# **COMEG**

**Safe** and **atraumatic** medical technologies ultrasonic piezo bone surgery













# ULTRASONIC PIEZO CLINICAL BENEFITS

Ultrasonic piezo bone surgery was initially used by CMF surgeons and then extended to many other specialties, due to its great clinical benefits in oral and extra-oral surgeries:

## Intraoperative

#### Safety

Selective cut: soft tissues are preserved (nerve, arteries, dura mater) Avoid bone overheating

#### Precision

Thin & precise osteotomies

Maximize bone volume

#### Comfort

No handpiece vibration Low pressure

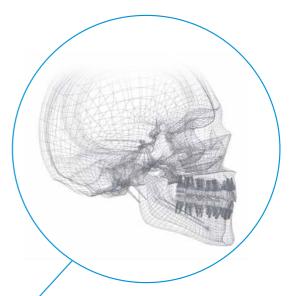
# Post-operative

#### **Smoothness**

Reduced pain
Less swelling and bruising
More natural results

#### Healing

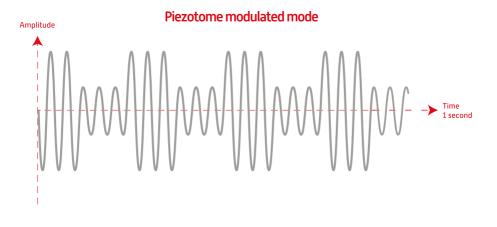
Favors bone regeneration Fast recovery Stable and long term results



# MINIMALLY INVASIVE SURGERY

# Safety

The generator produces a modulated frequency ranging from 28 to 36 kHz. This signal alternates between high and low amplitude, known as the PIEZOTOME® modulated mode. The bone is cut at a frequency close to its relaxation frequency, limiting the risk of injury to fragile anatomical structures [nerves, arteries]. Bone cutting is precise, cell regeneration is optimized and the healing is of high quality. The ultrasonic piezoelectric technology is suitable for any type of oral or extra-oral surgery where **precision and safety** is a must.



#### References

Gerbault O, Daniel RK, Kosins AM. The role of Piezoelectric Instrumentation in Rhinoplasty Surgery. Aesthetic Surgery Journal 2015;36[1]:21-34.

A. Troedhan, MD, DMD, PhD. Piezotome Rhinoplasty Reduces Postsurgical Morbidity and Enhances Patient Satisfaction: A Multidisciplinary Clinical Study. Journal of Oral and Maxillofacial Surgery, Volume 74, Issue 8, 1659.e1 - 1659.e11

Reside J, Everett E, Padilla R, Arce R, Miguez P, Brodala N, De Kok I, Nares S.

In vivo assessment of bone healing following PIEZOTOME® ultrasonic instrumentation.

Clinical Implant Dentistry Related Research 2015;17(2):384-94. Doi: 10.1111/cid.12094. Epub 2013 jun 13.

Compendium (upon request).

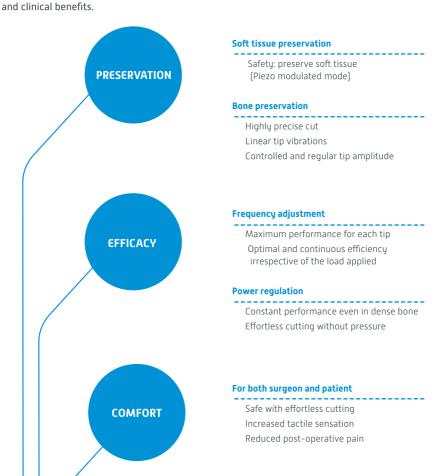
Safe and atraumatic ultrasonic piezo bone surgery

When Safety & Efficacy Matter

# NEWTRON® TECHNOLOGY

# The Perfect Match

**Ultrasonic power generators** are piloted by patented NEWTRON® technology electronics. The electronic module, the handpiece and the tips are perfectly tuned providing great efficacy



# MINIMALLY INVASIVE SURGERY

# Efficacy

Electric current generates a deformation of the piezoceramic rings. The movement of these rings leads to vibrations, thus the tip vibrates in a very regular longitudinal movement.

Patented electronic technology

6 ceramic rings for a boosted handpiece





Our powerful piezoelectric generators broaden the scope of surgical applications

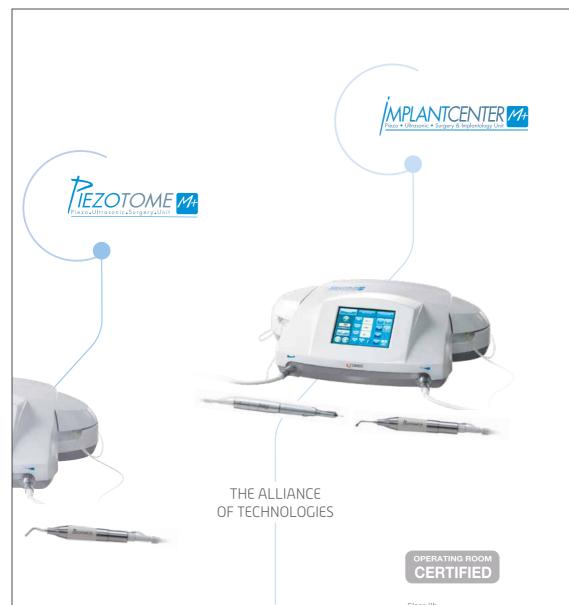
When Safety & Efficacy Matter

# THE CHOICE OF HIGH TECHNOLOGY

COMEG devices are operating room certified Approved by independent notified body, each device fulfills the most demanding medical regulatory standards. The advanced electronics prevent any interfering emissions.

Find out more from your biomedical engineer.





Class IIb Equipontential plug IEC 60601-1 3 <sup>rd</sup> Edition Footswitch certified IPX6 & IPX8 BVS Safety Marking (USA only)

Technology

# CONCENTRATED ULTRASONICS

PIEZOTOME® Solo M+, compact and efficient, brings together all of the powerful, reliable and safe components of the M+ range for maximum performance and safety.

Concentrated ultrasonics for bone surgery in an easy and powerful device

#### Clinical indications

#### Active on hard tissue while preserving soft tissue.

Small bones osteotomies, osteoplasties, drilling, smoothing where safety and precision are essential.



Power mode from d1 (most powerful) to d4











DELIVERED WITH

1x bracket

5x 3m single use irrigation lines with perforators

1x handpiece holders

1x IPX6 M+ footswitch

1x M+ wrench

1x 3m mains cord

# CONNECTED ACCESSORIES



#### PIEZOTOME® M+ LED handpiece

Boosted handpiece: 6 ceramic rings Cold LED light for high visibility and low heat generation

3m long cord adapted to the operating room environment



#### Peristaltic pump for controlled irrigation

Quick set-up

Robust

Precise and constant flow rate (avoids bone overheating)

Silent running

#### Footswitch (operating room certified IPX6 guarantee against water-jet)

Makes it possible to control the principal actions to respond to the sterile environment:

Power mode

Ultrasound ON/OFF



PIEZOTOME® Solo M+

# ULTRASONICS EXPERT

PIEZOTOME® M+ is a versatile device. Its dual connection allows you to connect two handpieces thus enabling faster clinical procedures. Easy adjustment settings with its touch screen and multifunction footswitch for perfect control throughout the surgical procedure.

The ultrasonic expert for fast and secure bone surgery





OPERATING ROOM
CERTIFIED

DELIVERED WITH

2x brackets

5x 3m single use irrigation lines with perforators

2x handpiece holders

1x IPX8 M+ multifunction footswitch

1x M+ wrench

1x 3m mains cord

# CONNECTED ACCESSORIES



#### PIEZOTOME® M+ LED handpiece

2 handpiece connections

Boosted handpiece: 6 ceramic rings

Cold LED light for high visibility and low heat generation

3m long cord adapted to the operating room environment





# Footswitch (operating room certified IPX8 guarantee watertightness)

Easy to move due to its arch, offers optimal control of the main functions:

Power settings

Choice of the active handpiece

PIEZOTOUCH mode:

progressive power regulation

#### Touch interface

Large 5.7 operator-oriented screen Easy and intuitive settings Memory function

# THE ALLIANCE OF TECHNOLOGIES

**IMPLANTCENTER M+** is a unique concept combining the power of a rotary motor and the safety of piezoelectric instrumentations. It therefore ensures total independence for the surgeon and leads to a multitude of surgeries.

The alliance of technologies for safe and atraumatic bone surgery







DELIVERED WITH

1x I-SURGE ™ LED micromotor

2x bracket

5x 3m single use irrigation lines with perforators

2x handpiece holders

1x IPX8 M+ multifunction footswitch

1x M+ wrench

1x 3m mains cord

# DIVERSITY OF CONNECTED ACCESSORIES

The perfect alliance of rotating and ultrasonic technologies.



#### The rotating motor

#### **Features**

Cranio-Maxillo-Facial certified Durable (brushless motor): robust, maintenance-free No vibration Sterilizable for perfect asepsis

#### **Performances**

Perfect balance between torque and speed for unmatched stability High torque: 6Ncm Large speed rotation motor: 100 - 40.000Rpm



# Footswitch (operating room certified IPX8 guarantee watertightness)

Easy to move due to its arch, offers optimal control of the main functions:

Global unit control
PIEZOTOUCH mode:
progressive power regulation



#### PIEZOTOME® M+ LED handpiece

Boosted handpiece: 6 ceramic rings
Cold LED light improved and low heat
generation

3 m long cord adapted to the operating room environment

# ACCESSORIES

Performance comes together with specifically designed long lasting durable components.



## Handpiece **POWERFUL**

6 Ceramic rings for faster surgeries

Cold LED light (100,000 Lux) for enhanced visibility even in posterior areas

No overheating

Lighweight handpiece for an easy handling and less hand fatigue



#### All in one

Delivered in its autoclavable metal case Ready for sterilization

Ref. F57802

#### Perfect asepsis

Fully sterilizable (autoclavable & washerdisinfectable)

Nose easily dismantled for perfect asepsis



## Pump & Irrigation SAFE

A perfect control of irrigation is necessary for:

Removing bone debris

Reducing the risk of bone necrosis

Generating a hemostatic effect due to the cavitation (implosion of microbubbles releasing oxygen)

#### Peristaltic pump for controlled irrigation

Quick set-up

Rohust

Precise and constant flow rate (avoids bone overheating)

Silent running

#### Disposable irrigation line

Ref. F57378 x1 Ref. F57379 set of 5





## Tips ROBUST

Designed to respect the patients anatomy

Fast assembly screwing system: saves time during surgery

Medical grade stainless steel

Strengthened by thermic and surface treatments

Synthetic diamond-coated tip

Sterile tips treatment: gamma-ray

#### Kits & tips

Disposable, delivered sterile or

5x re-usable, delivered non-sterile

Connected

# ULTRASONIC CRANIO-MAXILLO-FACIAL SURGERY

Piezoelectric surgery is a new bone cutting technique increasing safety especially in anatomically difficult to reach areas.

Micrometric vibrations ensure very thin and precise osteotomies with stable and long term results for a broad range of clinical applications:

#### Cranio

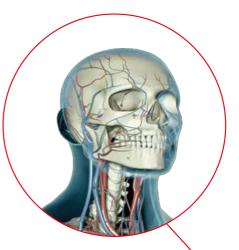
Frontal sinus osteotomy Craniosynostosis Parietal graft

#### **Maxillo**

LeFort I osteotomy Bilateral Sagittal Split Osteotomy (B.S.S.O) Genioplasty

#### **Facial**

LeFort II & III osteotomy Zygomatic bone osteotomy Reconstruction





v.Prof.Dr.Dr. Troedhan, Vienna, Austria

"The M+ Piezosurgical device, for the first time in the history of Piezoelectric-Surgery provides sufficient power for a fast surgical procedure in all cases of large osteotomies in orthognathic surgery, reconstructive surgery needing large autologous bone-transplants from the skull and in cosmetic surgery on facial hard-tissues. With its unrivaled precision and atraumaticity in bone-cutting CMF surgical procedures can usually be completed in less time than with traditional rotary or oscillating instruments with substantially less blood loss. In facial cosmetic surgery the application of newly developed ultrasonic surgical protocols provide a significant reduction of postsurgical morbidity and enhanced patient satisfaction with the outcome. "

# FOR SAFER AND MORE ACCURATE SURGERY



CMF kit	BS1L	BS2L XL	BS2R XL	BS1RD	SL1	BS4
F57803	F87612	F87605	F87606	F87608	F87618	F87615
F57804	F87982	F87983	F87984	F87985	F87974	F87978

5x re-usable Single use

## BS1L - Saw

Saw (0.6mm) with laser marking at 3, 6, 9, 12 and 15mm

Deep osteotomy

# BS2L XL & BS2R XL - Left & Right angled saws

Long lateral saws (39.5mm length) for easier access adapted to patients anatomy
Osteotomu

#### BS1RD - Rounded saw

With its rounded shape the tip is active on a 280° surface and its length (40mm) makes it possible to reach posterior areas easily

#### SL1 - Diamond-coated

Vestibular bone window cut
Smoothing of sharp angles
Bone incisions close to delicate structures

## BS4 - Circular scalpel

Osteoplasty
Bone harvesting



Courtesy of Dr Troedhan, Vienna, Austria

Orthognathic surgery

Cranial surgery



Courtesy of Dr Solyom, Toulouse, France

CMF

# OPEN ULTRASONIC RHINOPLASTY

A smooth and less traumatic procedure offering precise bone reshaping and controllable long term results.

#### Precise bone treatment

The new ultrasonic rhinoplasty protocol allows default corrections (nose too hard, too wide or bumpy) with no unwanted fracture even on brittle, thin or unstable bones.

#### **Direct vision**

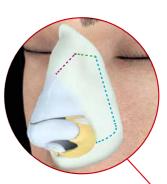
Surgery performed under direct vision for enhanced precision.

#### Fast recovery

Faster social-life re-integration: less ecchymosis and edema with more natural results.

#### Ultrasonic rhinosculpture

RHS2Hb and RHS2Fb tips are designed to sculpt bones without fracturing them



#### Rhinoplasty with precise osteotomies

- --- Lateral osteotomy RHS3L or RHS3R
- --- Transverse osteotomy RHS3L or RHS3R
- --- Median oblique osteotomy RHS5



#### Dr Gerbault MD, Vincennes, France

Piezoelectric surgery is a real disruptive technology in rhinoplasty, it allows a paradigm shift in the way of reshaping bones in rhinoplasty. It simplifies dramatically the way to perform hump reduction and osteotomies in rhinoplasty and adds a new dimension by allowing the possibility to sculpt and to polish nasal bones. Stable bones can be positioned with an unparalleled accuracy under direct vision and reshaped to achieve a perfect symmetry and smoothness of the bony vault. Moreover, this technique is easy, with a quick learning curve, simple to teach and the recovery is very fast as post-op ecchymosis is significantly reduced. For the first time in the history of rhinoplasty, a custom reshaping of the nasal bones is easily achievable.

# THE ESSENTIALS: GERBAULT RHINOPLASTY TIPS

Developed in collaboration with Dr. Gerbault, these tips are designed specifically for the nose anatomy; they do not alter the skin nor the blood vessels allowing for a guicker post-surgical recovery.



Rhinoplasty Gerbault Kit	RHS2Hb	RHS2Fb	RHS3L	RHS3R	RHS5	RHS6
F87681	F87686	F87687	F87677	F87678	F87679	F87680
F87999	F87969	F87968	F87991	F87992	F87993	F87994

5x re-usable Single use



RHS2Hb - Hard rasp

Use on thick skin or dense bone

RHS2Fb - Fine rasp

Use on thin skin or thin bone

Fine reshaping of the nose pyramid Removal of the bony hump Smoothing of bone irregularities Smoothing of bone and hard cartilaginous graft

#### RHS3L & RHS3R - Rounded saws

Left & Right angled saws Lateral and transversal osteotomies

## RHS6 - Diamond-coated drill

Diamond-coated tip dedicated to nasal bone drilling or nasal spine drilling Bone suture

Septal suture to bone

#### RHS5 - Thin saw

Straight thin saw Median oblique osteotomy Rib graft

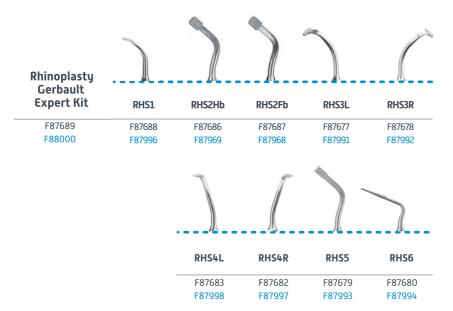


Courtesy of Dr Gerbault, Vincennes, France

Rhinoplasty

# THE EXPERTS: GERBAULT RHINOPLASTY TIPS

The Expert kit provides unprecedent bone access. Each tip has been designed specifically to respect the anatomy and answer to the different steps of bone treatment in rhinoplasty, from bone rasping to osteotomies with a completely unobstructed and clear view. Thus, any bone convexity or asymmetry can be assessed and treated.





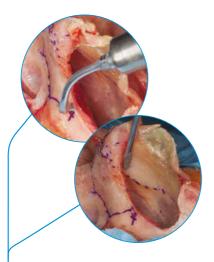
Dr Gerbault MD, Vincennes, France

5x re-usable Single use

\*\*Rhinoplasty has dramatically changed with ultrasonic rhinoplasty: from a partially blind approach where bones were rasped and broken with the risk of unwanted fracture, it has become a completely visually controlled operation where bones are reshaped and mobilized without altering their stability. This accurate control on shape, position and smoothness of bones is achievable thanks to the use of piezoelectric instruments through a wide sub periosteal exposure of the whole bony vault, and is safe as they dont damage soft tissues and preserve bone supports. Ultrasonic rhinoplasty is an easy procedure. The dorsum and keystone smoothness is achieved by using very thin saws and rasps. Bones can be drilled to suture cartilages to bones, change their orientation or to improve their stability. Finally, long piezoelectric tips enable to straighten the septum or to harvest long pieces of septum without risking to destabilize it. Piezoelectric surgery is part of the current evolutions of 21st century surgery: aesthetic and functional rhinoplasty are profoundly impacted by this disruptive technology.

# SHAPED FOR ALL TYPES OF NOSE

COMEG miniaturized rhinoplasty instruments paired with M+ piezoelectric ultrasonic devices allow the reshaping and mobilization of bones without sacrificing bone stability as soft tissue is preserved.



## RHS1 - Scraper

Curved tip to remove important bone excess: ostectomy on dense bone and in case of thick skin

Nasal pyramid remodeling

Ostectomy of the dorsal hump and lateral convexity

RHS2Hb - Hard rasp

RHS2Fb - Fine rasp

Fine reshaping of the nose pyramid
Removal of the bony hump
Smoothing of bone irregularities
Smoothing of bone and hard cartilaginous graft

## RHS3L & RHS3R - Rounded saws

Left & Right angled saws Lateral osteotomies

## RHS5 - Straight saw

Straight thin saw

Median oblique osteotomy

Costal bone grafting

## RHS4L & RHS4R - Angulated saws

Left & Right angled saws
Transverse osteotomies
Partial costal bone grafting

#### RHS6 - Diamond-coated drill

Diamond-coated tip dedicated to nasal bone drilling or nasal spine drilling Bone suture Septal suture to bone

> Courtesy of Dr Gerbault, Vincennes, France



# A COMPLETE AND DIVERSIFIED RANGE



for maximal bone volume

BS1S	BS2L	BS2R
E97611	E07612	E9761/ı

F87618 F87974

F87615 F87978

F87616 F87617

# **LATERAL SINUS LIFT**



SL1	SL2	

SL2	
F87619	
F87973	

SL3 F87620 F87972







For maximum
bone preservation

LC1	
F87623	









F87628

## **CROWN EXTENSION**





F87617



F87651



F87652



F87653



# CRESTAL SINUS LIFT

Minimally invasive surgery for smooth sinus floor fracture

 TKW1
 TKW2
 TKW3
 TKW4
 TKW5

 F87641
 F87642
 F87643
 F87644
 F87645



**DB1 DB2** F87610 F87609



F87607

# LONG LENGTH TIPS

For minimally invasive techniques and easier access

BS1 XXL

F87602 F87986 BS6 XXL

F87604 F87987

Clinical Expertise



RhinoPlasty
Expert - GERBAULT

IIPS	mode	rine setting*	ml/mn
TIDC	Recommended	Fine setting*	Irrigation

Irrigation

#### Rhinoplasty Basic & Expert

RHS1	D1	3	60
RHS2Fb	D1	3	60
RHS2Hb	D1	3	60
RHS3L/RHS3R	D1	3	60
RHS4L/RHS4R	D1	3	60
RHS5	D1	3	60
RHS6	D1	3	80

# OtherTips

#### Bone Drilling & Remodeling

DB1	D1	3	80
DB2	D1	3	80-100

#### Deep Bone Access

LC1X	L	D1	3	80-100
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#### Long Length Tips

BS1XXL	D1	3	80
BS6XXL	D1	3	80

# SinusLift

#### Lateral sinus lift

SL1	D1	3	60
SL2	D1	3	60
SL3	D4	3	50
SL4	D4	3	30
SL5	D4	3	30

# CrestSplitting

#### **Crest Splitting**

	Mandible	Maxilla		
CS1	D2	D3	3	80-100
CS2	D2	D3	3	80-100
CS3	D2	D3	3	80-100
CS4	D2	D3	3	80-100
CS5	D2	D3	3	80-100
CS6	D2	D3	3	80-100

# **CranioMaxilloFacial**

TIPS	Recommended mode	Fine setting*	Irrigation ml/mn		
Cranio-Maxillo-Fac	Cranio-Maxillo-Facial (CMF)				
BS1L	D1	3	60		
BS1RD	D1	3	80		
BS2LXL/BS2RXL	D1	3	60		
BS4	D1	3	60		
SL1	D1	3	60		

# **B**one**S**urgery

Osteotomy	& Osteoplasty

osteotomy a osteopiasty				
BS1S	D1	3	60	
BS2L/BS2R	D1	3	60	
BS4	D1	3	60	
BS5	D3	3	60	
BS6	D1	3	60	

# **IntraLift**

#### Crestal sinus lift

Crestal sinus lift				
TKW1	D2	3	100	
TKW2	D2	3	100	
TKW3	D2	3	100	
TKW4	D2	3	100	
TKW5	D2	3	100	

# Extraction

#### Syndesmotomy

LC1	D1	3	80-100
LC2	D1	3	80-100
LC2L/LC2R	D1	3	80-100
ALNIN	D1	3	80-100

# CrownExtansion

#### Crown extension

CLOMILEYCEURION				
BS6		D1	3	60
CE1		D1	3	60-80
CE2		D2	3	60-80
CE3		D1	3	60-80

\*Not applicable to Piezotome\* Solo M+

# THE BEST FOR YOU...

(1)

#### SECURITY: Cutting selectivity, no soft tissue lesions

"Piezotome" surgery is superior in atraumaticity and soft-tissue safety (...) no lesions of the mandible nerve were detected with Piezotome" surgery" " "O lesion with Piezotome" vs 16% of hypesthesia with rotary instruments"

LeFort I osteotomy "...total absence of soft tissue injuries, both in the posterior pedicle and in the vascular elements and palatal tissues"<sup>2</sup>

" ACTEON produced the least increase of intraosseous temperature" versus competitors units<sup>3</sup>



GREAT INTRAOPERATIVE CONTROL: Optimal visibility (cavitation), limits blood (hemostasis), remove bone debris and avoid temperature rises

"Throughout the procedure a clear and stable view was achieved, with a low level of bleeding and adequate irrigation of the cutting area"<sup>2</sup>



#### FAST PROCEDURE:

- " ... in 5 cases in which we used this technique, the duration of the osteotomy was 8 to 15 minutes, a trivial period in the entire surgery"<sup>4</sup>
- " A very quick performance was observed using Piezotome"2

PIEZOTOME ® = 137s

vs Piezon Master Surgery: 142s / vs Piezosurgery 3: 144s / vs VarioSurg : 149s

- 1- Ultrasonic Piezotome<sup>®</sup> Surgery: is it a benefit for our patients and does it extend surgery time? A retrospective comparative study on the removal of 100 impacted mandibular 3<sup>rd</sup> molar. A.Troedhan, A.Kurrek, M.Wainwright. Open Journal of Stomatology, 20113
- 2- LeFort I segmented osteotomy experience with Piezosurgery in orthognathic surgery. S.Olate, L.Pozzer, A.Unibazo, C.Huentequeo-Molina, F.Martinez, M.de Moraes. Int J Clin Exp. Med 2014;7[8]:2092-2095
- 3- Performance of ultrasonic devices for bone surgery and associated introosseous temperature development. S.Harder, S.Wolfart, C.Mehl, M.Kern. The International Journal of Maxillofacial Implants Volume24, Number 3, 2009
- 4- Mandibular condylectomy revisited: technical notes concerning the use of an ultrasonic system. S.Olate and al. J Oral Maxillofac Surg 2013

# AND FOR YOUR PATIENTS



#### BETTER HEALING PROCESS AND BONE REGENERATION

" Piezoelectric instrumentation favors preservation of bone<sup>®</sup> Better bone turnover and densification "Bone instrumented" by piezoelectric surgery appears less detrimental to bone healing than high-speed rotating device"4

#### SMOOTHNESS: Less traumatic

Decreased postsurgical morbidity "...significant reduction or almost absence of postsurgical ecchymosis/edema and significant reduction of pain"5

" Increased patient satisfaction significantly<sup>5</sup>

More natural results

#### SAFE AND STABLE RESULTS

Stable and long term results "...osteotomies can be performed with stability, because the underlying periosteum and mucosa are not damaged..." & "...allow the surgeon to easily stabilize unstable bones by drilling holes"6



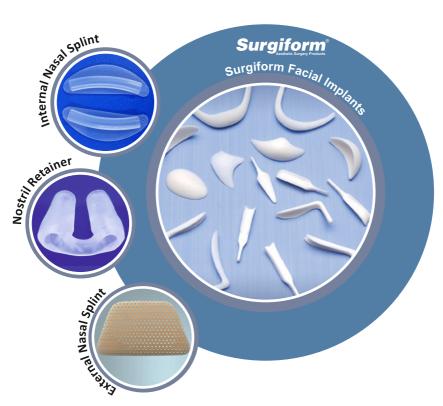
<sup>5-</sup> Piezotome rhinoplasty reduces postsurgical morbidity and enhances patient satisfaction: A multidisciplinary clinical study. A.Troedhan. YJOMS57235 J Oral Maxillofac Surg 2016

FIND ALL CLINICAL ARTICLES IN OUR COMPENDIUM REF. D57819

# Proven clinical benefits

<sup>6-</sup> The role of piezoelectric instrumentation in rhinoplasty surgery. O.Gerbault, RK.Daniel, AM.Kosins. Aesthetic Surgery Journal 2015;36(1);21-34

## **Related Products**



Find out more on our

You Tube channel



Class IIb medical device (GMED) - CE0459
Manufactured by SATELEC® (FRANCE) distributed by COMEG
Update on: 03/2021

COMEG Medical Technologies is the Medical Division of the ACTEON® Group.

Over **40 years of experience** in surgical endoscopy

Focused specifically in **Minimally Invasive Surgery** (MIS)

Global presence on 6 continents

**Meeting the specific needs** for GYN, URO, ENT, LAP, ARTHRO, CMF and PLASTIC surgery

**Intuitively connecting physicians** with the appropriate solutions

COMEG designs intuitive solutions for minimally invasive surgery.



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Technomed (India) Pvt. Ltd.

H-107, Shivaji Park, West Punjabi Bagh, New Delhi - 110026

Tel.: 🕓 8586952121, 9811085980

Email: info@technomed.net, technomedindia@outlook.com

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