

## Preoperative Safety Precautions Electrosurgery

### Intraoperative Safety Measures

During the procedure, additional safety concerns must be taken into consideration, including the following:

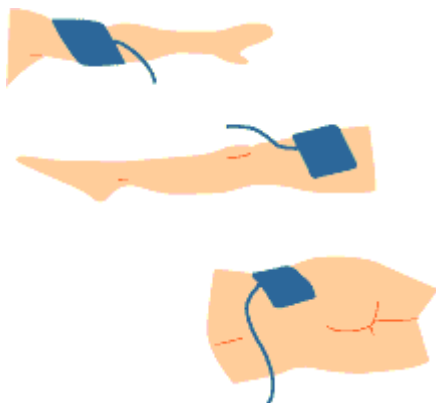
- Position and insulate the patient so that he or she is not touching any grounded metal objects (e.g., Mayo stands or I.V. stands).
- Avoid using flammable substances that can be ignited by sparks, such as alcohol and skin degreasers. If you must use alcohol-based skin preps, do not allow them to pool near the dispersive pad; be sure prep solutions are thoroughly dry and fumes have dissipated before ESU activation.
- If a foot switch is used, protect it from fluid spillage by covering it with a clear impervious cover.
- If two ESUs are used, place the dispersive pads as close to each respective surgical site as possible.
- Position ECG electrodes away from the electrosurgery site or the current pathway through the body, further from the active site than the ground pad.
- Do not use sharp towel clips to attach cables to drapes. Sharp metal clips can damage electrical cables or provide an unwanted point of contact with the patient's skin. Overlapping electrical wire around the metal clip creates an electrical transformer than can cause a hazard and may ignite drapes.
- Throughout the procedure, make sure the dispersive pad maintains uniform body contact; potential problems include tenting, gaping, and liquids that impair with adhesion. If the contact is compromised during surgery and the machine alarm ALWAYS check the pad site first to ensure contact quality and integrity of the return electrode.
- Connect the active electrode cable directly into the ESU in a labelled, stress-resistant receptacle. (If an adapter is used, it should be one that is approved by the manufacturer and does not compromise the safety features of the power unit).
- Keep the active electrode out of contact with anything that will ignite if the electrode is inadvertently activated. When it is not in use, place it in a clean, dry, well-insulated container or safety holster and keep a watchful eye on it. Observe closely for inadvertent depression of the off-on switch.
- If more than one active electrode is connected to the ESU, monitor the location of the tips of the active electrodes, or place them in a nonconductive holster when they are not in use. It is safer if the unit does not allow for activation of more than one electrode at the same time.
- Disconnect the active electrode from the power unit if it is allowed to drop below the sterile field.
- Allow only the surgeon to operate or touch the foot pedal. He or She is responsible for the effects or results that are created by the electrosurgical effect
- Operate the ESU at the lowest acceptable power setting.
- Avoid operating electrosurgical equipment while standing on wet surfaces. Keep the foot pedal dry.
- Avoid using the power unit as a dispensing table, because dials may be inadvertently bumped and solutions may be spilled. Unintentional activation or device failure may occur if liquids enter the ESU.

- Use a smoke evacuation system to protect patients and perioperative personnel from inhaling the smoke generated during electrosurgery. Place the evacuator suction tubing as close as possible to the source of the smoke to maximize smoke capture and enhance visibility at the surgical site. Consider wearing high-filtration surgical masks during procedures that generate smoke.
- If the patient is repositioned intra-operatively, reconfirm dispersive pad contact.
- Document on the patient's intraoperative record the brand name of the generator, its identification number, the location of the dispersive pad, and the settings used. Note the patient's skin condition preoperatively and postoperatively, as well as the site of ECG electrodes. Record the use of any other electric equipment

#### Pad Placement and Site Considerations:

##### Choose:

- Assess and document the patient's overall skin condition and integrity, with particular attention to areas that will be under the dispersive pad, under ECG leads, and at temperature probe entry sites. Note particularly if the patient's skin is oily, thin, or shows evidence of contact dermatitis (any flaking or reddening), scarring, vascular disease (poor circulation), or diabetes.
- Well vascularized muscle mass such as upper arms (biceps/triceps), upper thighs (Quadriceps/ hamstrings), buttocks , lower abdominal area avoiding the midline and linea alba.



- Prepare the Pad site it should be clean, dry and hair free
- Dry and free of alcohol fumes or solutions
- As close to the surgical site as possible

##### Avoid:

- Vascular insufficiency, Dry flackey or scarred skin
- Irregular body contours
- Bony prominences and Metal implants – Never place a pad directly over these sites
- Broken or poor skin types
- Fatty tissue areas as fat is a poor electrical conductor

**Consider:**

- Incision site/prep area
- Patient position or intraoperative repositioning that may cause pad problems
- Other equipment on patient such as ECG electrode, Tourniquet, Stockings and Drapes
- Current pathway and place pad as close to the surgical site as possible

**Special Considerations for:**

**Cardiology and Electrosurgery with Pacemakers**

The use of electrosurgery on patients with implanted cardiac pacemakers or pacemaker electrodes is potentially hazardous. The pacemaker may be damaged or the high-frequency energy of the ESU may interfere with the action of pacemaker circuitry, causing fibrillation, dysrhythmias, or cardiac burns. Although most modern pacemakers are designed to be shielded from RF current during ESU use, interference is still a possibility. If a patient has a pacemaker, take the following precautions: Consider using bipolar, rather than monopolar electrosurgery. Because of the short return pathway it employs, bipolar electrosurgery may be a safer alternative for patients with pacemakers.

- Check with the pacemaker's manufacturer regarding its function during the use of ESUs. Establish a policy based on the manufacturer's recommendations for this type of situation.
- Provide continuous ECG monitoring for patients with pacemakers when an ESU is being used.
- Make the distance between the active electrode and dispersive pad as short as possible and place both as far from the pacemaker as possible.
- Ensure that the current path from the surgical site to the dispersive pad does not pass through the vicinity of the heart.
- If possible, use short bursts of current so the heart can be paced normally between activations.
- Keep all ESU cords and cables away from the pacemaker and its leads.
- Keep all ESU cords free of coils and entanglement with other cords. Place ESU cords perpendicular to ECG and other patient monitoring cords.
- Have a defibrillator available in the room.
- Evaluate the pacemaker postoperatively for proper function.
- ECG monitoring, pulse oximetry, and other electronic monitoring may also be affected while the ESU is in use, but most sophisticated equipment can filter out interference.
- A patient with an Automatic Implantable Cardioverter Defibrillator (AICD) should have the device deactivated before the procedure and have his or her ECG monitored continuously if an ESU will be used. Electrosurgery must not be used on a patient with an activated AICD because it may trigger the device to shock.