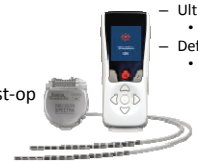
Perioperative Sources of EMI

- Electrocautery
  - Bipolar OK
  - Monopolar is incompatible
    - If must use monopolar (endoscopy, eg), then:
      - Turn SCS OFF
      - Turn voltage to "0"
      - Place grounding pad far from IPG and leads
      - Interrogate after surgery
- INCOMPATIBLE with:
  - Diathermy
  - Lithotripsy
  - (TMS)
- Interrogate post-op



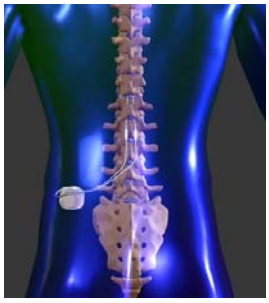
- Imaging
  - CT scans OK but can cause temporary increase in stimulation → Turn voltage to "0" and device OFF
  - MRI
    - Most devices INCOMPATIBLE
    - Several newer devices MRI CONDITIONAL (head/extremities vs full body) but most only at 1.5 Tesla
  - Ultrasound
    - Don't place directly over IPG
  - Defibrillation:
    - Place paddles as far from device as possible and perpendicular to leads

Neuraxial Anesthesia and SCS

- Single shot spinal or catheter OK BELOW level where SCS leads enter
  - Ultrasound
- Lumbar epidural OK BELOW cervical SCS IF cervical epidural entry
- Epidural catheter could disrupt stimulator leads

Neuraxial Anesthesia and SCS

- Epidural catheter could disrupt stimulator leads
  - Lead migration is a common complication
    - Reports???
      - Fibrous tissue develops around epidural leads and may protect from this
      - SCS lead diameter 1.3-1.4mm, paddle
        - » 20g catheter < 0.8mm
  - Epidural anesthesia has been used successfully w/o SCS complication for labor analgesia
    - SCS leads placed from T12/L1; do not attempt of leads enter epidural space from low lumbar
- Risk of infection of SCS hardware
- Risk/Benefit of neuraxial
- Discuss with chronic pain physician



Conclusions

- Chronic pain can make management of acute pain challenging
  - Implantable devices may limit neuraxial anesthetic
    - Caution with EMF
  - Opioid use is not diminishing despite drop in prescriptions
    - For OUD, continue methadone through perioperative period
    - Consider continuing buprenorphine depending upon indication, dose, pain history and surgical procedure
      - Use high-affinity short-acting opioids as needed
      - If discontinuing, hold for 72 hours before surgery
    - Strongly consider weaning chronic opioids for pain before elective surgery
      - Many patients find even chronic pain unchanged or improved on a lower dose!
  - Maximize multimodal therapies
    - Use regional/neuraxial when possible
    - Administer non-opioid analgesics
      - On a SCHEDULED basis