

Exam Questions TüKliS – Seminar "Electrosurgery"

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Date: 18.01.2022

High-Frequency Surgery

- What is the "Faradic effect"?
bei niederfrequentem AC (ca. 100 kHz – ca. 1000 kHz) kommt es zum Faradischen Effekt → Muskelkrämpfe (2 Schmerzen)
- What is the meaning of the abbreviation "APC" in electrosurgery?
Argon-Plasma-Koagulation
- Which procedures should you avoid when applying the neutral electrode to the patient? (Several answers may be correct)
 - (a) Rubbing of skin at the application site of the neutral electrode with a wet rag
 - (b) Removing / Shaving hairs at the application site of the neutral electrode
 - (c) Paying attention to pacemakers, implants, scars and colored tattoos and taking proper action
 - (d) Applying the complete adhesive area of the neutral electrode to the skin of the patient
 - (e) Orienting the long edge (if present) of the neutral electrode away from the operating field
 → Equipotential Ring verhindert Leading Edge Effekt → gleichmäßige Verteilung
- Which variables are controlled in modern electrosurgical units? (Several answers may be correct)
 - (a) Voltage
 - (b) Plasma / spark intensity
 - (c) Power
- What is the function of the equipotential ring of the Omega Neutral Electrode?
 - Verhindert Leading Edge Effekt (→ Strahlende ungleich verteilt)
 - Freie Orientierung, egal wie gehalten wird
- The advantages of the open BIClamp are: (Several answers may be correct)
 - (a) Less blood loss
 - (b) Less postoperative pain
 - (c) Shorter hospital stay
 - (d) minimum amount of suture material/clips or none at all

- What voltage is approximately required for APC?
 - (a) 1000 V
 - (b) 2000 V
 - (c) 4000 V
 - (d) 6000 V
- What are the main factors for the thermic depth effect of APC in descending order of importance (i.e., most important factor first)?
 - (a) Duration, power setting, distance from tissue
 - (b) Power setting, duration, distance from tissue
 - (c) Duration, distance from tissue, power setting
 - (d) Power setting, distance from tissue, duration
- What minimal temperature is required for the coagulation of biological tissue for therapeutic purposes?
 - (a) 42°C → Hyperthermie (50° → Coagulation 4-6 min)
 - (b) 60°C
 - (c) 90°C
 - (d) 100°C → Schneiden
- What is "capacitive coupling"? (Several answers may be correct)
 - (a) the involvement of an internationally recognized capacity in a surgery
 - (b) the electrical coupling of two metallic conductors in direct contact
 - (c) electrical current that is established in tissue or in metal instruments running parallel to but not directly in contact with the active electrode
 - (d) the transfer of energy within an electrical network or between distant networks by means of displacement current

Water Jet

- Which term characterizes the operating principle of the water jet in liver surgery?
 - (a) Irrigation
 - (b) Selective dissection
 - (c) Sharp cutting
 → Gefäße werden "freigelegt" nicht durchtrennt, können Anschluss koaguliert werden
- Which statements concerning water jet in liver surgery are wrong? (Several answers may be correct)
 - (a) Less blood loss
 - (b) Preservation of vessels and nerves
 - (c) Better visibility in operating field
 - (d) Less tissue trauma
 - (e) Water jet can be used also laparoscopically
 - (f) Simultaneous coagulation by heating of the nozzle

- For how many operations one may use the water jet applicators?
 - (a) Only one time (single use)
 - (b) Many times (multi use)
 - (c) Depends on the degree of contamination and on the used washing and sterilization method
- What are influencing factors for the tissue effect of the water jet? (Several answers may be correct)
 - (a) Pressure setting → 30-40 bar
 - (b) Orientation (angle) and position (distance) towards tissue
 - (c) Duration of application
 - (d) None of the above
- Which separating media are generally used with the water jet? (Several answers may be correct)
 - (a) NaCl 0.9%
 - (b) H₂O dest.
 - (c) Air
 → Argon-Ladung-Lösung bei kurzem Strom (bzw. bei kurzem Strom)
- Which default pressure settings are used in open liver surgery?
 - (a) 0-5 bar
 - (b) 5-10 bar
 - (c) 30-40 bar
 - (d) 60-70 bar

Cryo & RFA

- What effect describes the temperature change of a real gas or liquid when it is forced through a valve?
 - (a) the Doppler effect
 - (b) the Joule-Thomson effect
 - (c) the Leidenfrost effect

- What are the main influencing factors for cryo-devitalization? (Several answers may be correct)
 - (a) the final temperature < -40°
 - (b) the cooling rate
 - (c) the freezing time
 - (d) several freezing cycles (2-3)
 Cell typ
- At about what temperature irreversible cellular damage occurs within seconds?
 - (a) 42°C – nur Hyperthermie
 - (b) 46°C – Zellstrukturen werden zerstört ~60 min
 - (c) 60°C
 - (d) 100°C – geschritten
- How many electrodes do you minimally need to perform RFA?
 - (a) One
 - (b) Two
 - (c) more than two
 Bipolar → 2 Elektroden an Sonde / Pinzette...
 Monopolar → 1 Elektrode am Instrument, 1 Metallelektrode
- To increase the size of the RFA lesion in the same time, you can ... (Several answers may be correct)
 - (a) Increase the voltage/current
 - (b) Use internal cooling of the probe
 - (c) Decrease the size of the probe
 - (d) Use pulsed RF application
 → Increase vgl. bronchoskopie – dünne & dicke Sonde
- RFA probes can be ... (Several answers may be correct)
 - (a) monopolar
 - (b) bipolar
 - (c) rigid
 - (d) flexible
 nur
- In comparison to surgery, RFA ... (Several answers may be correct)
 - (a) is less invasive
 - (b) is more expensive
 - (c) can be applied to non-surgical candidates
 Größter Vorteil: keine Narkose, OP, kein Ausfall im KH

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