nexus

It’s neXus or Nothing

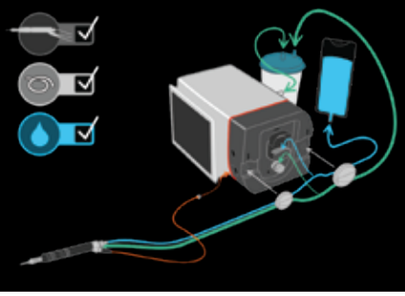
The revolutionary ultrasonic system with all-in-one power, versatility, and cost-effectiveness pioneering innovative tools for hard-and-soft tissue removal.

neXus: All-in-one ultrasonic generator.

SMART SET UP

No specialized training

Fewer delays



PROPRIETARY DIGITAL ALGORITHM
Fine tunes and amplifies individual tools for greater efficiency and versatility

AUTO DEVICE RECOGNITION
Convenient, unified Misonix port

DIGITAL TOUCHSCREEN DISPLAY
Familiar interface is quick and intuitive

ONBOARD DIAGNOSTICS
Real-time troubleshooting reduces procedure delays

Setting the standard.

Best-in-class ultrasonic tools support a wide range of procedures through innovative and unmatched applications.

More Power

Optimizes ultrasonic motion of applications (apps) • Increases power for precision bone cutting

Versatile tools for hard and soft tissue removal

BoneScalpel®

Decompression
Deformity
CMF/OMF

SonaStar®

General surgery
Neurological surgery
Liver surgery

SonicOne® OR

Wound debridement

As innovators in the field, we are proud to continue providing best-in-class ultrasonic tools for neurosurgery, spine surgery, general surgery, orthopedic surgery, wound debridement, and craniomaxillofacial surgery.

nexus

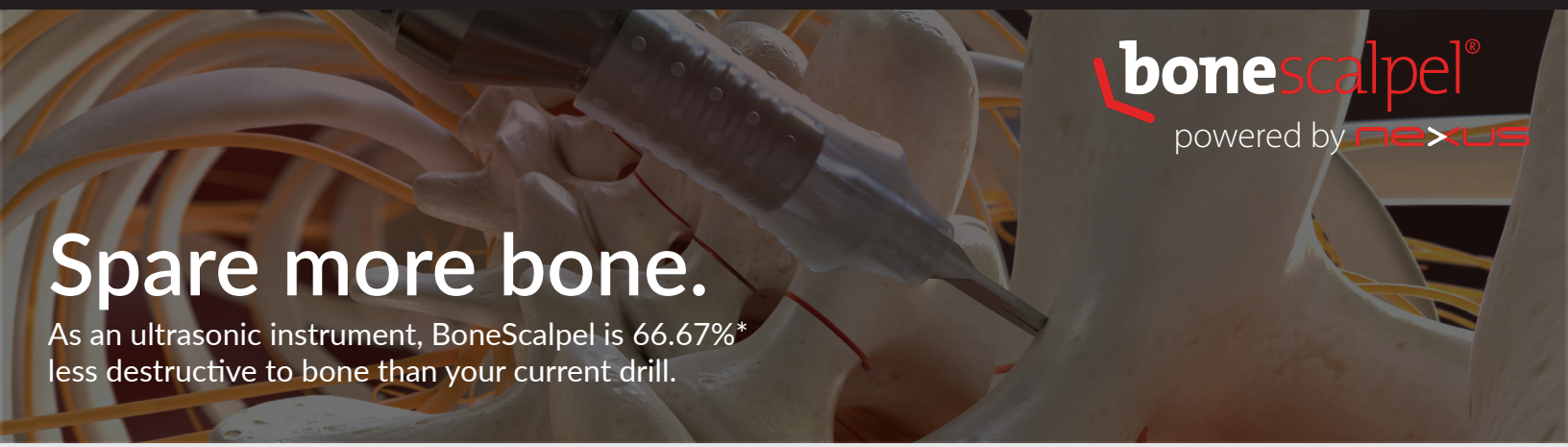
SafetyMatters

bonescalpel®

Ultrasonic Bone Removal

- Controlled Cutting
- Improved Efficiencies
- Soft Tissue Sparing
- Reduced Bleeding

MISONIX®
BETTER MATTERS™



bonescalpel® powered by nexus

Spare more bone.

As an ultrasonic instrument, BoneScalpel is 66.67%* less destructive to bone than your current drill.

WHY LEADING SPINE SURGEONS HAVE SWITCHED TO BONESCALPEL FOR BETTER OUTCOMES.

CONSISTENCY

"Surgery after surgery, BoneScalpel performs elegantly, reducing complications, blood loss and damage to tissue and nerves. I use it for every spinal deformity case."

Suken Shah
Nemours/Alfred I. duPont Hospital for Children

PRECISION

"In osteotomies throughout the spine, mechanical tools pose a greater risk where BoneScalpel safely and elegantly performs. Less trauma to tissue. More ergonomic. Less painful on my hands."

Paul Holman
Houston Methodist Hospital

EFFICIENCY

"The BoneScalpel is a vital instrument for spinal surgeons. The efficiency and precision it offers translates into reduced operating times, preservation of healthy bone and minimizing bleeding during routine and complex spinal procedures."

Isador Lieberman
Texas Back Institute

Feel it to Believe it.

* Bone graft material reduction as a result of using the BoneScalpel® in posterior lumbar fusions. The 66.67% reduction in bone destruction is due to the differential in thickness of the cutting devices. The 20mm BoneScalpel Blade is 1mm thick vs. a standard matchstick burr, which is 3mm in diameter.[1]

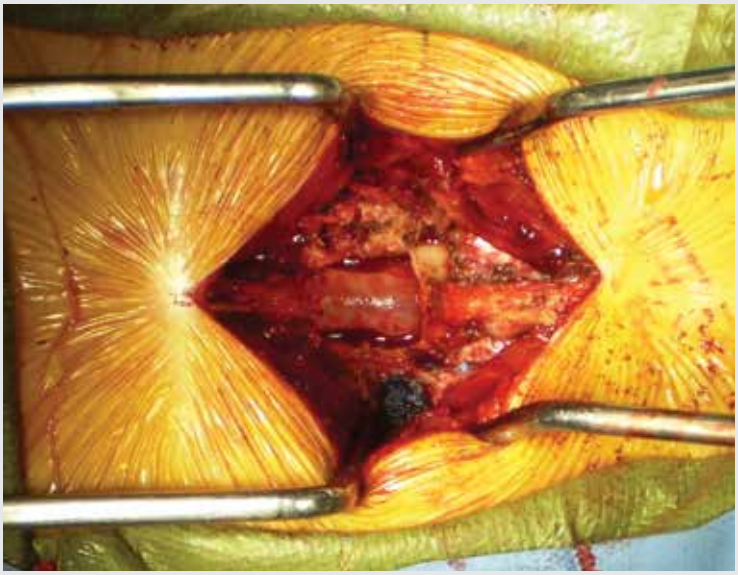
1. Jensen WK. Misonix: Use of the BoneScalpel® in posterior lumbar fusions decreases the amount of allograft needed for fusion, thus reducing costs. [poster]. NASS 32nd Annual Meeting. 2017.

Once you demo BoneScalpel, you'll experience what true confidence in an instrument feels like.
To schedule a demo contact your local Bioventus Representative or contact us directly on our website www.misonix.com/contact

Tissue-Specific

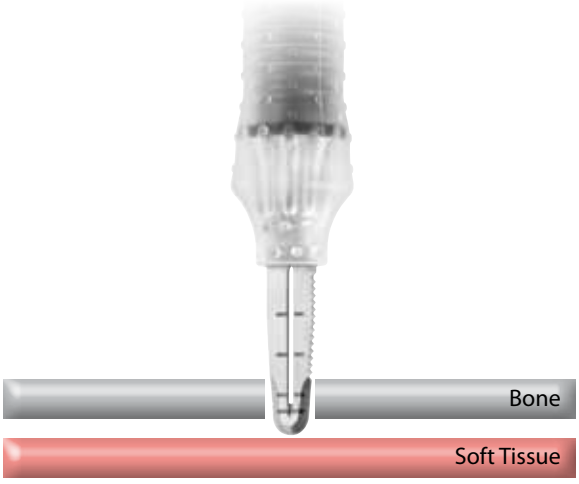
- Controlled cutting
- Improved efficiencies
- Soft tissue sparing
- Reduced bleeding

BoneScalpel® is tissue-specific as it allows for controlled removal of rigid bone while being atraumatic to the surrounding elastic soft tissues.



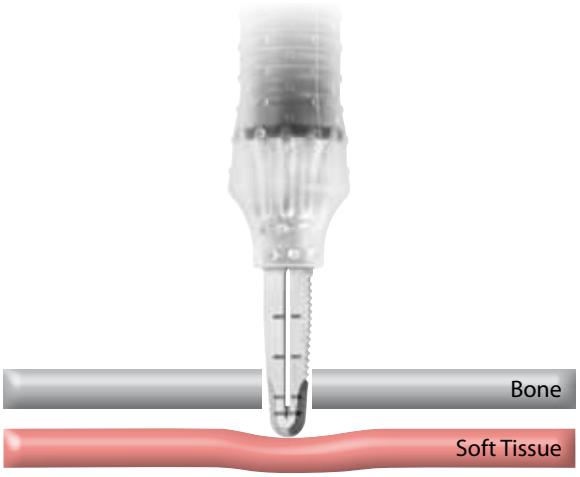
Hard Tissue Response

- BoneScalpel cuts bone as it is more rigid and unyielding than soft tissue.
- When rigid bone comes in contact with the BoneScalpel blade it does not bend, deform or move away.
- As a result bone absorbs a large portion of the blade's energy and is cut at the point of contact with the blade.



Soft Tissue Response

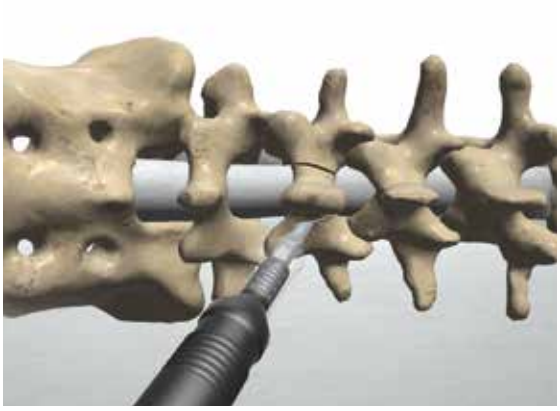
- In contrast, soft tissue responds elastically in contact with the blade, that is, it moves, deforms and vibrates.
- This results in substantial dampening of the energy transferred from the blade to the tissue.
- The energy absorbed by the soft tissue at the point of contact with the blade is generally not sufficient to cut the tissue unless soft tissue is held against the blade at high tension for a long period of time.



Four Key Benefits

Controlled Cutting

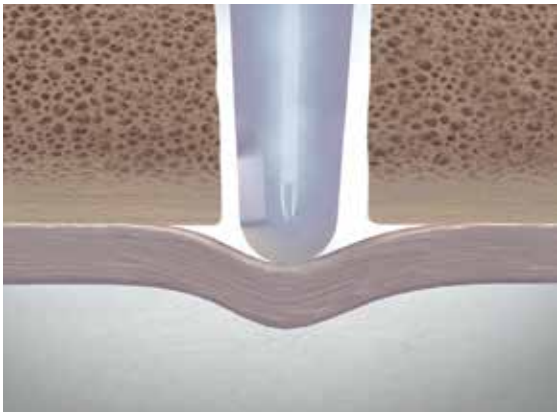
- Non-abrasive, controlled cutting
- Reach more anatomical structures
- Versatile product configurations
- Enhances cooling of surgical site
- Tactile feedback through cortical & cancellous bone
- Thin geometry allowing bone preservation
- Repeatable and predictable experience
- Eliminates chatter, skipping, or walking



Soft Tissue Sparing

- Minimal soft tissue interaction
- Preservation of non-targeted tissues
- Absence of tissue wrapping
- Differentiates tissue types

The BoneScalpel osteotomy is atraumatic to soft tissues. The blade is blunt and travels in a linear motion, which eliminates wrapping and tearing. In addition, soft tissue has elastic properties that allow it to deform and rebound without failure to its integrity. Osteotomies can be performed in close proximity to delicate structures.



Improved Efficiencies

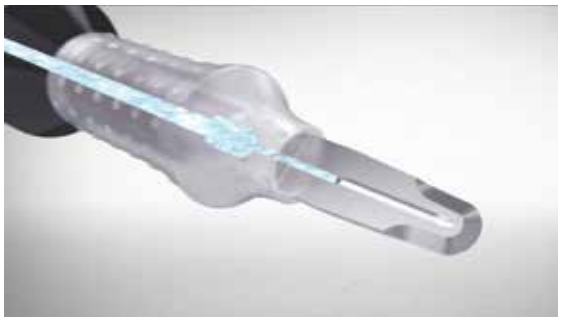
- Non-abrasive, controlled cutting
- Efficient cooling of surgical site
- Reduced time vs. conventional methods
- Reduced blood loss
- Direct visualization vs. blind cutting
- Access through tubular retractors
- Universal tip geometry for multifunctional use
- Minimizes hand fatigue vs. conventional methods
- Micro-reciprocating movement

The longitudinal blade motion enables precision osteotomies free of gyroscopic effects and facilitates cutting techniques for en-bloc bone dissection and in close proximity to delicate soft tissue structures.

Substantial time savings have been reported for advanced osseous resections in the spinal anatomy such as multilevel laminectomies and bilateral facetectomies.

Reduced Bleeding

- Integrated, continuous irrigation
- Proprietary fluid pathway design
- Creates a tamponed effect
- Significantly less bleeding compared to standard methods[1]



A proprietary fluid pathway is instrumental in directing irrigation for the purposes of cooling and lubrication over the blade and directly into the kerf.

[1] Blood Loss Reduced During Surgical Correction of AIS with an Ultrasonic BoneScalpel – Peter O. Newton, MD. 20th International Meeting on Advanced Spine Techniques (IMAST), Vancouver, Canada, July 2013.

Indications and Clinical Experience

The BoneScalpel system is indicated for use in the fragmentation and aspiration of both soft and hard (e.g.: bone) tissue as used in the following surgical specialties:

- Orthopedic Surgery
- Plastic and Reconstructive Surgery
- Neurosurgery
- Thoracic Surgery
- Wound Care
- General Surgery

It is also indicated for use in debridement of wounds, such as, but not limited to burn wounds, diabetic ulcers, bedsores and vaginal ulcers, soft tissue debridement and cleansing of the surgical site in applications, in which, in the physician's judgment would require the use of an ultrasonic aspirator with sharp debridement.

The BoneScalpel has been used for bone fragmentation in the following orthopedic, reconstructive and neurosurgical procedures:

Thoraco-Lumbar

- Laminectomy
- Laminotomy
- Foraminotomy
- Sacral laminoplasty
- Decompression of spinal canal (ipsi-lateral, contra-lateral by undercutting)
- Decompression in revision cases
- Sequestrectomy
- Facetectomy
- Transforaminal lumbar interbody fusion
- Thoracic corpectomy

Cervical

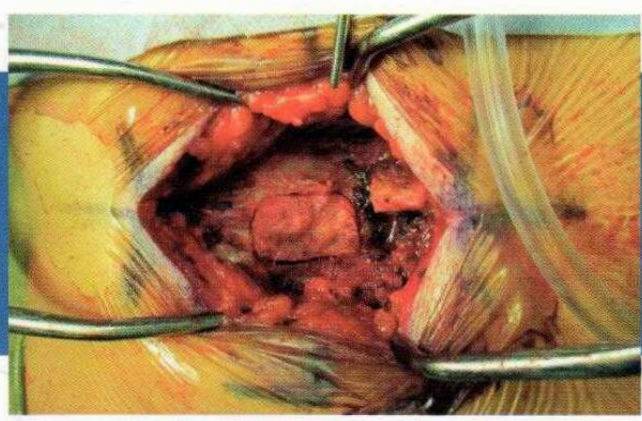
- Laminectomy
- Laminoplasty
- Foraminotomy
- Osteophyte resection
- Resection of osteochondrosis
- Robinson-Smith procedure
- Anterior corpectomy
- Anterior foraminotomy
- Intra-oral dens resection

Spinal Deformity

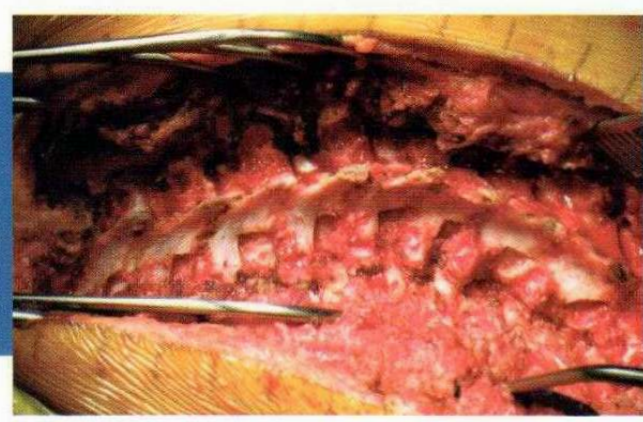
- Facetectomy
- Ponte osteotomy
- Smith Peterson osteotomy
- Pedicle subtraction osteotomy
- Vertebral column resection
- Thoracoplasty

Minimally Invasive Spine

- Microscopic approach
- Approach through MIS retractor (e.g. METRx)
- Thoracoscopic approach (not cleared in the U.S.)



Sacral Laminectomy



Facetectomy

Clinical Experience

The BoneScalpel has been used for bone fragmentation in the following orthopedic, reconstructive and neurosurgical procedures:

Maxilla

- Maxillary osteotomy
- Maxillary corticotomy
- Maxillectomy, hemi-max.
- LeFort I osteotomy
- Exostosis excision
- Sinus lift

Mandible

- Mandibular osteotomy
- Mandibular corticotomy
- Mandibulectomy
- Sagittal split osteotomy
- Sagittal osteotomy
- Mandibular Decortication
- Genioplasty

Skull Base and Cranial

- Suboccipital craniotomy
- Orbital-zygomatic craniotomy
- Craniotomy for orbital tumors
- Orbital reconstruction
- Correction of craniosynostosis

Pediatrics

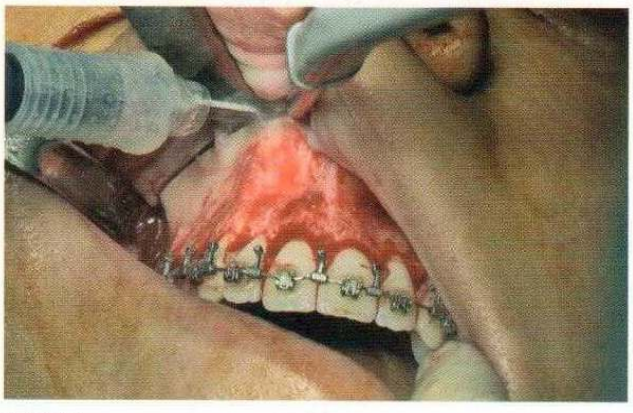
- Pediatric craniotomy
- Pediatric craniosynostis
- Pediatric sternotomy in revision

Oncology

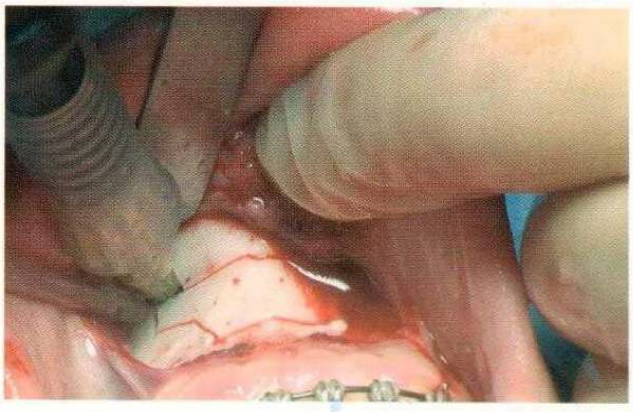
- Bone tumor resection

Reconstructive Surgery

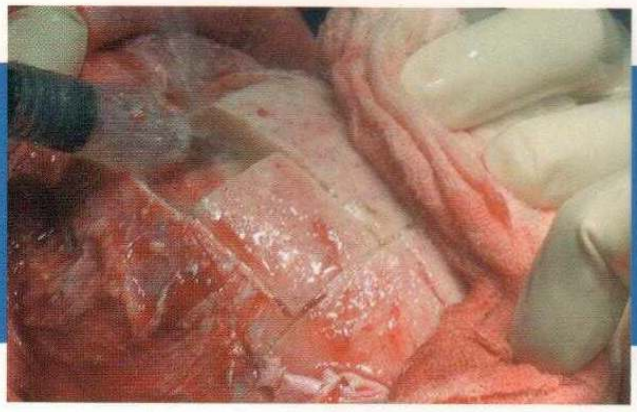
- Bone harvest from fibula, iliac crest, chin, and parietal
- Maxillary and mandibular reconstruction
- Orbital reconstruction
- Vastus intermedius perforator periostial flap (VIPP) for complex facial reconstruction
- Osteo-periostial flap for revascularisation of femoral head (hip necrosis)



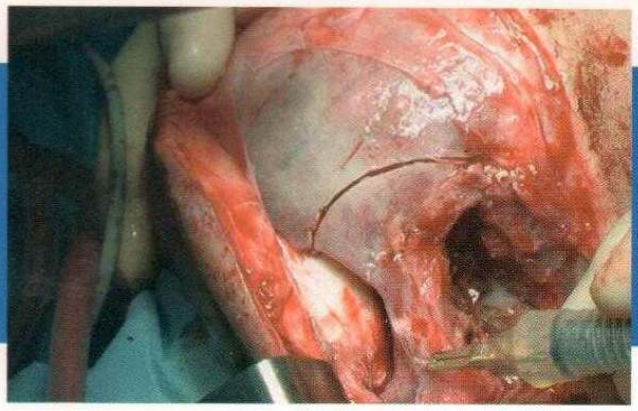
LeFort I



Chin graft



Displasia



Orbitotomy

Introducing BoneScalpel® MIS System

BoneScalpel MIS System is the latest, most advanced addition to the Misonix BoneScalpel System family. The BoneScalpel MIS System is a valuable tool in minimally-invasive spine procedures, requiring less space when incising or removing bone than an osteotome or a Kerrison rongeur. Spine surgeons can now more precisely, and with greater confidence, control their bone cuts in difficult-to-reach areas while better protecting soft tissue.

The BoneScalpel MIS offers:

- Superior control in retractor and tube-based procedures for precise bone cutting of hard tissue while sparing soft tissue & neural structures
- Deep cuts through osseous structures with minimal blood loss, increased soft tissue protection and reduced hand fatigue for the treating surgeon
- A large amount of viable autograft bone compared to shavers or burrs, potentially offering a cost savings in these procedures

The outstanding capability of the **BoneScalpel MIS System** technology makes it ideally suited for the limited access and visibility of MIS applications, where the margins of error are even tighter than those of open surgical procedures.

BoneScalpel Tip Selection Guide

bonescalpel®

Tip	Part #	Working Length*	Approach/Purpose
 10mm Blade, Blunt .5 x 5 mm	110-31-1110	34 mm	Open En Bloc Resection
	110-31-2110	100 mm	Mini-Open En Block Resection
 20mm Blade, Blunt 1.0 x 6.4 mm	110-31-1120	40 mm	Open En Bloc Resection
	110-31-2120	100 mm	Mini-Open En Block Resection
	150-32-2120	150 mm**	MIS En Block Resection
 25mm Blade, Blunt 1.0 x 6.4 mm	110-31-1125	45 mm	Open En Bloc Resection
 20mm Blade, Serrated 1.0 x 6.4 mm	110-31-1121	40 mm	Open En Bloc Resection
 Micro Hook Shaver 1.3 x 1.8 mm	110-31-1210	59 mm	Open Sculpting/Shaving
	110-31-2210	140 mm	Mini-Open Scupting/Shaving
	150-32-2110	150 mm**	MIS Sculpting/Shaving
 Macro Hook Shaver 2.2 x 3.0 mm	110-31-1220	50 mm	Open Sculpting/Shaving
 Diamond Shaver 4.4 mm	110-31-1230	34 mm	Open Sculpting/Shaving

Handpiece	Compatible Blades	Compatible Shavers	Compatible Combination Packs
bonescalpel® **100-21-0001**	110-31-1110 110-31-2110 110-31-1120 110-31-2120 110-31-1125 110-31-1121	110-31-1210 110-31-2210 110-31-1220 110-31-1230	110-31-5501
bonescalpel ACCESS® **100-22-0001**	150-32-2120	150-32-2110	150-32-5501

If you would like more information or would like to evaluate BoneScalpel, please contact us at +1.631.694.9555

*Approximate distance from typical index finger placement to end of probe using BoneScalpel Handpiece (100-21-0001)
**Approximate distance from typical index finger placement to end of probe using BoneScalpel Access Handpiece (100-22-0001)

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bioventus®
Innovations For Active Healing

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AccuracyMatters

sonastar®

Ultrasonic surgical aspiration system

- High performance tissue ablation
- Vessel sparing, soft and hard tissue removal
- Adaptive radio frequency coagulation capability
- Easy to set up and break down

MISONIX®
BETTER MATTERS™

sonastar®

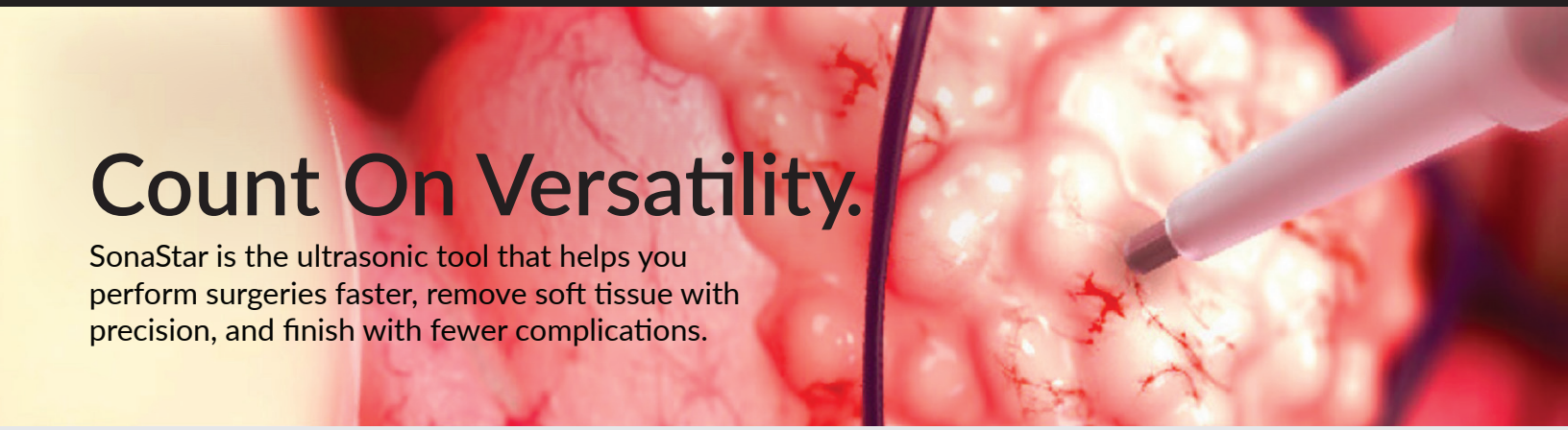
Misonix, Inc. designs, develops, manufacturers and markets therapeutic ultrasonic medical devices. Misonix's therapeutic ultrasonic platform is the basis for several innovative medical technologies. Addressing a combined market estimated to be in excess of $3 billion annually, Misonix proprietary ultrasonic medical devices are used for wound debridement, cosmetic surgery, spine surgery, neurosurgery, laparoscopic surgery and other surgical and medical applications. Additional information is available on the Company's web site at www.misonix.com. All of our products are designed, manufactured and serviced with strict adherence to U.S.A. cGMP and ISO 13485:2007 standards. Additionally, all products meet or exceed the regulations for all applicable safety requirements.

OsteoSculpt® bone shavers (long)

SonaStar aspiration tips

SonaStar specialty aspiration tips

OsteoSculpt bone shavers (short)



Count On Versatility.

SonaStar is the ultrasonic tool that helps you perform surgeries faster, remove soft tissue with precision, and finish with fewer complications.

THE REVOLUTIONARY ULTRASONIC TECHNOLOGY ALLOWS FOR MAXIMUM CONTROL AND EASE-OF-USE.

VERSATILITY

This ultrasonic solution allows for easier setup and more efficient utilization while doing the work of multiple instruments. The system meets the needs of multiple specialties with the ability to carefully resect delicate skull base and liver tumors while effortlessly taking down fibrous meningiomas. Without question, the most versatile ultrasonic aspirator available.

SAFETY

Allows for accurate removal of targeted tissues, minimizing damage to healthy structures offering users procedure specific solutions. Solutions that not only allow for an aggressing resection in the most delicate of situations, but also offer faster operative times with more confidence.

RELIABILITY

Onboard diagnostics and trouble-shooting provide operating room staff and surgeons the confidence of knowing the device will perform day in and day out, without failure. The SonaStar will be the one device you know always works, with patented real-time feedback and control loops you can focus on what you do best.

Feel it to Believe it.

Once you demo SonaStar, you'll experience what true precision in an instrument feels like.
Contact your local Bioventus representative or call us directly at demo@misonix.com.

Dynamic Tissue Response™ | DTR

1 **SonaStar DTR**

Tissue selectivity is managed seamlessly and intuitively with the SonaStar DTR. DTR enables the surgeon to command the desired balance between power and selectivity by setting a single parameter, the Vibration.

DTR automatically increases tissue selectivity at low vibration settings when delicate anatomy demands it most. Likewise, it decreases selectivity at high vibration settings to achieve high ablation rates. A dedicated, electronic circuit is able to sense and adjust tip vibration within milliseconds.

Benefit: DTR helps to preserve nerves and blood vessels while enabling the removal of tough tissues

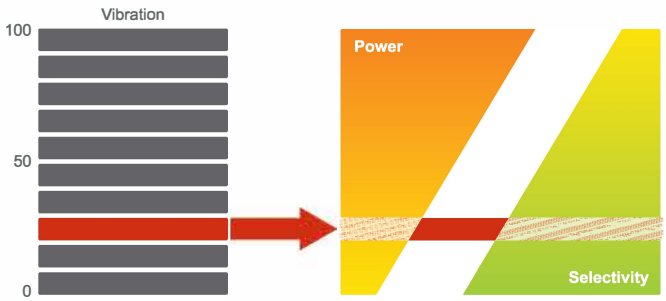
2 **SonaStar Linear Mode**

In addition to DTR, SonaStar has a progressive Linear function that allows the surgeon to control tip vibration directly and dynamically in response to changes in the anatomy and pathology by setting a pre-set vibration maximum.

Benefit: The Linear function provides the surgeon with greater control of Vibration during tissue ablation.

Tissue Selectivity Features (Combined)

By allowing surgeon control of vibration via the Linear mode, the surgeon is able to directly control tissue selectivity with DTR.



Indications

The SonaStar Ultrasonic Aspirator System is indicated for use in the fragmentation, emulsification and aspiration of both soft and hard (i.e., bone) tissue in the following surgical specialties:

- Gastrointestinal and A翻liated Organ Surgery
- General Surgery, e.g., liver
- Gynecological Surgery
- Laparoscopic Surgery
- Neurosurgery
- Orthopedic Surgery
- Plastic and Reconstructive Surgery
- Thoracic Surgery
- Thoracoscopic Surgery
- Urological Surgery

The SonaStar system may be combined with electrosurgery using optional RF surgery interface components.

SonaStar Handpieces | 23 kHz

SonaStar handpieces, with their piezoelectric drivers, are core system components. They deliver uncompromised performance in wide ranging scenarios. RF coagulation is seamlessly integrated and all materials are carefully selected to minimize magnetic susceptibility.

Most important, they feature a straight and streamlined aspiration channel to yield maximum aspiration efficiency and minimize any risk of clogging. This results in handpieces that are compact, extremely well balanced, reliable and intuitive to set up.

SonaStar Short Straight

The SonaStar Short Straight is an advanced 23 kHz handpiece that combines high performance with maximum flexibility. It delivers ultrasonic power in a compact design engineered for effective tissue removal. It accepts the entire tip portfolio for hard and soft tissue ablation and can be configured for a variety of surgical approaches. The Short Straight handpiece delivers **up to 230 microns** of amplitude.

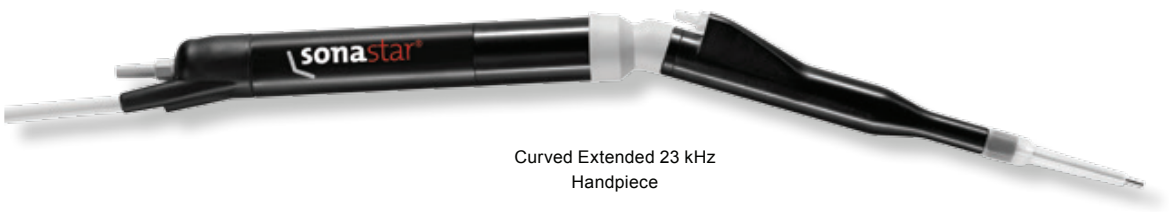
Shown with standard long curved plus tip (MXA-D218)

Short Straight 23 kHz Universal Handpiece

Shown with short aspiration tip (MXA-D212)

SonaStar Curved, Extended

The SonaStar Curved, Extended handpiece is designed to provide clearance for use with a microscope. Additionally, the handpiece is well balanced, and its curved shape improves ergonomics by reducing hand fatigue over extended periods of use. It provides an amplified tip stroke for more efficient removal of fibrous or calcified structures. The Curved, Extended handpiece delivers **over 300 microns** of amplitude.



Curved Extended 23 kHz Handpiece

SonaStar® Aspiration Tips

A: MXA-S004
B: MXA-D218
C: MXA-D228
D: MXA-D226
E: MXA-D224
F: MXA-D232
G: MXA-D212
H: MXA-D214
I: MXA-D216
J: MXA-D230
K: MXA-S002

MXA-D234 and MXA-L002 (not shown)

The soft tissue aspiration and OsteoSculpt® bone sculpting ultrasonic tips are engineered as distinct surgical instruments and individually tuned to the 23 kHz system frequency.

Soft Tissue Aspiration Tips

2.6 mm Macro | 1.9 mm Standard | 1.6 mm Micro | 1.1 mm Precision

SonaStar aspiration tips cover the spectrum from delicate skeletonizing to powerful debulking. They come in a variety of tip diameters and styles to address both open surgical procedures and minimally invasive surgery.

Specialty Tips

Deep Access Probe (MXA-D232)

The Deep Access Probe is designed for use in tight areas for ablation of soft tissue in neurosurgery. It is a 1.9 mm standard, long straight tip protected by a sheath made of rigid plastic to mitigate any potential for collateral damage to the surrounding tissue, e.g., thermal necrosis.

Laparoscopic Probe (MXA-L002)[1]

The Laparoscopic Probe consists of a 30 cm long straight aspiration tip with 1.9 mm standard I.D. housed in a rigid plastic sheath with a silicone tip assembled at its distal end. Previous surgeries include resection of liver hepatocellular carcinomas, liver metastases from colorectal cancer and carcinomas of the gall bladder. The probe can also be reprocessed up to 6 times.

Notched Aspiration Tip (MXA-D230)

The Notched Aspiration Tip combines our signature SonaStar ultrasound technology with mechanical cutting to remove stubborn tissue. Reported uses of this tip include the removal of fibrous meningiomas. It features beveled edges of the distal shaft orifice, and four V-shaped notches opposite one another for enhanced cutting power. This enables the surgeon to perform dissections of stubborn tissue. Since the Notched Aspiration Tip helps address a wider range of tissue types it can potentially save surgeons valuable time in the O.R. [1]Not available in all markets. Check on availability.

OsteoSculpt Bone Shavers*

MXA-S004 MXA-S002

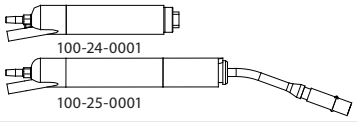
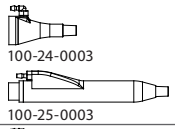
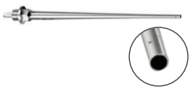
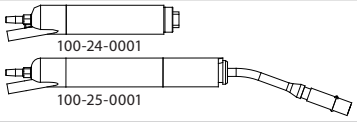
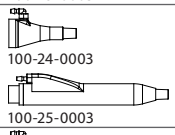
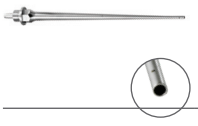
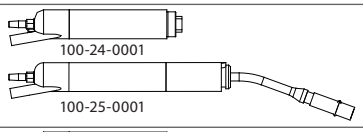
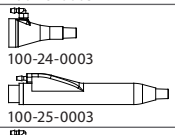
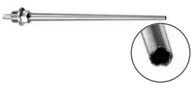
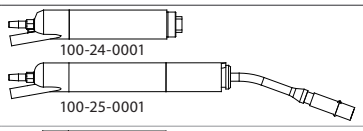
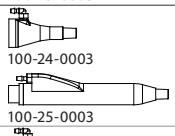
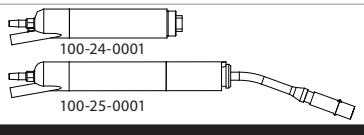
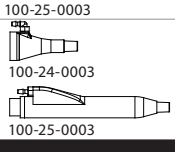
OsteoSculpt bone shavers are designed to remove hard tissue efficiently with minimal impact to adjacent anatomy. Different styles are offered to target various applications.

*Bone shaving surface area for MXA-S004 is 1.8 x 1.3 mm, for MXA-S002 it is 3.6 mm x 160°

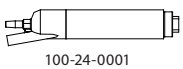
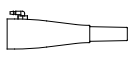
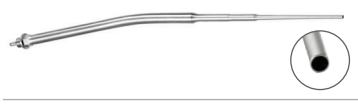
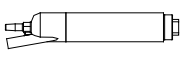
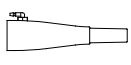
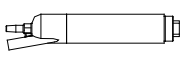
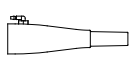
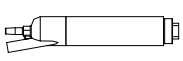
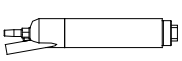
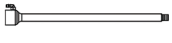
SonaStar Tip Selection Guide

sonastar®

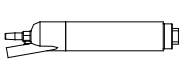
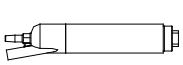
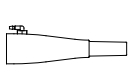
Short Aspiration Tips for Short Straight and Curved Extended Handpieces

Tip		Handpiece	Front Housing
	**130-35-1419** 1.9 mm Standard, short Working length* = 3 in.		
	**130-35-1416** 1.6 mm Micro, short Working length* = 3 1/2 in.		
	**130-35-1411** 1.1 mm, Precision, short Working length* = 3 3/8 in.		
	**130-35-1499** 1.9 mm, Notched, standard, short Working length* = 3 in.		
	**140-35-1426** 2.6 mm, Macro, short Working length*=3 in.		

Long Aspiration Tips for Short Straight Handpiece

	**130-33-2411** 1.1 mm Precision, long curved Working length* = 6 3/4 in.		
	**130-33-2416** 1.6 mm Micro, long curved Working length* = 7 in.		
	**130-33-2419** 1.9 mm Standard, long curved Working length* = 7 1/4 in.		
	**130-33-3419** *Deep Access Probe* 1.9 mm Standard, long with Rigid Sleeve Working length* = 5.43 in.		
	**140-33-4420** *Laparoscopic Probe*[1] 2.0 mm Standard long, reusable with (6) replacement sheath tips Working length* = 11.80 in.		

OsteoSculpt® Bone Shavers for Short Straight Handpiece

	**130-35-1220** 3.6 mm x 160° Standard, short Working length* = 3 in.		
	**130-33-2210** 1.8 mm x 1.3 mm Micro, long curved Working length* = 6 3/4 in.		

*Approximate distance from typical finger placement to end of probe using SonaStar Short Handpiece

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PrecisionMatters

Top-Down Wound Debridement Means Better Outcomes

sonicone® O.R.
Ultrasonic Debridement System

SonicOne O.R. Ultrasonic Debridement with SonicVac:

- The only device that combines aspiration with ultrasonic debridement
- Preservation of healthy tissue and vital structures
- Effectively lyses and removes bacteria and biofilms
- Consistently maximizes wound bed preparation
- Reduces blood loss

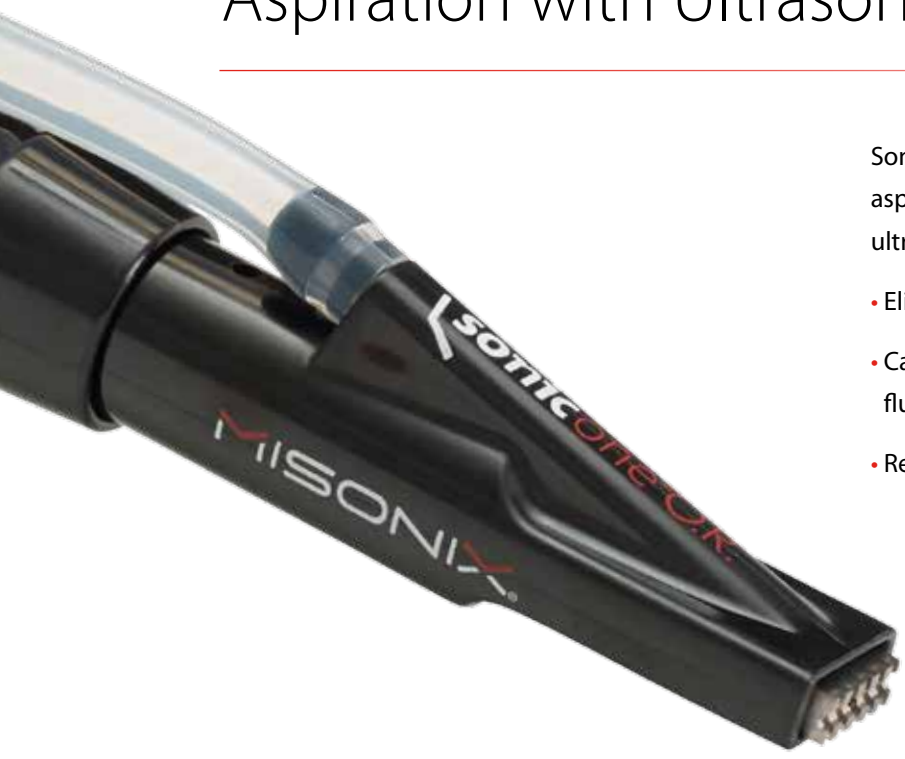
MISONIX®
BETTER MATTERS™

Top-Down Wound Debridement Means Better Outcomes

SonicOne O.R. utilizes ultrasonic technology in the form of a debridement modality which provides safe and effective removal of all nonviable tissue while safely preserving healthy structures. Sharp and non-distinct debridement techniques often result in inadvertent resection of viable tissue planes. The precision available with the SonicOne OR allows for surgical debridement layer by layer from superficial to deep while protecting underlying viable tissues.

Top-down debridement by utilizing SonicOne

SonicOne O.R. with SonicVac is the Only Wound Debridement Device that Combines Aspiration with Ultrasonic Debridement



SonicVac combines the advantages of vacuum aspiration with the precision and power of ultrasonic debridement for better outcomes.

- Eliminates vapor dispersion[1]
- Captures used irrigate in addition to other fluids from the wound site
- Removes disrupted debris from the field

1. "The clinical implications of a new wound debridement device that combines low frequency direct contact ultrasound and vacuum aspiration." Mark S. Granick M.D., Michael Baruch M.D., Wayne J. Caputo M.D., Paul M. Glad M.D.

Preservation of Healthy Tissue and Vital Structures

The SonicOne O.R. provides surgeons a safe and effective means of surgical soft and hard tissue management. Utilizing low frequency, high intensity ultrasound, the SonicOne O.R. titanium tips vibrate at 22.5 kHz. This precise vibration creates mechanical energy that is transferred to tissue, causing molecules to oscillate. Micro-sized gas bubbles created in tissue and surrounding fluids create bubbles that collapse (implode), which results in destruction of tissue close to the bubbles. This transient cavitation emulsifies devitalized tissue while the membranes of healthy tissue simply move with the oscillation.

Pre-debridement .

Post-debridement using SonicOne with SonicVac.

Effectively Lyses and Removes Bacteria and Biofilms

Due to the ultrasonics phenomenon of transient cavitation, the gas-filled bubbles created by the SonicOne O.R. undergo rapid expansion followed by collapse. The turbulence created by the imploding gas bubbles may be one mechanism by which destruction of bacteria and biofilm occurs.

"Post-treatment a log 5 reduction in bacterial count was seen as a result of the low frequency ultrasonic debridement. Three of the five samples post-treatment showed a bacterial count of zero. The cultures and quantitative bacterial cultures indicate the ability for SonicOne ultrasonic debridement to reduce bacterial load in a variety of wound types and with a broad spectrum of bacteria present."[1]

Pre-debridement .

Post-debridement using SonicOne with SonicVac.

1. "Surgical Debridement with SonicOne; an initial look at the bacterial load pre and post low frequency direct contact ultrasound." Daria Abolghasemi, D.O., Karen D. Szymanski, D.O., Michael Baruch M.D., Jasshed Zuberi M.D.

Consistently Maximizes Wound Bed Preparation

The therapeutic effects of low frequency ultrasound on wound bed preparation and healing is well documented in the literature. Acoustic micro-streaming and cavitation are the principal effects that drive the cascade of healing activity. Acoustic streaming has been shown to alter cell membrane permeability and second messenger activity, which in turn may result in increased protein synthesis, degranulation of mast cells, and increased production of growth factors. It has been shown that patients within a study treated with SonicOne Ultrasound for recipient site wound bed preparation with subsequent skin graft have a 95% take of split thickness skin graft.[1]

Pre-debridement of foot ulcer.

Post debridement pre graft application

Post graft placement

1 "Split Thickness Skin Graft Incorporation after Ultrasonic Debridement for Wound Bed Preparation in Diabetic Foot Wounds." Sean M. Betesh, DPM, Michael I. Gazes, DPM, MPH, Peter B lume, DPM, FACFAS.

Reduces blood loss

SonicOne has demonstrated reduced blood loss when compared to standard excision methods.[2]

Pre-debridement of fourth degree burn to right foot.

Debridement with SonicOne with SonicVac.

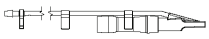
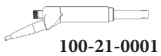
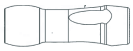
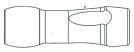
Post-debridement of fourth degree burn to the right foot.

2. "Ultrasonic Tangential Burn Excision Reduces Blood Loss." Abraham P. Houng M.D., Sylvia J. Petrone M.D., Robin A. Lee M.D., Michael A. Marano M.D.

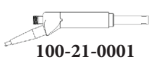
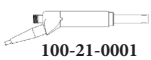
SonicOne O.R. Tip Selection Guide

sonicone® O.R.

Soft Tissue Debridement Tips

Tip		Handpiece	Front Housing	Uses
	**120-31-13C2** SharpVac	 **100-21-0001**		General soft tissue debridement with vacuum aspiration and wound preparation.
	**120-31-13X2** SonicVac	 **100-21-0001**		General soft tissue debridement with vacuum aspiration and wound preparation.
	120-31-10X1 Hatch Titanium Probe	 **100-21-0001**	 **100-21-0003**	Cross hatched for general tissue Debridement and wound bed preparations. (high aggressiveness)
	**120-31-10R1** Cylindrical Titanium Probe	 **100-21-0001**	 **100-21-0003**	Debridement of small areas, deep tunneling and undermining wounds. (low aggressiveness)

Hard Tissue Tips

	**110-31-1110** 10mm blade, blunt **110-31-2110** 10mm blade, blunt	 **100-21-0001**	 **100-21-0002**	Small bone osteomomy
	**110-31-1120** 20mm blade, blunt 110-31-2120 20mm blade, blunt	 100-21-0001	 **100-21-0002**	Osteotomy, harvesting bone grafts.
	110-31-1125 25mm blade, blunt	 **100-21-0001**	 **100-21-0002**	Partial Metatarsal amputation, calcanectomy,osteotomy/ wedge resection.
	110-31-1121 20mm blade, serrated	 **100-21-0001**	 **100-21-0002**	Osteotomy, harvesting bone grafts.
 	**110-31-1210** Micro Bone Shaver 110-31-2210 Micro Bone Shaver **110-31-1220** Macro Bone Shaver	 **100-21-0001**	 **100-21-0002**	Resection of osteotomylitic bone osteotomy and charcot reconstruction.
	110-31-1230 360 Bone Shaver	 **100-21-0001**	 **100-21-0002**	Bone contouring and Charcot reconstruction. Burr holes in bone.

*MIS products provided with extended front housings

References available upon request and on file at the corporate offices.

If you would like further information or would like to evaluate SonicOne, please contact us at +1.631.694.9555

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