



→ PIEZOSURGERY®  
NEURO&SPINE EXCELLENCE



# → EXPERIENCE EXCELLENCE: CHOOSE PIEZOSURGERY® IMPROVES NEURO & SPINE SURGERY

→ YOUR CHALLENGES ARE COMPLEX. MECTRON CAN HELP YOU.

We understand that as a clinician, you seek technological solutions to accompany your expertise, that will allow you to optimize workflow, while ultimately providing your patients with the best postoperative results.

After performing extensive research on clinician needs and the challenges presented by traditional instrumentation, we developed a solution to provide you with increased safety, precision and surgical performance.

The PIEZOSURGERY® plus promotes ease of use and precise handling during osteotomies, with reduced trauma to adjacent soft tissue, improved bone healing, reduced pain, swelling and edema promoting better healing and an overall reduction in the length of hospitalization stays for patients.<sup>1</sup>

The expansive postoperative benefits of PIEZOSURGERY® have been experienced by distinguished surgeons in over 80 countries across our globe.





Surgical procedures requiring the opening, removal, or remodeling of bone are supported by PIEZOSURGERY®.

#### → CLINICAL INDICATIONS

Surgical fields of application:

- Spine Surgery
- Neurosurgery
- Pediatric neurosurgery

#### → WHAT OUR USERS THINKS

“ We were trying to find a new instrument where we could achieve a bone craniotomy or a spine laminectomy without losing bone tissue. We changed how to do spine surgery, we can perform a multi level laminotomy without losing bone tissue and we can perform at most five separate lamina.

Dr Legnani F., Neurosurgeon at the IRCCS Institute Foundation Besta, Milan (Italy)

This tool allows us to do the osteotomy with the minimal risk of damaging the underline structures. It is an instrument that is worth trying and to learn how to use it.

Prof. Di Rocco F., Neurosurgeon at GH Est-Hôpital Femme Mère Enfant, Lyon (France)

You have a very nice control over your bone cutting and bone modeling. It is very easy to handle and I think there is not a large learning curve you have to go through.

Dr. Messing-Jünger M., Neurosurgeon at Asklepios Klinik, Sankt Augustin (Germany)



# → EXPERIENCE SPINE SURGERY



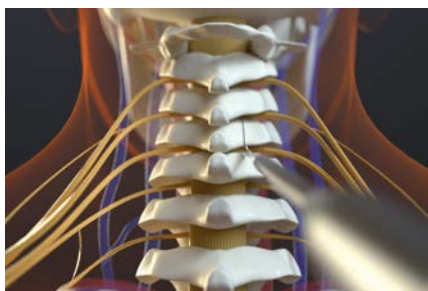
## → ADVANTAGES OVER TRADITIONAL TOOLS

- Safer for dura and nerves, allowing improved decompression close to vascular structures
- Less heat generation in comparison to drills<sup>2</sup>
- Increased surgical control and flexibility in bone cutting<sup>3</sup>
- Improved reconstruction and bone grafting<sup>4</sup>
- Reduced overall surgical time due to safety<sup>3</sup>
- Allows for transversal bone cut as opposed to an exclusively orthogonal cut

“*Piezosurgery proved to be a useful and safe technique for selective bone cutting and removal of osteophytes with preservation of neuronal and soft tissue in ACDF. In particular, the angled inserts were effective in cutting bone spurs behind the adjacent vertebra which cannot be reached with conventional rotating burs.*”<sup>5</sup>



### → LAMINOTOMY AND LAMINECTOMY

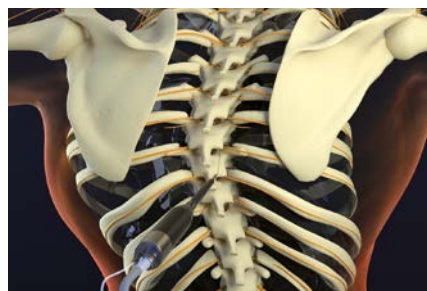


A precise, safe and efficient approach to cutting spinal bone, improving workflow, allowing for better bone reconstruction and an overall decrease of average surgery time.

Recommended inserts:  
• MT8-20L • MT1520+

Additional inserts:  
• MT5-10L • MT1412+

### → CORRECTION OF DEFORMITIES

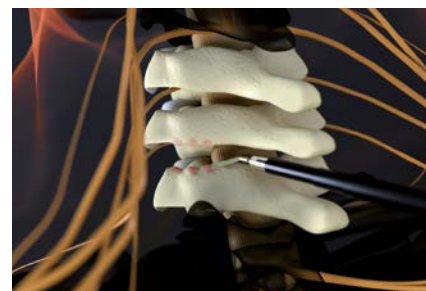


Safe and efficient bone correction even in the most difficult areas, ensuring improved bone fusion due to the absence of heat and minimized bone loss.

Recommended inserts:  
• MT8-20L • MT1520+

Additional inserts:  
• MT5-10L • MT1412+

### → REMOVAL OF OSTEOPHYTES

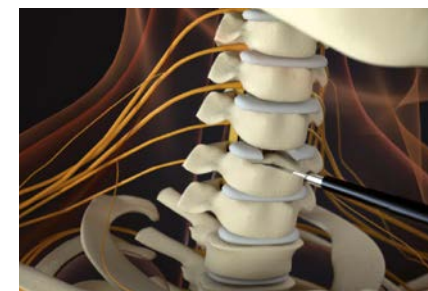


Safer and faster removal of osteophytes, even in areas with reduced visibility.

Recommended insert:  
• MT8-20L

Additional inserts:  
• MP4+ • MP6L

### → ANTERIOR CERVICAL DISCECTOMY AND FUSION (ACDF)



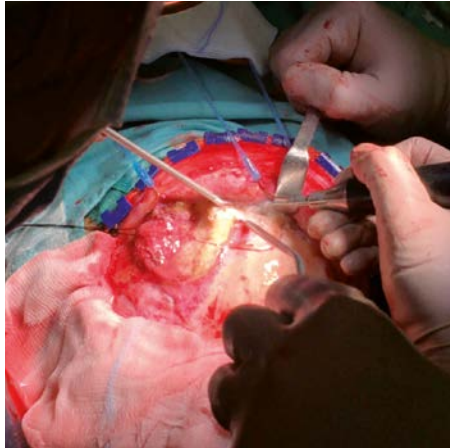
Safe access to difficult to access areas in the cervical spine.

Recommended insert:  
• MT8-20L

Additional inserts:  
• MP5L • MP6L



# → EXPERIENCE NEUROSURGERY



## → ADVANTAGES OVER TRADITIONAL TOOLS

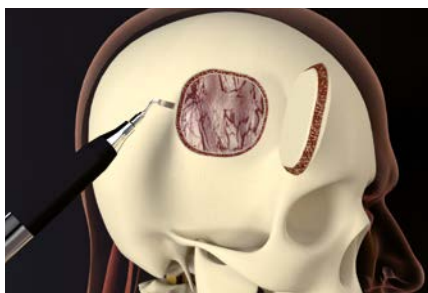
- Safer for dura, nerves, vessels, sinuses & orbits<sup>5</sup>
- Reduced risk of CSF leak<sup>2</sup>
- Better aesthetic result for patient<sup>6</sup>
- Less need for fixation, for dural and bone substitutes<sup>4</sup>
- Faster bone healing<sup>2,7</sup>

“Piezoelectric surgery represents an innovative technique to perform safe and effective osteotomies and is an alternative to traditional bony tissue management using rotating or perforating instruments. We evaluated the safety and feasibility of craniotomies using an ultrasonic device that allows the selective cut of mineralized structures, avoiding damages to the vascular, dural, and parenchymal structures.”<sup>6</sup>



MT15-10 MT6S-10 MT4-10+ MT1412+ MD2-10 MD3-14 MP5L MP6L MT8-20L

## → CRANIOTOMY AND CRANIECTOMY



Reduced risk of CSF leak, better aesthetic result for the patient, sparing of fixation materials, dural and bone substitutes, due to selective and precise cutting. Reduced heat ensures improved ossification with implants.

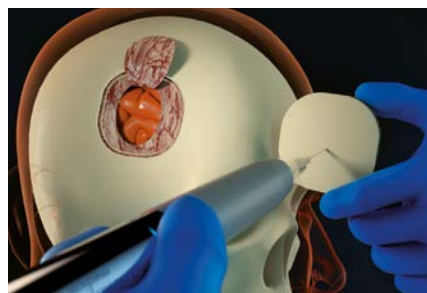
Recommended insert:

- MT4-10+

Additional inserts:

- MT15-10 • MT4-20+
- MT6S-10 • MT1412+

## → DRILLING A HOLE FOR DURAL SUSPENSION



One device can be used for all bone management, including drilling holes in the bone.

Recommended insert:

- MD3-14

Additional insert:

- MD2-10

## → ACOUSTIC NERVE DECOMPRESSION



Improved and increased safety in nerve decompression due to selective bone management and reduced heat.

Recommended insert:

- MP5L

Additional insert:

- MP6L

## → ENDOSCOPIC TRANSPHENOIDAL APPROACH



Safer decompression of dura, internal carotid artery and optic nerves due to selective cutting and heat reduction, allowing for the possibility to reconstruct the bone flap with increased safety and precision.

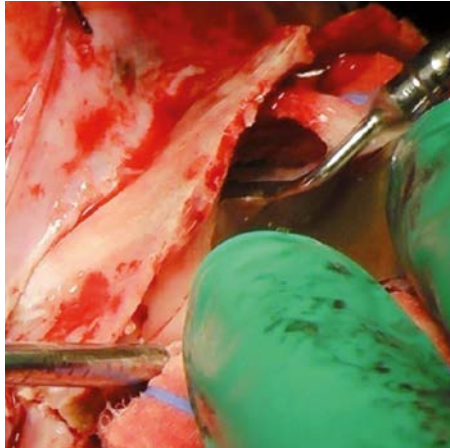
Recommended insert:

- MT8-20L

Additional insert:

- MP6L

# → EXPERIENCE PEDIATRIC NEUROSURGERY



## → ADVANTAGES OVER TRADITIONAL TOOLS

- Minimal loss of bony tissues <sup>2,8</sup>
- Minimal need to retract dura and orbital tissues <sup>5</sup>
- High flexibility in designing bone flap <sup>3</sup>
- Improved bone flap reconstruction <sup>4</sup>
- Reduced blood loss <sup>3</sup>
- Blood-free surgical site <sup>2,9</sup>

“*Piezosurgery [PS] is a safe and effective tool that can be specifically recommended for bone splitting and graft, laminotomy, and craniotomy in cosmetically eloquent areas. The limit of operation times can be overcome by a learning curve in neurosurgery and Piezosurgery Plus [PSP].*” <sup>4</sup>



MT15-10 MT6S-10 MT4-10+ MT4-20+ MT1412+ MT1520+ MP5L MP6L MT8-20L



### → CRANIOPLASTY AND RESHAPING OF FRONTO- ORBITAL BANDEAU



Safe and precise cranium and orbital bone cutting, sparing of bony tissues and high flexibility in bone remodeling.

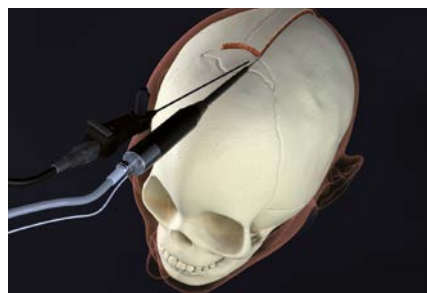
Recommended inserts:

• MT15-10 • MT4-10+

Additional inserts:

• MT4-20+ • MT65-10  
• MT1412+ • MT1520+

### → ENDOSCOPIC STRIP CRANIECTOMY



Safe bone cutting in difficult to access areas with the use of the endoscope, eliminating the risk of rotating or oscillating tools.

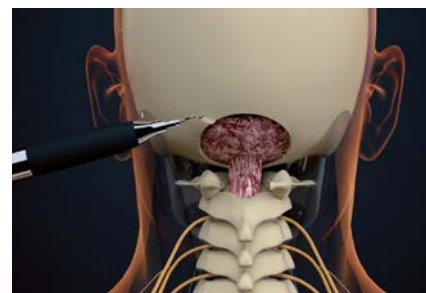
Recommended insert:

• MT8-20L

Additional inserts:

• MP6L • MP5L

### → CHIARI MALFORMATION



Improved safety and flexibility of bone management in comparison to traditional rotating and oscillating tools.

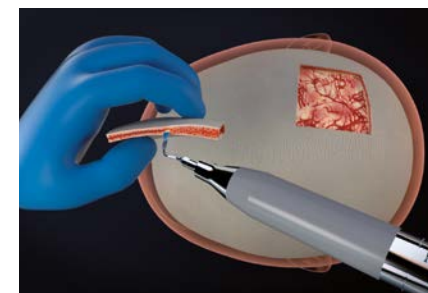
Recommended insert:

• MT4-10+

Additional inserts:

• MT15-10 • MT4-20+  
• MT1412+ • MT1520+

### → BONE SPLITTING



Precision and flexibility of bone harvesting and remodeling which is not possible with high speed instruments.

Recommended inserts:

• MT15-10 • MT4-10+ • MT1520+

Additional inserts:

• MT1-20 • MT4-20+  
• MT1412+ • MT1520+

# → **PIEZOSURGERY® *plus*** – EXCELLENCE IN BONE SURGERY!

Innovative features, including two independent handpieces and channels, provide you with superior results for every surgery.



Discover the wide range of  
medical PIEZOSURGERY® inserts.  
Scan the QR code or click on it!



For more info about  
PIEZOSURGERY® *plus*  
device scan the QR code  
or click on it!

# CLINICAL REFERENCES

1 Pirodda A., Raimondi M.C., Ferri G.G.

**Piezosurgery in otology: a promising device but not always the treatment of choice.**

Eur Arch Otorhinolaryngol. 2012 Mar; 269(3):1059. doi: 10.1007/s00405-011-1841-2. Epub 2011 Nov 22.

2 Franzini, Legnani, Beretta, Prada, DiMeco, Visintini, Franzini.

**Piezoelectric Surgery for Dorsal Spine.**

World Neurosurg. 2018 Jun;114:58-62. doi: 10.1016/j.wneu.2018.03.026. Epub 2018 Mar 10.

3 Bertossi D., Lucchese A., Albanese M., Turra M., Faccioni F., Nocini P., Rodriguez Y., Baena R.

**Piezosurgery versus conventional osteotomy in orthognathic surgery: a paradigm shift in treatment.**

J Craniofac Surg. 2013 Sep;24(5):1763-6. doi: 10.1097/SCS.0b013e31828f1aa8.

4 Massimi L, Rapisarda A, Bianchi F, Frassanito P, Tamburrini G, Pelo S, Caldarelli M.

**Piezosurgery in pediatric neurosurgery.**

World Neurosurg. 2019 Mar 1. pii: S1878-8750(19)30514-5. doi: 10.1016/j.wneu.2019.02.103. [Epub ahead of print]

5 Grauvogel J., Grauvogel T.D., Kaminsky J.

**Piezosurgical lateral suboccipital craniectomy and opening of the internal auditory canal in the rat.**

J Neurosurg Sci. 2014 Mar;58(1):17-22.

6 Vetrano IG, Prada F, Perin A, Casali C, DiMeco F, Saini M.

**Piezosurgery for infra- and supratentorial craniotomies in brain tumors surgery.**

World Neurosurg. 2018 Nov 17. pii: S1878-8750(18)32611-1. doi: 10.1016/j.wneu.2018.11.064. [Epub ahead of print]

7 Ma L., Stübinger S., Liu X.L., Schneider U.A., Lang N.P.

**Healing of osteotomy sites applying either piezosurgery or two conventional saw blades: a pilot study in rabbits.**

Int Orthop. 2013 Aug;37(8):1597-603. doi: 10.1007/s00264-013-1908-3. Epub 2013 Jun 22.

8 Iacoangeli M., Rienzo A.D., Nocchi N., Balercia P., Lupi E., Regnicolo L., Somma L.G., Alvaro L., Scerrati M.

**Piezosurgery as a Further Technical Adjunct in Minimally Invasive Supraorbital Keyhole Approach and Lateral Orbitotomy.**

J Neurol Surg A Cent Eur Neurosurg. 2014 Feb 19. [Epub ahead of print]

9 Bertossi D., Albanese M., Chiarini L., Corega C., Mortellaro C., Nocini P.

**Eagle syndrome surgical treatment with piezosurgery.**

J Craniofac Surg. 2014 May;25(3):811-3. doi: 10.1097/SCS.0000000000000700.

mectron s.p.a.,  
via Loreto 15/A, 16042 Carasco (Ge), Italia,  
tel +39 0185 35361, fax +39 0185 351374

→ [www.mectron.com](http://www.mectron.com) – [piezosurgery@mectron.com](mailto:piezosurgery@mectron.com)



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