THE ROLE OF THE PERIOPERATIVE NURSE IN ELECTRO-SURGICAL SAFETY

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Electrosurgery

- The term electrosurgery refers to the passage of high-frequency electrical current through the tissue in order to achieve a specific surgical effect i.e. cutting, coagulation, desiccation or fulguration for the destruction or manipulation of the tissue.
Historical Perspective

The use of cautery dates back as far as prehistoric times when heated stones were used to obtain haemostasis.

The use of electricity in medicine coincided with the earliest scientific discoveries beginning in the 17th Century.

1900 Joseph Rivere-First True use of Electricity in Surgery

However many people credit William T Bovie as being the ‘father’ of electrosurgical devices.
The Framework for Improving Quality in our Health Service was published in April 2016.

Within this document quality is defined by the four quality domains set out in Safer Better Healthcare Standards (2012).

- Person Centred Care & Support
- Effective Care & Support
- Safe Care & Support
- Better Health and Wellbeing
A 55 year old male admitted to hospital with acute chest pain and dyspnoea due to a ruptured aortic aneurysm.

He arrested and was resuscitated intraoperatively.

The surgery was completed.

After this operation burns on the anterior surface of the right hand, elbow and the distal forearm were noticed.

He was right handed and there was a 57% loss of his complete ability.
Types of Diathermy

• **MONOPOLAR**
  - Current flows in a closed loop - from device to instrument, through the patient’s body to the patient plate and from there back to the device.

• **BIPOLAR**
  - Current only flows in the defined tissue region between both poles and not through the patient’s body.
Preoperative Responsibilities

- Check the electrosurgical unit is clean and in working order.

- Patient’s **skin integrity is to be evaluated.**

- **Check if patient has a pacemaker, internal cardioverter defibrillator or other electrical implant.**

- Ensure patient is in the desired position for surgery.

- Prepare site for application of dispersive electrode diathermy pad.

- Select a single use diathermy pad size appropriate to the patient size.
Preoperative Responsibilities Continued…

- **Apply the diathermy pad to ensure firm skin contact** and check all attachments are secure.

- Document in the perioperative care plan the dispersive electrode diathermy pad position and site preparation.

- **Ensure patients skin is not in contact with any metal interface.**

- Metal jewellery should be removed.

- Ensure fluids do not come in contact with the diathermy pad.

- Position cables safely to prevent trips or falls and place foot pedals within appropriate site for surgeons use.
Intraoperative Responsibilities

- Once the patient’s surgical site has been prepped and draped the active electrode lead is connected to the designated receptacle on the ESU by the circulating nurse.

- The active electrode is inspected before use.

- **Ensure surgical site is fully dry and vapours evaporated** prior to using the active electrode.

- Verify power settings.

- **Store active electrodes** in a dry well insulated safety holster when not in use at the surgical field.
Intraoperative Responsibilities Continued…

• Document in perioperative care plan the type of diathermy used.

• The activated electrode should be cleaned regularly.

• Sponges close to the active electrode should be kept moist.

• Caution when using the active electrode in the presence of intestinal gases, oxygen enriched environments and fluid filled cavities.

• If the patient is repositioned during surgery check the position and contact of the dispersive electrode diathermy pad with the patients skin surface.
Postoperative Responsibilities

- Remove the dispersive electrode diathermy pad carefully.
- Check the patient’s skin integrity.
- Turn off the ESU at the power switch.
- Clean ESU, power cord and foot pedal.
- Discard all disposable items and check reusable accessories prior to reprocessing.
Special Considerations

- Special precautions must be put in place for patients with pacemakers, internal cardioverter defibrillators or other electrical implants.
- A preoperative cardiology consult may be necessary.
- An ICD will need to be DEACTIVATED prior to surgery.
- Bipolar electro surgery should be used wherever possible.
- All electrosurgical cords and cables and the diathermy pad should be placed on the opposite side as far as possible from the pacemaker/ICD.
- The defibrillator should be kept on standby in the theatre at all times.
- Continuous monitoring must be in place.
- Patient should be reviewed by relevant personnel postoperatively.
Laparoscopic Surgery

- The dangers of electrosurgery are increased by the confined, enclosed conditions that apply in a laparoscopic procedure.
- Vision is limited to the immediate operating area and much of the length of the instrument may be outside the surgeons field of vision.
- Patient injury can occur through direct coupling or capacitative coupling.
- However, **insulation failure** is thought to be the main cause of electrosurgical complications.
- Every laparoscopic instrument set likely has one or more reusable instruments with an insulation defect.
In Conclusion

The safe use of electrosurgical equipment will have a positive influence on the patient’s surgical outcome and protect perioperative personnel. It is essential to have a basic knowledge and understanding of electricity and the risks associated with electrosurgical equipment.
QUALITY MEANS DOING IT RIGHT WHEN NO ONE IS LOOKING

Henry Ford
References


References Continued...


