SUBJECT: **Electrosurgical Unit Usage in the Operating Room**

Policy No.: **OR 014**
Supercedes: **OR-11.1**
Revision Date: **10/2018**
Effective Date: **11/2006**

Policy Statement: Purpose of Procedure: To establish guidelines for the safe use of the electrosurgical units (ESU) in the operating room and electrosurgical bipolar coagulator

Policy Statements:

1. Each ESU will be inspected and calibrated by biomedical services personnel on an established schedule.
2. Biomedical will maintain copies of routine safety and preventive maintenance inspections.
3. Each ESU will have current inspection sticker in place.
4. The ESU is not to be used in the presence of flammable agents such as alcohol or tincture base agents.
5. A new disposable dispersive pad and cord and a new cautery pencil is used with each patient.
6. When using an ESU on patients with pacemakers the EKG is monitored closely. All patients are assessed pre-procedure for presence of pacemaker.

KEY POINT: The ESU is used with caution because of the danger of introducing electrosurgical currents into the heart which could cause fibrillation, also, interference from the electrosurgical current can cause pacemaker to revert to an asynchronous mode or inhibit the pacemaker entirely.

Physician's Order Required: No

Performed By: RN, Surgical Technician (set up only)

Equipment List:
Electrosurgical Unit (ESU)
Disposable dispersive pad with cord
Hospital approved disinfectant
Cautery pencil with cord

Procedural Steps:

A. Electrosurgical Unit

1. Clean the flat surfaces of the generator daily and after each procedure with a hospital approved disinfectant.

2. Inspect the generator, cords and wires for integrity.
   KEY POINT: Any damaged unit must be removed from service immediately.

3. Plug the generator into the appropriate wall outlet.

4. Select appropriate size pad based on patient size and weight.
   KEY POINT: DO NOT CUT PAD. The greater the area of contact, the less chance of burns.

5. Open the sealed package, following manufacturer's instructions. Peel the grounding pad from the backing.

6. Apply dispersive pad as close to operative site as possible

KEY POINT: Electrosurgical current flows toward the ground and will take the path of least resistance. Any other grounded equipment can act as an "alternate path" to the current flow.
KEY POINT: While prepping patient, do not allow the dispersive pad to become wet. Solutions are excellent conductors. If they are allowed to pool under the patient, they could create an alternate path and a potential burn site. If a flammable prep is used (ie, Chloraprep, Duraprep) sufficient time of approximately 3 minutes (per manufacturer recommendations) for drying should be allowed prior to draping and activation of the ESU. Patient jewelry and metal hair clips should be removed. Ensure that the patient's body is not in contact with any metal.

7. Place the dispersive pad on the patient by selecting an appropriate site for application of the dispersive pad. Suggested placement area: forearm, anterior thigh, abdomen and buttock.
   a. Site should be dry and clean.
      KEY POINT: Moisture may prevent adequate adhesion and increase conductivity.
   b. Place pad in area of high vascularity such as the thigh.
      KEY POINT: Blood carries away heat and helps keep the area under the pad cool.
   c. Avoid scarred tissue.
      KEY POINT: Vascularity is poor over scarred area.
   d. Avoid hairy area. Shave area if necessary to use this site.
      KEY POINT: Hairy surfaces have poor adhesion and tend to insulate.
   e. Avoid bony prominence.
      KEY POINT: Bony prominence reduces contact surface and vascularity is poor
   f. Avoid internal hardware.
      KEY POINT: Pad should not be placed on top of prosthetic devices.
   g. Do not place pad circumferentially around limb. This may restrict blood flow.

8. Adhere the pad securely to the skin surface by applying gentle pressure over the entire pad and border.
   KEY POINT: Be sure the entire pad contacts the skin. Do not reapply or reuse the same dispersive pad.

9. Connect the dispersive pad to the patient return electrode outlet on the generator. Turn on the ESU, and then plug the patient return electrode into the ESU.
   KEY POINT: Cord should be of adequate length to reach patient without stress on the connection.

10. Plug active accessories into appropriate receptacle

11. Position the foot pedal, if used, for the doctor's convenience.

12. The nurse will turn the main switch "ON" and set coagulating and cutting power control to the setting that the doctor requests.
    KEY POINT: Begin with the lowest setting that will accomplish coagulation/cutting function.

13. When the procedure is completed, turn machine off.

14. If the ESU does not function properly, the nurse will turn the main switch "OFF" and check the unit as follows:
    a. Check connection at wall outlet.
    b. Check connection between patient dispersive pad and adapter in front of ESU.
    c. Check location and integrity of dispersive pad. Be sure that pad has maintained uniform body contact. Look for lifting, tenting, or any other reason for poor contact. Replace if necessary.
    d. If foot pedal is used, check connections from foot pedal to unit.
    e. If the ESU still does not function properly, remove the defective machine from service and red tag for repairs.
    f. Keep the dispersive pads and cautery pencil that were used during the procedure and give to Medical Equipment Repair staff with the malfunctioning ESU.
    g. In the event of a patient injury, an Event Notification form must be completed and the surgeon notified. All items (pad, cautery pencil and ESU) involved will be immediately removed from service and saved until the event has been investigated. Nurse will notify Charge Nurse/Nurse Manager of incident.

Documentation:

The nurse will document on the Perioperative Patient Care Plan the lot number and location of the dispersive pad and the identification number of generator. The condition of the skin under the dispersive pad will be documented before and after the procedure.

B. Force GSU Argon

1. Connect the E2800 Force GSU adapter box to the system, if regular cautery is needed
2. Connect the active electrode handset to the force GSU unit
3. Select the generator power settings according to the manufacturers' instructions
4. Set the gas flow range according to the manufactures instructions
5. Place the generator in the ready mode

C. Electrosurgical Bipolar Coagulator:

1. Place generator on stand with foot pedal on floor at foot of surgeon.
2. Attach power cord to wall electrical outlet.
3. Connect the two banana plug outlets into the OUTPUT adapter on front of generator.
4. Flip POWER switch to ON. Red lamp will glow.
   KEY POINT: Red light means generator is functioning properly.
5. Adjust COAGULATION switch. Always start at #10 power setting and work up to higher setting as requested by the surgeon.
   KEY POINT: #30 is usually the maximum requested.
6. When foot pedal is depressed, amber light will glow.
   KEY POINT: If light does not glow, generator is not functioning properly.
7. Machine is now ready for surgery.

Documentation: Record use of Bipolar generator on intraoperative nursing note.

D. Intraoperative Safety

Safety precautions to be taken during the procedure:

1. Dispersive electrode contact is checked when patient is repositioned.
2. Cord connections and dispersive electrode contact are checked when higher than normal settings are requested.
3. Active electrodes are maintained on the field in nonmetallic containers.
4. During surgical procedures involving the patient’s face or head, if possible, the technique of draping should be wide to expose the whole head in order to allow supplemental oxygen, as administered by face

or nasal prong, to disperse. If possible, during MAC anesthesia, local anesthesia with epinephrine should be used to minimize the need for electrocautery.

5. During surgical procedures involving the patient's face or head, the electrosurgical hand piece will remain off the operative field until a discussion/communication between the surgeon and anesthesia has taken place regarding any oxygen that may be in use or needed to by use to verify that it is safe to use electrocautery.

References:

Valleylab Inc. Surgical Products Instruction Manual
AORN. (2020). Guidelines for Perioperative Practice. Denver, CO: AORN.
Essentials of Perioperative Nursing, Fifth Edition

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