irrigation to avoid overheating
7 implant positioning
8 *OPTIONAL:* correction of the pilot osteotomy axis (differential implant site preparation); OR finalization of the implant site close to the alveolar nerve

The inserts for the implant site preparation are designed to provide best results in maxillary bone.

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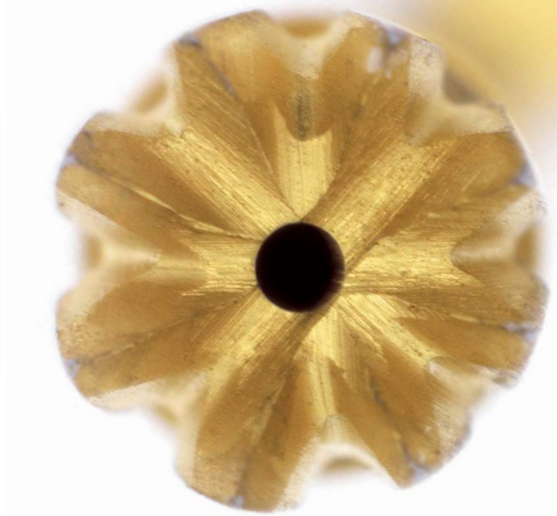


PIEZOSURGERY® INCORPORATED

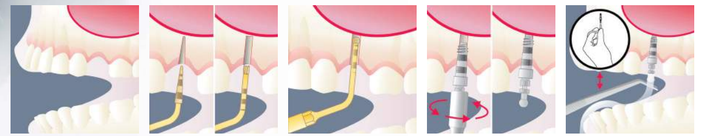
SINUS PHYSIOLIFT®.

PIEZOSURGERY® and SINUS PHYSIOLIFT® simplify the crestal approach to sinus lift.

The new SINUS PHYSIOLIFT® allows you to micrometrically control hydraulic pressure in the sinus cavity!

- sinus membrane elevation with micrometric precision by means of hydrodynamic pressure
- watertight sinus elevator for hydrodynamic sinus lift
- atraumatic technique not requiring the use of mallet and osteotome
- implant site preparation using PIEZOSURGERY® – the sinus basal cortex is removed with minimal risk of perforating the Schneiderian membrane
- multiple implant placements can be performed
- a flapless procedure can be performed in some cases

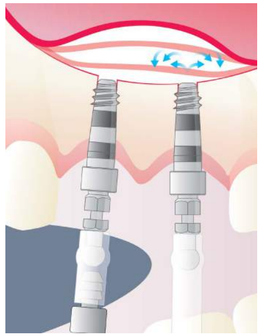
SINGLE IMPLANT SINUS LIFT TECHNIQUE

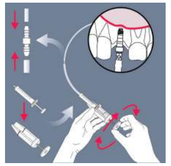


1 Incision
2 Preparation for inserting the elevator
3 Removal of the basal cortex
4 Insertion of the CS1 elevator
5 Attachment of the Physiolifter
6 Elevation of the Schneiderian membrane
7 Placement of grafting material
8 Compacting of graft
9 Implant placement

MULTIPLE IMPLANTS SINUS LIFT TECHNIQUE

This technique, devised for single tooth sinus elevation, can be used also in case of several missing teeth. To this end, multiple sites are prepared following the same technique. When using multiple elevator screws, it is imperative to apply special airtight seals to all but one screws to ensure that the system is not pneumatized during the lift.





MEMBRANE ELEVATION

Following implant site preparation using PIEZOSURGERY®, the CS1 elevator is inserted in the osteotomy. Silicon tubing connected to a syringe containing 3 ml of physiological saline solution is then inserted in the CS1. With the SINUS PHYSIOLIFT® protocol, it is possible to elevate the Schneiderian membrane safely, controlling the pressure of the liquid by means of the Physiolifter.

SINUS PHYSIOLIFT®

before sinus lift — after sinus lift

CLINICAL OUTCOME

Radiographic images of the surgical site following the use of SINUS PHYSIOLIFT® show that the graft is distributed evenly around the implants, suggesting the integrity of the membrane[1]

CRESTAL SINUS ELEVATOR CS1

Hollow screw elevator with a 2.4 diameter at the top and 3.5 diameter close to the shaft. Laser markings in 2 mm increments allow tracking insertion depth. The screw elevator may be placed with a micromotor or a ratchet.

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

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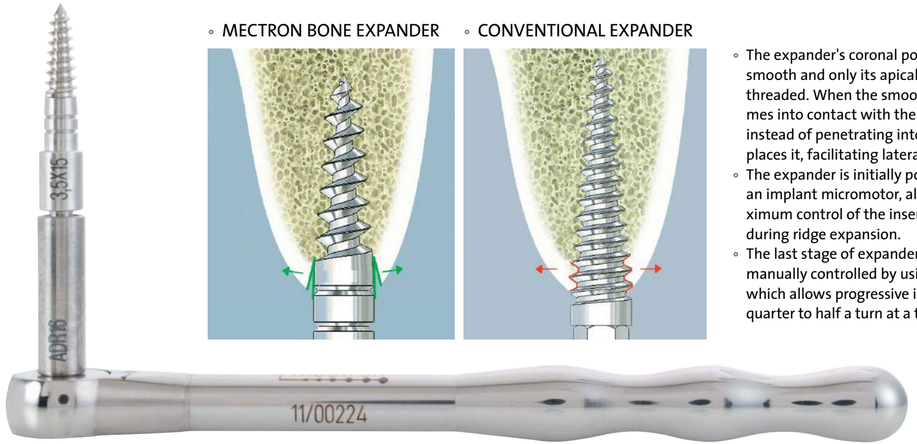


◦ MECTRON BONE EXPANDER ◦ CONVENTIONAL EXPANDER

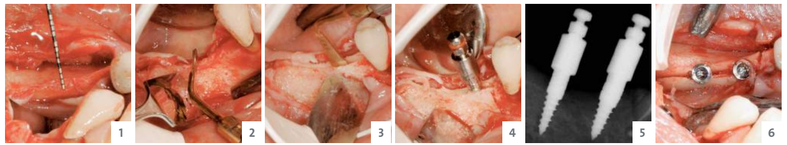
- The expander's coronal portion is smooth and only its apical portion is threaded. When the smooth portion comes into contact with the cortical bone, instead of penetrating into it, it displaces it, facilitating lateral expansion.
- The expander is initially positioned using an implant micromotor, allowing maximum control of the insertion torque during ridge expansion.
- The last stage of expander insertion is manually controlled by using a ratchet, which allows progressive increments of a quarter to half a turn at a time.

BONE EXPANDERS.

Set the stage for implant stability while expanding narrow ridges.

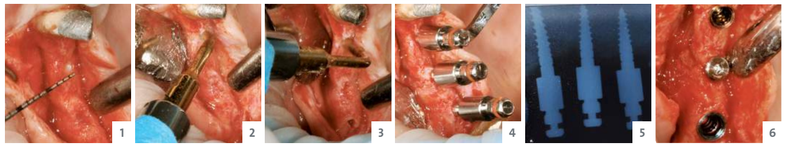
- Technique for expanding atrophic alveolar ridges
- Lateral bone condensation technique allows for compacting poor quality cancellous bone, thus greatly improving implant primary stability
- Technique is less traumatic for the patient than working with a mallet and chisel

EXPANSION OF AN ATROPHIC ALVEOLAR RIDGE



1. 2-mm thick ridge
2. initial osteoplasty (insert OP3) to bring the ridge from 2 to 3 mm
3. crestal osteotomy with 0.35 mm thick PIEZOSURGERY® insert OT7S-4
4. introduction of 2.5 mm and 3.5 mm bone expanders in sequence
5. x-ray of bone expanders in place
6. end result

LATERAL BONE CONDENSATION



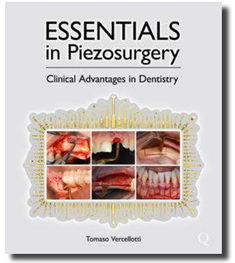
1. thickness of the ridge: 3 mm – cancellous bone quality D4
2. initial preparation of the site with IM1 insert
3. preparation of the site with PIEZOSURGERY® insert IM2P
4. bone expanders inserted, lateral bone compacting of the medullary bone, with transition from D4 to D3
5. x-ray view showing expanders in place
6. implants in place

PIEZOSURGERY® INCORPORATED

EVIDENCE-BASED.

The original, patented PIEZOSURGERY® technology is supported by thousands of peer-reviewed publications.

For over 15 years we have had ongoing collaborations with clinical practitioners and research institutions worldwide. As you get ready to incorporate PIEZOSURGERY® into your practice, we invite you to educate yourself on the benefit of our technology by reviewing the extensive peer-reviewed literature. Selected examples of the breadth of benefits associated with PIEZOSURGERY® are collected in our "Abstract Volumes", available for download at www.piezosurgery.us.



"ESSENTIALS IN PIEZOSURGERY"

The monography by Tomaso Vercellotti - published by Quintessence Publishing – clearly outlines the clinical advantages of our technology over conventional instruments. Additionally, the book illustrates the proper surgical technique for many applications through easy to read step-by-step diagrams, which help users at different stages of their career achieve a fast learning curve and benefit from PIEZOSURGERY®'s unique advantages right away.

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".

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

RESPECT OF SOFT TISSUES

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

Wallace SS et al. **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

PATIENT COMFORT

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

Sohn et al. **Piezoelectric osteotomy for intraoral harvesting of bone blocks.** Int J Periodontics Restorative Dent. 2007; 27(2):127-131

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