1. Identification Epileptic Foci: Drugs

A. A specific intra-operative application of the EEG, called electrocorticography (ECoG), is the localization of epileptic foci during surgery for intractable epilepsy. For these procedures, recording electrodes are applied on or in the brain.
B. The craniotomy can be performed under local anesthesia with conscious sedation or under light general anesthesia using nitrous oxide, narcotic, and low dose inhalational agent.
C. Provocative techniques and agents, such as hyperventilation, *low dose barbiturates* (methohexital 10 to 50 mg, thiopental 25 to 50 mg), propofol 10 to 20 mg, or etomidate 2 to 4 mg, have been used to activate the foci. Under general anesthesia, *alfentanil* 20 to 50 µg/kg and *fentanyl* 10 µg/kg also have been used to successfully produce ECoG activation.

2. LMWH: Mechanism of Action

A. Low-molecular-weight fractions of heparin have been employed principally for deep vein thrombosis prophylaxis and treatment. There are several available agents: certoparin, dalteparin, danaparoid, enoxaparin, reviparin, and tinzaparin. They do not differ in their efficacy.
B. *LMWH, just like unfractionated heparin, acts via ATIII, but has a greater affinity against factor Xa than thrombin (IIa). The LMWH heparin binds to ATIII and enhances it’s inhibitory activity.*
C. The effect on standard coagulation tests (PTT) will be minimal as will the effect of protamine neutralization (ACT). The anti-Xa level is therefore the appropriate test.
D. LMWH’s cause less platelet inhibition and are associated with a lesser incidence of HIT. They are smaller in size, may have a less risk of bleeding, and less risk of osteoporosis with long term use than the unfractionated form.

3. Metoclopramide: Esophageal Sphincter Tone

A. Dopamine (D2 receptor) antagonist in the myenteric plexus that stimulates upper gastrointestinal motility (proximal gut), *increases gastroesophageal sphincter tone*, and relaxes the pylorus and duodenum. It also has antiemetic properties.
B. Metoclopramide speeds gastric emptying but has no known effect on acid secretion and gastric fluid pH.
C. Administered orally or parenterally. IV dose is given 5-20mg approximately 15-20 minutes before induction. If given over 3 to 5 minutes, the abdominal cramping associated with rapid administration can be prevented. The oral dose is 10 mg and onset is within 30 to 60 minutes. The elimination half-life is 2 to 4 hours.
D. The clinical usefulness is greatest in patients who are likely to have large gastric fluid volumes, such as parturients, emergency surgery patients, obese patients, trauma, or those...
with gatroparesis. However, gastric emptying is not guaranteed. Effect can be enhanced if given with an H2 blocker.

**Keyword Challenge:**

1. Which of the following is MOST likely to be increased as a result of administration of metoclopramide?
   A. Gastric volume
   B. The pH of gastric contents
   C. Lower esophageal sphincter tone
   D. Gastrointestinal motility of the colon

2. Which statement about the use of remifentanil during a craniotomy is MOST likely true?
   A. High doses increase EEG activity in an epileptogenic area.
   B. In normal patients a bolus dose increases the processed EEG (Bispectral Index) number.
   C. Prolonged infusion causes prolonged analgesia in the postoperative period.
   D. It can cause postoperative delirium.

**Sources:** Barash, Big Blue, ACE