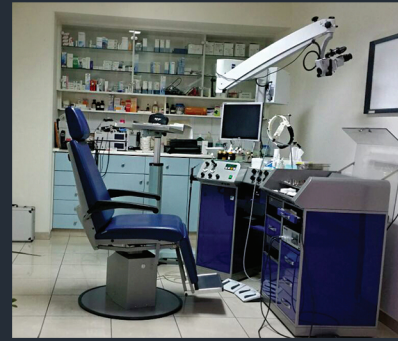


D&A ULTRASURG II



- Office-based surgery
- Easy setup and operation



- Compact and portable
- No consumables

A NEW UPGRADED
Apparatus for Various
Specialities

- Incising
- Haemostasis

- **Easily transported** between Consulting Rooms and Operating Rooms

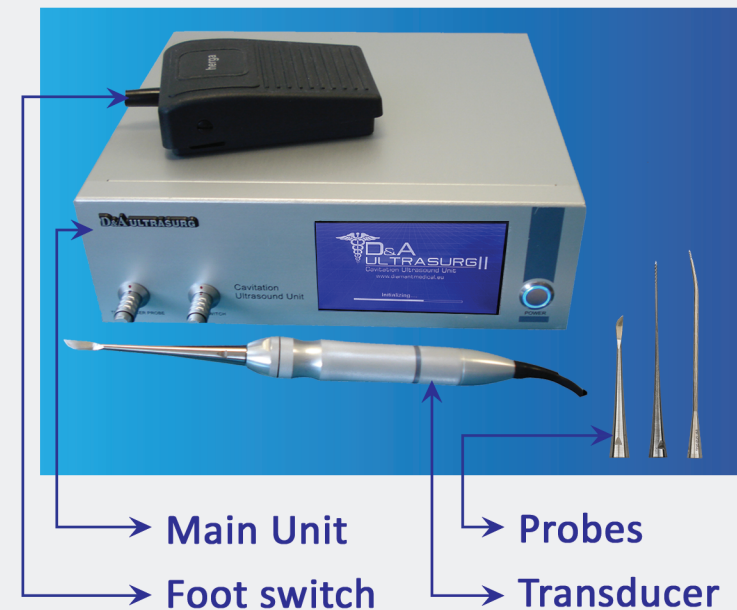


Ultrasound Surgical Unit

Introduction to Ultrasound Surgery with Ultrasurg II

The D&A Ultrasurg II is an alternative surgical instrument to the scalpel or to electro-diathermy. It uses ultrasound energy focussed into a variety of attachments to cut soft tissue. These wave-guide cutting instruments are connected to a hand-held ultrasonic transducer powered by an ultrasound generator which is operated by a foot pedal. The Ultrasurg II cuts by vibration at between 20,000Hz and 60,000Hz. At the same time as it cuts it seals the edges of the incision, minimising bleeding. It cuts and seals by denaturation of the proteins, rather than by heat and creates no smoke. It may be more precise than surgical diathermy, but it only coagulates while it cuts, unlike diathermy.

Ultrasurg II has many uses but in ENT it is principally used in nasal turbinate operations and in tonsil procedures. Other operations in which ultrasound can be effective include thyroidectomy, laparoscopic cyst decortication, gynaecological cancer surgery and haemorrhoidectomy. It is also useful for some skin procedures.



Reduction of enlarged/ hypertrophied inferior nasal turbinate

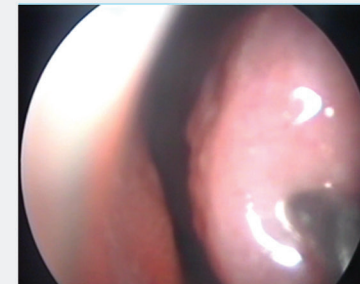
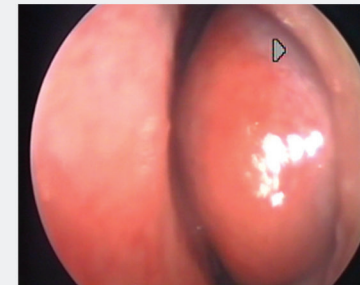
Recommended power setting: 65-80

Anaesthesia: Local

Cotton balls soaked with local anaesthetic spray (such as 10% lidocaine) applied along the entire length of the nasal conchae followed by 3 – 4 sprays of local anaesthetic. Begin after 6 – 8 min.

or

Spray the inferior nasal turbinate with local anaesthetic, wait a few moments and then inject 1 ml of anaesthetic inserting the needle from the head, along the entire length of the nasal conchae. Begin after 6 – 8 min.



Effects on tissues. Ultrasound acts on mucosal elements of the turbinate, for example, effecting changes on the following:

- **The vascular net.** Subsequent shrinkage of the vascular net leads to reduced blood flow in the area with the reduction of turbinate oedema.
- **The stratum.** Presence of collagen tissue growth especially perivascularly shows permanence of the resulting alteration.
- **The glands.** Partial destruction of glands can lead to the reduction of watery secretions in pathological situations.

Method of use

US-C

Duration of surgery: Entering and withdrawing from the nasal concha 9 -15 sec.
Touch the medial surface of the nasal concha with the sharp end of the nasal probe.
Activate the ultrasound apparatus by using the foot pedal. Insert the nasal probe into the nasal turbinate submucosally and advance it slowly towards the posterior end of the turbinate using light pressure with flowing, deliberate, even motions.

Withdraw the probe (while the device is activated continuously), pausing briefly at intervals of 6 – 8 mm length every 2 – 3 sec. Check simultaneously the nasal concha surface to ensure it has shrunk to the desired size, remembering that further post-operative shrinkage is expected to occur. Before withdrawing the probe, perform small circular movements at the entry point for 3 – 4 sec to ensure good haemostasis.

A second or even third entrance at the points where further shrinkage is desired (e.g. the posterior end of the turbinate) is also possible.

Advantage of the method

Interstitial form of therapy of the reduction of nasal turbinate [the surface of the organ remains intact avoiding functional injuries and preserves the physiological functions of the turbinates such as regulation of air humidification, temperature and mucociliary transportation].



Removal of cartilaginous part of a nasal spur of the septum

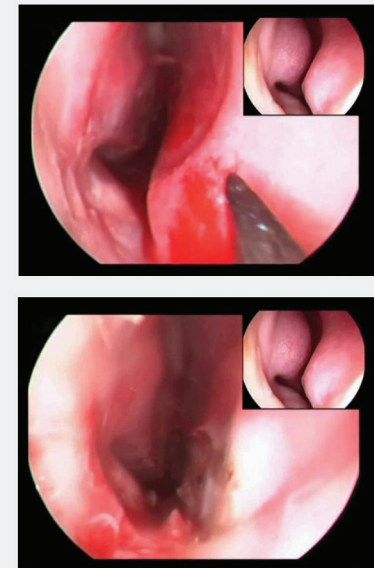
Recommended power setting: 70-90

Anaesthesia: Local

Cotton balls soaked in local anaesthetic spray (such as 10% lidocaine). Follow this by infiltrating local anaesthetic over the whole area of the spur which is about to be removed. Inject sufficient anaesthetic submucosally on the other side of the nasal septum in order to elevate the mucosa from the septum. This will prevent perforation occurring during the removal of the spur.

Begin after 5 – 6 min.

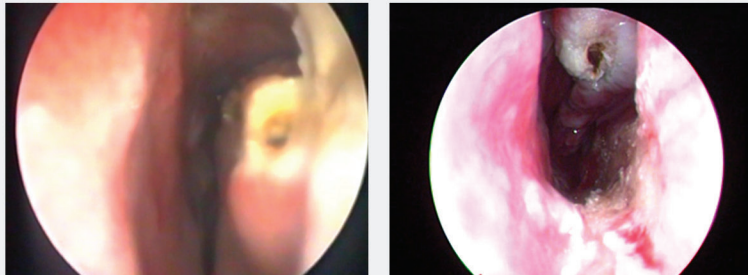
Duration of surgery: Depends on the size and depth of the spur.



- Easy office procedure
- Avoids formal septoplasty
- Easily performed with turbinate surgery
- No packs or sutures required

Method of use

With the pointed blade of the special ultrasound scalpel and the apparatus activated (using the foot pedal) press slowly and continuously. Cut the cartilaginous component of the nasal spur together with the mucosa, along the entire length on the side where the spur is situated.



US-E

US-C



Division of nasal mucosal adhesions (Synechiaes)

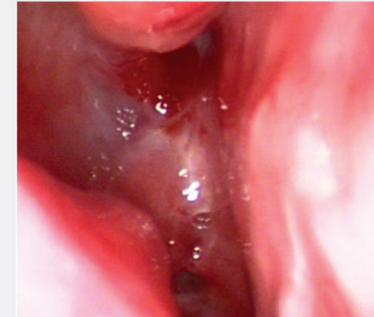
Recommended power setting: 65-75

Anaesthesia: Local

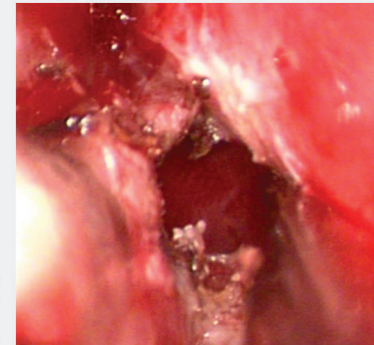
Spray the nose then use cotton wool balls soaked in local anaesthetic solution or spray (such as 10% lidocaine). Then infiltrate local anaesthetic injection into the adhesion. Wait 5 minutes.

Note: the use of the Ultrasurg II greatly reduces incidence of mucosal adhesions because nasal packing is rarely needed.

before



after



- Easy office procedure
- Easily done with turbinate surgery
- No packs or sutures required

Method of use

Remove the cotton wool balls then use the pointed blade of the scalpel (US-E) activated by pressing the foot pedal. Divide the adhesion with a slow and continuous cutting motion until it is completely separated.

US-E



Ultrasound-assisted surgery for snoring and OSA

Recommended power setting: 70-90

Anaesthesia: Local

Spray a topical anaesthetic (such as 10% lidocaine) into the posterior oral cavity. After 3-4 minutes, inject 1.0 ml of a mixture of 2% lidocaine with 1:1000,000 epinephrine and 0.5 ml 0.5% bupivacaine at the junction of the soft palate and the uvula bilaterally, and into the base of the uvula.

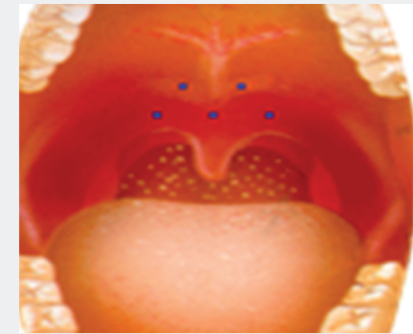


Fig.1



Fig.2



Fig.3

• Palatal surgery can be combined with nasal surgery and/or tonsil mass reduction

Method of use

Stage 1: Using forceps, hold the lower part of the uvula and pull it slightly downwards. Then, with the sharp blade of the special ultrasonic scalpel (US-E) touch the loose part of the uvula which you desire to cut. Activate the scalpel by the foot pedal and with a very slow, even movement cut all the loose part away, ensuring you do not injure the proximal muscle.

Stage 2: Next, in the same way cut trenches on the free edge of the soft palate at either side of the uvula.

Stage 3: Change the attachment on the hand piece, attaching the nasal probe (US-C). Insert the probe (activated by the foot pedal) into the soft palate submucosally, for one second at five points (Fig.1)

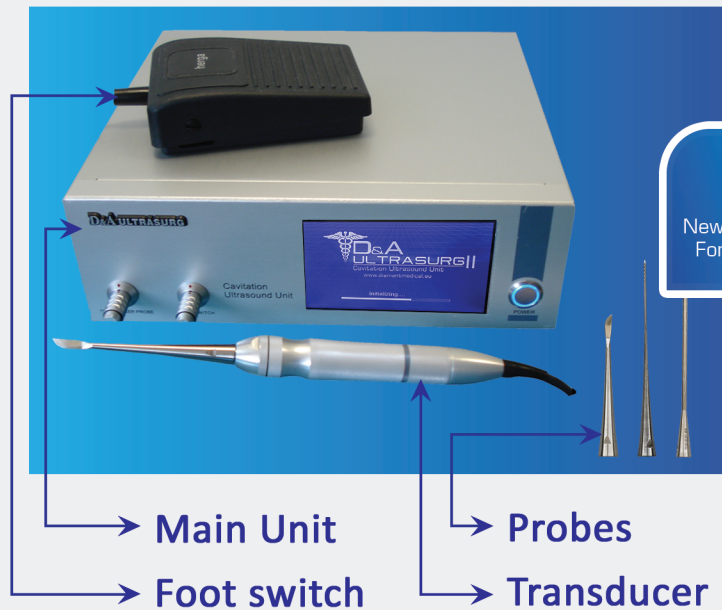
US-E

US-C



Ultrasound Surgical Unit

A New State-Of-The- Art Apparatus For Incising And Haemostasis



New

New Upgraded Apparatus
For Various Specialities



FEATURES AND CAPABILITIES OF THE NEW APPARATUS

- Full touch screen operation.
- Multiple language capability.
- Remote security updates via USB port. Provision of automatic updates remotely and enhancement of equipment by new instruments, on site.
- Backup power system for data saving in case of power failure.
- Self testing. Creation of security codes to unlock apparatus and/or keep a time log. Diagnostics for service points.
- Independent timer for each instrument (for isolated procedures as well as cumulative data).

**Most Applications Are Easily Done
In Consulting Rooms Portable Unit:**
hassle-free setup across operating /
consulting rooms and other
hospital environments



APPLICATION IN ENT FIELD

NASAL DISEASES

- Shrinkage [volume reduction] of hypertrophic inferior nasal turbinates with immediately visible results.
- Bloodless removal of nasal septal spurs.
- Shrinkage or removal of nasal septal polyps.
- Division of adhesion of nasal mucosa (synechiae).
- Treatment of epistaxis.

PHARYNGEAL DISEASE

- Surgical treatment of recurrent cryptogenic tonsillitis and recurrent tonsillolith formation without conventional tonsillectomy.
- Conventional tonsillectomy using the Ultrasurg II scalpel.
- Sub-total tonsil reduction for hypertrophic tonsils.
- Ultrasound - assisted treatment of snoring and obstructive sleep apnoea.
- Various applications in orofacial region for cutting mucosal or skin lesions (hypertrophic, premalignant and malignant lesions).
- Emergency tracheotomy (2-3 minutes).



ADVANTAGES OF ULTRASURG II

- No consumables.
- No smoke effect.
- Local anaesthesia.
- Does not burn tissue.
- Less post-procedural pain/discomfort
- Type of power/force used is mechanical, not electrical.
- Less post-procedural risk of bleeding [without use of nasal tampons].
- Patient is not required to be grounded and no electrical current travels through them.
- Neither the patient, nor the surgeon is in danger of being burned.
- No damage to tissues adjacent to the point where the procedure takes place.
- Incising and haemostatic abilities are equal, if not greater than those of monopolar cautery.
- Faster and more effective healing process [allows parents and children to return to work and childcare rapidly].
- Interstitial form of therapy for reduction of nasal turbinates [the surface of the organ remains intact avoiding functional injuries and preserves the physiological functions of the turbinates, such as regulation of air humidification, temperature and mucociliary transportation].

Treatment of chronic recurrent tonsillitis/ Reduction of massive tonsils

Recommended power setting: 70-85

Anaesthesia: Local

For adults: The oropharynx is anaesthetised using a topical anaesthetic spray (such as 10% lidocaine). After several minutes, local anaesthetic is injected into the superior junction of the anterior and posterior pillars, and mid-portion of the anterior pillar.

Begin after 5 min.

For children: Use general anaesthesia

Duration of surgery: Depends on the desired reduction, between 3 – 8 min for each tonsil.



- Safe office procedure
- Useful in OSA with palatal and nasal surgery
- Immediate visible results
- The procedure can be performed with local anaesthesia at a physician's surgery/medical office

Method of use

US-D

Insert the curved probe deep into each large visible tonsil crypt.

Activate the ultrasound apparatus by using the foot pedal. Withdraw the probe from the crypt by performing small, circular movements so that the probe is in contact with the membrane of the tonsil crypt.

Epithelium and all pathological residues from the crypt are removed as a result of the ultrasound action and the specially designed probe. Small circular movements of the probe injure the membrane of the crypt which results in development of connective scar tissue and consequently seals the crypt.

Repeat the process at each large visible crypt, ensuring that the device reaches the bottom and it is not activated during the insertion. It is important not to miss any large visible tonsil crypts.

Prophylactic antibiotics are recommended.



- The patient avoids dangers and possible side-effects of general anaesthesia and costs incurred by in-hospital procedures
- No blood loss during or post-procedurally
- The patient can return to normal activity within 1-2 days

Recurrent cryptogenic tonsillitis and tonsillolith formation

Recommended power setting: 70-85

Anaesthesia: Local

The oropharynx is anaesthetised using a topical anaesthetic spray (such as 10% lidocaine). After several minutes, local anaesthetic is injected into the superior junction of the anterior and posterior pillars, and mid-portion of the anterior pillar. Begin after 5 min.

Duration of surgery: 5 – 8 sec for each tonsil crypt



- Can avoid conventional tonsillectomy
- Safe office procedure
- Speedy return to school or work

Method of use

US-D

Insert the curved probe deep into each large visible tonsil crypt.

Activate the ultrasound apparatus by using the foot pedal. Withdraw the probe from the crypt by performing small, circular movements so that the probe is in contact with the membrane of the tonsil crypt.

Epithelium and all pathological residues from the crypt are removed as a result of the ultrasound action and the specially designed probe. Small circular movements of the probe injure the membrane of the crypt which results in development of connective scar tissue and consequently seals the crypt.

Repeat the process at each large visible crypt, ensuring that the device reaches the bottom and it is not activated during the insertion. It is important not to miss any large visible tonsil crypts.

Prophylactic antibiotics are recommended.



❖ The patient avoids dangers and possible side-effects of general anaesthesia and costs incurred by in-hospital procedures

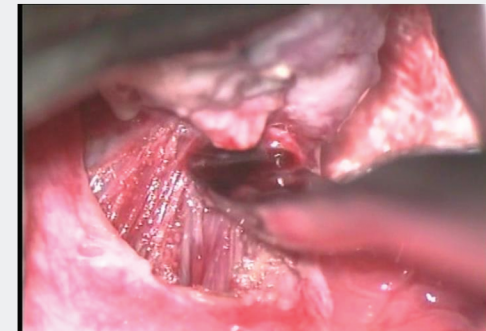
❖ No blood loss during or post-procedurally ❖ The patient can return to normal activity within 1-2 days

Tonsillectomy using ultrasound dissector

Recommended power setting: 70-90

Anaesthesia: General anaesthetic

Ultrasonic scalpel tonsillectomy is typically performed under general anaesthetic. This procedure uses ultrasonic energy to simultaneously dissect through tissues and to seal blood vessels. Tissues are cut using a blade, which vibrates at ultrasonic frequency, cutting the tissue. This vibration also transfers energy to the tissue, thereby leading to coagulation, and through this achieving haemostasis. Rise in temperature caused by the vibration is around 55–100°C and is lower than by other hot methods such as diathermy or lasers.



A **wide variety of methods** of tonsillectomy such as guillotine excision, blunt dissection, bipolar diathermy dissection, laser dissection, and the bipolar scissor technique have long been in use. Ultrasound tonsillectomy has been used successfully because ultrasound energy produces minimal lateral thermal tissue damage. It is associated with less postoperative pain and earlier return to eating, drinking and normal activities.

Method of use

The patient is positioned in the way normal for tonsillectomy. This is essentially the cold steel method using a dissector modified as an ultrasound attachment.

The tonsil is grasped in the usual way with forceps. Dissection begins slowly with the inactivated probe. Any bleeding is controlled by activating the probe by pressing the foot-pedal briefly until haemostasis is secured. If bleeding is significant, then bipolar diathermy may be required or even a ligature but this is infrequent. Slow dissection permits good haemostasis with the ultrasound probe. The temperatures found at the tip of the activated US probe are much less than other electro-cautery methods and are associated with less post-operative pain and less secondary haemorrhage. The method can be safely used in ambulatory (day surgery) units with usual precautions and advice.

The National Institute for Health and Clinical Excellence (NICE) has issued full guidance to the NHS in England, Wales, Scotland and Northern Ireland on tonsillectomy using ultrasonic scalpels.

US-H



Application of ultrasound in mucosal or skin lesion in orofacial region

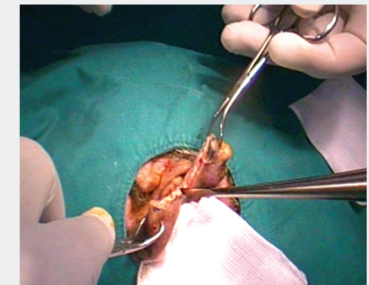
Recommended power setting: 70-90

Anaesthesia: Local

Spray the oral mucosa with local anaesthetic. In certain cases, inject local anaesthetic.

Begin after 3 –4 min.

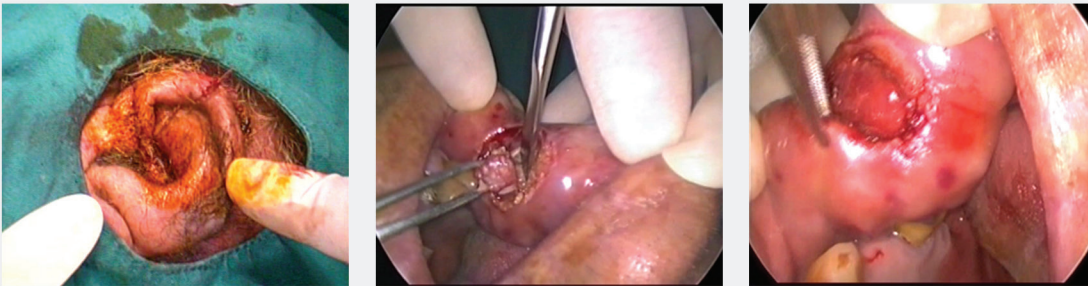
Duration of surgery: Depends on site and size of the lesion.



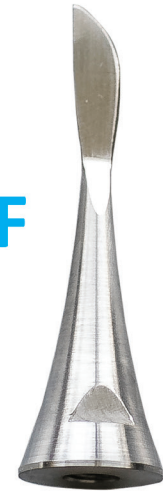
• Ultrasound scalpel cuts and cauterises simultaneously • Bloodless field

Method of use

With the sharp blade of the Special Ultrasonic Scalpel activated by the foot pedal, cut the oral mucosa or the skin around the area of the lesion with a very slow, even movement.



US-F



US-E



Available probes for research procedures

Diamant has produced a series of operating instrument probes intended for research procedures (haemorrhoid reduction, haemorrhoidectomy, mastectomy, thyroidectomy, tonsillectomy, haemostatic purposes, emergency tracheotomy).

The following probe types are available on request:

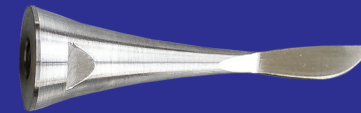
US-I



US-J



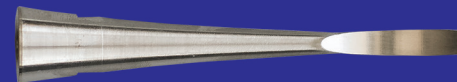
US-F



US-G



US-H



US-K

