Information for users
KaVo SONICflex® bone and INTRAsurg® 1000 Air

Overview

The therapies developed in recent decades in dentistry have become increasingly less invasive. A trend can also be identified in the field of dental surgery.

Amongst the groundbreaking innovations has been the use of ultrasonic and sonic technology in bone surgery. First seen in the 1960s, this technology has undergone continuous development ever since. A wide and varied selection of systems is now in use.

The major advantage of ultrasonic and sonic technology is its ability to significantly minimise the risk of damage to nerves or membranes in the context of osteotomies.

The method is minimally invasive because the range of movement (oscillation) of the working tip is restricted to just several microns. As the soft tissue is able to oscillate sympathetically, it is protected against injury. The risk of nerves or membranes sustaining irreparable damage is virtually excluded.

Bone tissue is rigid and cannot move. Ultrasonic and sonic instruments are used to cut through it. This selectivity is assured at all frequencies below 50 kHz. It is for this reason that KaVo has consciously set its frequency to an absolutely safe level of 6 kHz. The risk of heat being generated in the surrounding tissue needs to be minimised to prevent post-operative trauma.

Unlike other systems, KaVo’s SONICflex bone is based on the sonic technology which has been proving its worth in scalers for many years. KaVo’s SONICflex bone tips can provide you with a simple and cost-effective way of expanding your range of treatments.

With KaVo’s SONICflex bone set, you can easily access new and minimally invasive forms of treatment.

Used in conjunction with the INTRAsurg 1000 Air, SONICflex bone provides you with the ideal combination of rotating and oscillating surgical instruments in a single unit.

The power and speed of the proven rotating operating principle is impressive.

In sensitive and critical areas, you can protect a maximum amount of soft tissue and nerves by switching to the minimally-invasive oscillating KaVo SONICflex bone.

Simply press the foot switch to activate one of the preset programs and switch between the two treatment modes.

The high oscillation amplitude facilitates effective and precise incisions. It can be set to 120, 160 or 240 μm easily using the ring switch on the KaVo SONICflex 200 L. The elliptical motion of the tips means that you can work in any direction.

Thanks to the perfect image you are afforded at all times of the area being treated, you will have no problem directing the saline solution as required. The coolant exits shortly before the working tip, reaching the area being treated directly without compressed air.

You will always retain a clear overview of what you are doing, even in areas which are difficult to see, thanks to the optimum illumination provided by the KaVo SONICflex 2003 L.

The KaVo SONICflex bone has five tips for all manner of applications. It can be used for oscillating osteotomies (e.g. distraction) and bone splitting, as well as for the minimally invasive removal of teeth and root residue. Moreover, it increases safety in the context of external sinus lifts. The KaVo SONICflex paro and rootplaner tips can of course also be used with the KaVo INTRAsurg 1000 Air. You can now perform periodontal surgery and root tip resections under sterile conditions.

The ideal combination: SONICflex® bone and INTRAsurg® 1000 Air

| 1) Round burr | Very deep | Imprecise | Jagged | Very wide osteotomy line |
| 2) SONICflex bone saw | Very deep | Very precise | Very smooth | Very narrow and long cut for defined bone augmentation |
| 3) Oscillating saw tip | Flat | Imprecise | Smooth depth | Hooking of saw tip results in undesirable damage to the surface of the surrounding bone |
| 4) Oscillating saw tip | Very deep | Imprecise | Smooth depth | Hooking of saw tip results in undesirable damage to the surface of the surrounding bone. Very short cutting length |
The SONICflex 2003 L handpiece is connected to the INTRAsurg 1000 Air via the air instrument hose. You must listen for an audible clicking sound indicating that the tip is securely fitted.

The coolant hose is attached directly to the KaVo SONICflex bone tip. The torque wrench fixes the required SONICflex bone tip in place in the SONICflex 2003 L handpiece.

The INTRAsurg 1000 Air is the key to KaVo sonic surgery. Simply connect it to the compressed air supply (4 – 7 bar) in your surgery.

The system

Tips for optimising treatment results

- For optimum cutting with the KaVo SONICflex 2003 L, make sure that the compressed air supply in your surgery is set to a pressure between 4 and 7 bar. Otherwise, the KaVo SONICflex bone will not be able to reach maximum performance.
- Do not exert pressure whilst working. If you press the working tip too hard against the bone, it will not be able to oscillate correctly. The excess energy will be dissipated to the surrounding bone tissue in the form of heat. This can impair cutting and cause thermal damage to the bone.
- For an ideal oscillation amplitude, make sure that the ring switch on the KaVo SONICflex 2003 L is set to the right level for the working tip.
Indication and use of tips

Tip no. 80 (four-edged tip)

**Indication**
- Removal of root residue
- Extraction prior to implantation
- Osteotomy (bone splitting)

**Setting on the SONICflex 2003 L: Level 3**

**Use**
Use the tip like a periosteum: Work the root residue in circular movements, digging deeper with the four-edged tip. This will expand the alveoli and cut through the Sharpey’s fibres.

Non-invasive extraction prior to implantation:
When treating teeth with multiple roots, you need to separate the roots carefully using a rotating instrument. Once you have done this, work around each root digging downwards in circular movements.

Osteotomy:
Place the tip at a slight angle (as when screwing) on the surface of the bone (do not exert pressure), and move backwards and forwards in the required gap path. If the bone you are treating is very hard, use a thin rotating Lindemann burr to remove the outer compacta around the osteotomy gap.

**Example**
The series of images shows an example of how the four-edged tip can be used for the minimally invasive extraction of a hemisectioned tooth with apical fist.

Tip no. 81 (diamond burr)

**Indication**
- Preparation of the bony window in the context of an external sinus lift

**Setting on the SONICflex 2003 L: Level 3**

**Use**
Following exposure of the facial wall of the maxillary sinus, use the diamond burr to prepare the bony window (do not exert pressure).

If the osteons are very thick, we recommend using the rotating diamond burr for preliminary treatment of the outer compacta. Then use the diamond burr to prepare the bone near to the membrane.

**Example**
The pre-operative x-ray reveals the extremely restricted amount of vertical bone in the left posterior maxilla.

Since a subsequent implantation was intended, an external sinus lift was performed to increase the amount of bone.

In this case, arotating instrument was used for preliminary treatment. The remaining bone around the osteotomy line was then removed and smoothed with the diamond burr.

Tip no. 82 (non-diamond burr)

**Indication**
- Atraumatic release of Schneider’s membrane in the context of a sinus lift

**Setting on the SONICflex 2003 L: Level 2 - 3**

**Use**
The advantage of this tip is that you only need one instrument to release the membrane.

Hold the tip against the membrane of the prepared bony window and start to carefully move it downwards.

Continue in this way to dig beneath the membrane and release it from the bony wall of the sinus (air is required for the sinus lift). Then luxate the membrane with the bone lid in a cranial direction.

**Example**
Once the bony sinus window has been prepared, the Schneider’s membrane is carefully removed. The membrane was completely undermined in the caudal region and luxated in a cranial direction.

The subantral space gained by means of this process is filled with bone substitute and sealed with a resorbable membrane.

The post-operative x-ray reveals the significant lift of the sinus floor by means of the augmentation (the pre-operative x-ray appears above in the section describing the diamond burr tip).
KaVo SONICflex® bone and INTRAsurg® 1000 Air

Tips No. 83/84 (axial and sagittal saw)

Indication
- Removal of bone blocks
- Osteotomy

Setting on the SONICflex 2003 L: Level 3

Use
Move the saws slowly backwards and forwards in the required gap path, taking care not to exert pressure.

In cases of very dense and hard outer compacta bone tissue, preliminary treatment of the area around the osteotomy gap with a thin Lindemann burr may be necessary.

Example
This patient was due to undergo an implantation in the area of tooth 11. Due to the buccal bone atrophy, augmentation with a retromolar bone block from the right mandible was undertaken prior to implantation.

SONICflex® bone and INTRAsurg® 1000 Air: Advantages in application

- A simple and cost-effective way to expand your range of treatments.
- The ideal combination of rotating and oscillating surgery in a single unit.
- Maximum tissue protection and minimum post-operative trauma.
- Precise and effective incisions.
- Can be used in many areas of bone treatment (osteotomies, augmentation, extractions and sinus lift).
- Optimum coagulation of areas requiring treatment which are difficult to see.
- Intelligent supply of coolant to the working tip without compressed air.
- With the KaVo INTRAsurg 1000 Air, you can now also use KaVo’s SONICflex paro, rootplaner and retro tips with sterile coolant.

Images
Page 6: Dr. F. Heinemann, Morsbach
Pages 7/8: Dr. Dr. S.-H. Gnoth, Cologne
Page 9: Dr. E. Guez, Paris

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