

ELECTROCAUTERY USE IN SURGERY

Smith et al. Laryngoscope 2001 769-780 “Electrosurgery and applications in ENT”

- Good review of bovie function and physics
- Cutting- arcing that vaporizes tissue- heat damage if don't continue to move
- Coagulation-tissue heated to 45-55 C denatures proteins
- Spray- diffuse charring of superficial tissue to stop capillary bed bleeding

Complications:

Inadvertent burns, fires esp. ENT procedures, 1 report of medical student being burned inadvertently activating bovie-burning gown, undergarments, and genitals.

Plume:

- The dangers of the electrosurgical plume are often ignored.
- The amount of smoke produced by the electrosurgical destruction of 1 g of tissue has been estimated to be the equivalent of that produced by 6 to 12 cigarettes.
- Studies have confirmed that this smoke plume may contain toxic gases and vapors such as benzene, hydrogen cyanide, and formaldehyde as well as dead and live cellular material, including blood fragments and viruses.
- Animal studies have shown that electrosurgical smoke has mutagenic potential comparable to cigarette smoke.
- The National Institute for Occupational Safety and Health (the occupational arm of the Centers for Disease Control and Prevention) has issued a hazard control document recommending general room and local exhaust ventilation while an electrosurgical unit is in operation.
- A smoke evacuator with capture velocity of 100 to 150 ft/min at the inlet nozzle and a high-efficiency particulate air (HEPA) filter are also recommended

Pollinger et al “Comparison of wound-healing characteristics with feedback circuit electrosurgical generators in a porcine model”Am. Surg 1054-60

Cautery incision displayed delayed healing but no change in tensile strength.

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