
Working Together to Serve the Community

**OPERATING ROOM
POLICY AND PROCEDURE MANUAL**

Subject: Electrosurgical/Electrocautery Safety

Key Words: **Bovie, Cautery, Smoke, Pre Protocol, Fire, Jewelry**

Policy: Proper care and handling of electrosurgical equipment is essential to patient and personnel safety. Perioperative personnel must demonstrate competency in the use of Electrosurgical Units (ESUs)/Electrocautery units.

Purpose: To establish practices for the safe use of the ESU and to prevent injury to patient and staff.

Performed by: Perioperative personnel

Equipment: High filtration masks
The electrosurgical unit or electrocautery unit.
Sterile cords and holsters
Conductive dispersive pads - age appropriate
Various disposable tips
Smoke evacuation apparatus

Procedure:

1. Information regarding adequate safety margins, including testing methods, warranties, and a manual for maintenance and inspections should be obtained from the manufacturer.
2. The ESU/electrocautery units must be inspected by the Biomedical personnel prior to initial use and assigned an identification number and re-inspected on a periodic basis with the date posted on the unit.
3. Prior to use, the electric plug, cord and connections and the foot switch cord and connections should be inspected for damage. The safety features (lights, activation sound) are to be tested. The unit is to be removed for repair by Biomed if damaged or malfunctioning.
4. The ESU/electrocautery unit must be used with extreme caution in the presence of:
 - a. Alcohol-based skin preps (**prep protocol must be followed.**)
 - “Prep Protocol” includes checking for dryness, confirming containment of drip towels, prep items, identification of fire risks, and appropriate documentation.
 - The “Prep Protocol” is documented on the white board and pre-procedure checklist in the box provided “Prep Protocol.”

- Alcohol-based antiseptics must be in unit dosed applicators.
- Avoid getting solution into hair. If this happens, dry hair with towel. Dry time for hair, skin folds and between digits will be much longer than 3 minutes and will vary.
- After applying solution wait until skin is dry (3 minutes) before draping. Skin will turn from shiny (wet) to dull when dry.
- All solution soaked materials (e.g. prep applicators, drip drapes) must be contained prior to the use of cautery. This includes items used by the anesthesia providers.

- b. heat generating source i.e. fiberoptics, lights, etc.
- c. oxygen enriched environment.

d.

ALCOHOL-BASED PREP SOLUTIONS	DRYING TIME	TOWEL DRY
Chloro Prep	3 Minutes	No
Dura Prep	3 Minutes	No
Acti Prep	3 Minutes	No
Hibiclens	3 Minutes	Yes

5. Power to high intensity light sources should be turned low, off and disconnected from light source when not in use. Complete all fiberoptic light source cable connections before activating the source.
6. Activate the ESU/electrocautery unit only when the tip is in view. Deactivate the unit before the tip leaves the surgical site.
7. During surgeries in the oropharynx, all gauze must be thoroughly moistened with water/saline. The moisture level must be maintained during the surgery when cautery is in use.
8. A basin of water/saline and a fire extinguisher should be readily available.
9. Both O₂ and N₂O support combustion. During general anesthesia, the anesthesia provider will decrease FI O₂ to the minimum possible to maintain adequate SpO₂. Be aware of possible enriched O₂ and N₂O atmospheres near the surgical site under the drapes, especially during head and neck surgery.
10. During MAC and Local anesthesia with head and neck surgery or any other procedure where no physical barrier is between the surgical site and the oxygen source (e.g. ether screen):
 - a. Coat any exposed facial hair with water-soluble surgical lubricating jelly to make it non-flammable, including easily ignitable fine lanugo.
 - b. O₂ is to be decreased to minimum flow to maintain adequate SpO₂.
 - c. If O₂ is in use the anesthesia provider is to notify the surgeon.
 - d. The surgeon is responsible to indicate to the anesthesia provider when he/she will use the electro-surgical cautery.

- e. The anesthesia provider will stop supplemental O₂ prior to beginning, and during the use of the cautery unit. At that time the nasal canula must be disconnected from the oxygen source, and the patient instructed to take a couple of deep breaths to clear any pooled oxygen from the airway and nasopharynx.
 - f. Tent drapes to allow oxygen, which is slightly heavier than air, to drain away from the patient's head and toward the floor.
11. The patient's skin integrity at the pad site is to be evaluated before and after use and documented on the perioperative document.
 12. The operative field should be inspected for alternate ground points. Personnel and/or patients may be injured if current does not follow the designated path. The patient must not be in contact with metal table parts.
 13. All jewelry should be removed to prevent alternate electrical pathway burns. See attachment "A" (informational sheet) and have patient complete Attachment "B", and place in patient's chart.
 14. Power settings for coagulation and/or cutting should be set as low as possible, confirmed orally with the operator before activation, and determined in conjunction with the manufacturer's recommendation.
 15. DO NOT store or place fluids on top of an ESU/electrocautery units. Do not obstruct the ventilation of the ESU/electrocautery unit.
 16. Select an appropriate size-grounding pad for patient's weight (do not cut). Inspect the pad for wire breakage, fraying and expiration date.
 17. The single use dispersive electrode is to be placed on the positioned patient on clean, dry skin over a large muscle mass and as close to the operative site as possible. Attempt to apply the grounding device closer to the operative site than any other conductive patient contact (ECG electrodes, pulse or pressure devices).
 18. Avoid excessively hairy sites (clip if necessary), bony prominences, scar tissue, over metal prostheses, and areas distal to tourniquets or BP cuffs.
 19. Ensure the dispersive electrode's entire surface area maintains uniform body contact without tenting or gapping. Avoid contact with liquids, which will interfere with adhesion and sites where prep or irrigating fluids can pool or collect.
 20. Check grounding device contact if patient is repositioned.
 21. The patient ground cable is positioned as to avoid being tripped over, stepped on, pulled out of the ESU/electrocautery unit, or in contact with any member of the OR staff.
 22. The active electrode (hand piece) should be confined to a dry, well-insulated safety holster to prevent accidental activation and/or injury to patient or personnel.
 23. Hand piece tip must be secure and cleaned of charred tissue.

24. Avoid coiling or twisting around and/or contact between the active electrode cable and conductive surgical instruments and devices.
25. If a fault occurs during a case, check all connections from the patient to machine. If an adverse skin reaction or injury is suspected, the ESU/electrocautery unit, active electrode and dispersive electrode are to be retained with the ESU/electrocautery unit and sent to Biomedical Engineering for a full investigation. An Event Report should be completed.
26. Smoke evacuation should be used to remove electrocautery plume to reduce health hazards to patients and personnel. This can be accomplished by implementing the following:
 - a. Wall suctions with in-line filters.
 - b. Specially designed smoke evacuation systems according to manufacture recommendations.
 - c. Improved surgical filtration masks.
27. Bipolar ESU/electrocautery forceps do not require use of a dispersive electrode. Current flows from tip to tip. If used concurrently with monopolar devices, a dispersive pad must be used.
28. Use of an ESU/electrocautery unit in monopolar mode may interfere with pacemaker circuitry. Use bipolar mode whenever possible.
29. A magnet will be available for use by Anesthesia for patients with AICD's/pacemakers implanted.
30. The ESU/electrocautery unit biomedical number, dispersive electrode site, power settings, name of person applying the electrode, and condition of skin at electrode site postoperatively must be documented on the perioperative record.

References:

AORN Recommended Practices, 2007.
Bulletin of the American College of Surgeons;
Volume 82 Number 8, Operating Room Environment, Fires in the Operating Room.
August 1998.
ECRI; CMS REF: S&C -07-11

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