

Electrosurgical Units and High Frequency Desiccators

Knowing the ABCs of electrosurgery will help position you as a trusted resource for your customers



Effective electrosurgery equipment is a key component of today's physician office. Electrosurgery is used in 80% of all surgeries performed in the United States, with each of these procedures requiring different types of disposable products.

A firm understanding of electrosurgical equipment and its clinical benefits enables you to be a consultative resource for your customers. Electrosurgical equipment is typically divided into two categories, either electrosurgical units (ESU) or high frequency desiccators, depending upon their ability to both cut and/or coagulate tissue. Versions within each category are consistently used in specific clinical specialties, which is important to understand as you focus on your account's needs. An ESU is designed to coagulate and cut tissue and can do so as effectively as a scalpel. A high frequency desiccator, on the other hand, can only coagulate tissue.

The following is a summary of the basic information required for fluency in electrosurgery.

Electrosurgical equipment:

1. ESUs are utilized for the cutting and coagulation of tissue with monopolar or bipolar energy.
2. High frequency desiccators are used to perform desiccation, fulguration and coagulation. They do not utilize

a cutting waveform and need no patient grounding pad since the unit is a ground reference machine.

Electrosurgical energy:

1. MONOPOLAR energy delivery requires a hand-piece (pencil), an active electrode (blade, ball, needle or loop) and a return (dispersive) electrode (patient grounding pad).
 - a. CUTTING is the primary monopolar mode of any modern ESU. Electrosurgical cutting requires less manual pressure than the sharpest scalpel. There are two types of cutting:
 - i. Pure cut mode is for dissection only and results in the electrode performing like a scalpel.
 - ii. Blended cut mode adds hemostasis to cutting to seal off small bleeders.
 - b. COAGULATION mode is the secondary monopolar mode of an ESU and is used solely for hemostasis. There are two types of coagulation:
 - i. Standard coagulation is the result of an electrode being positioned in physical contact with the tissue. The duration of contact is also an important factor in stopping localized bleeding.

ii. Fulguration (spray coagulation) is non-contact coagulation during which the current sparks or jumps from the active electrode to the tissue (like lightning arcing downward). It is quite effective for sealing hidden bleeders and for areas with large bleeders. It can also be used to destroy surface layers of cells in the bed where a lesion has been removed, and it will prevent possible migration of suspicious cells.

2. BIPOLAR energy is delivered only as a coagulation mode. Instead of using a patient grounding pad, the energy passes between the tips of an instrument and through the tissue they are grasping to stop the bleeding.

That's it for the basics of electrosurgery, and it explains what you need to know about electrosurgical devices.

Choosing the appropriate device

In order to be a valued resource, you will also need to know the correct electrosurgical generator for each specialty and site of care. Showing a customer the appropriate device is an important step in solidifying your credibility.

The typical user of a high frequency desiccator, such as the Bovie® DERM 942, is a dermatologist. These cost-effective devices are usually placed in each dermatologist's office exam room. For example, if the office has six exam rooms, the practice will require six Bovie® DERM 942 devices. Each of these high frequency desiccators require a single-use dermal electrode and certain procedures may require a second single-use electrode as well. The clinician may also require a single-use hand-piece sheath. Given the volume of product used in the office, you can see how being a resource for the customer can translate into a long-term relationship with the practice.

If cutting is required in a clinician's procedures, there is a strong possibility that there will be a need for a generator with more capabilities. The Bovie® Bantam PRO is essentially two machines in one, serving not only as a high frequency desiccator for simple dermatologic procedures, but also providing 50 W of cutting power. Using this electrosurgical unit also requires the use of a disposable return electrode (patient grounding pad).

For customers performing LEEP/LLETZ procedures, they may choose to move up a generator level.

The Specialist PRO is used in the classic LEEP (Loop Electrosurgical Excision Procedure) or LLETZ (Large Loop Excision of the Transformation Zone) procedures performed by the OB/GYN. The Specialist PRO-G system (ESU, Bovie® Smoke Shark™ II smoke evacuator, and mobile stand) is the perfect solution for the modern OB/GYN office. Accessories used with the Specialist PRO include an electrosurgical pencil, a patient grounding pad, a loop electrode, and a ball electrode – all of which are single-use products and are disposed of after the procedure.

Plastic surgery facilities and surgery centers typically find that the Bovie® Surgi-Center PRO provides everything they need in an ESU. This full function device can easily accommodate most surgical procedures performed at these facilities. As with the Specialist PRO, the Surgi-Center PRO also uses single-use accessories such as an electrosurgical pencil, electrodes, and a patient grounding pad in each procedure.

Patient grounding pads are available in two versions; a solid pad and a split pad. While both versions provide the system with a return electrode to close the electrical circuit, the split pad is considered much safer. Most ESUs (all Bovie® models that provide a cut mode) are designed to sense the grounding pad's contact with the patient. If the grounding pad loses contact with the patient, these ESUs stop sending energy to prevent a potential patient burn. The ESU then displays an error message and will not provide energy until the grounding pad is properly repositioned. However, even with an ESU that has this sensing technology, the use of a solid grounding pad may prevent the unit from properly sensing a potentially dangerous event. Accordingly, the split pad is the most widely used and recommended.

That's the ABCs of electrosurgery. As you can see, there are several electrosurgical generator options used by a considerable number of surgeons in countless procedures throughout the world. The result is numerous facilities needing to purchase high quality ESUs, with disposables being purchased on a continual basis.

What does that mean to you? If you are a consultative resource for a facility using electrosurgery, you will be able to provide the facility with critical, high-volume products needed to perform some of their most important procedures and establish yourself as a valued partner to their practice. 