

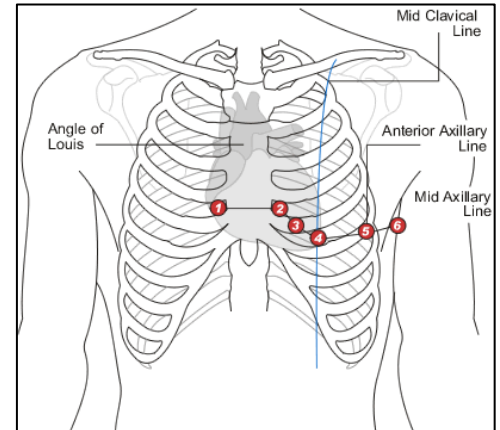
Intra-Op Myocardial Ischemia

Anesthetic Pearls: Anesthetic Implications and Diagnosis of Intra-Op Myocardial Ischemia

The diagnosis of myocardial ischemia in the operating room can be made by ECG, TEE, or PA catheter data.

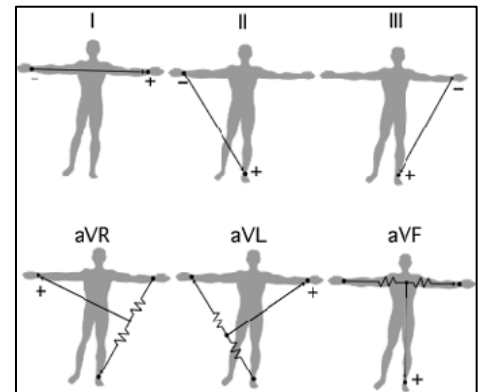
I. ECG diagnosis of MI

- Lead V3, V4, or V5 are the most sensitive single leads
 - Sensitivity ranges from 75-85%
 - Lead II sensitivity is no better than 50% (probably lower)
- More sensitive with more leads
 - Combining "2" leads may increase sensitivity up to 95%
 - False positives increase as the number of leads increases
 - Commonly use Leads II and V5 intraoperatively
- Peri-op 12-lead ECG may be most sensitive ECG method
 - Difficult in intra-op patient
 - False positives related to heart rate, amplitude, non-cardiac changes



II. TEE diagnosis of MI

- Requires a change (worsening) in segmental wall motion score of at least 2 grades in one or more segments.
- Global changes may (may not) be caused by ischemia.
 - LV ischemia can lead to infarct
 - Regional Wall Motion Abnormalities (RWMA) that develop during surgery and persist to the end of the procedure are more likely to progress to infarct
- LV stunning may occur as a result of ischemia.
 - Stunned myocardium may recover function
 - Prediction of recovery is enhanced by the use of pharmacologic stress testing (Dobutamine stress echo)
- Pitfalls of TEE monitoring for intra-op myocardial ischemia.
 - Baseline abnormalities may confuse interpretation
 - Rhythm disturbances alter pattern of contraction
 - Factors other than ischemia influence wall motion
 - Imaging difficulties
 - Motion of heart or probe compared to location of ischemia vs. scan sector (abnormalities may be in segments not being imaged therefore can not detect ischemia in segments of the LV not being visualized). Typical OR issue is the 0° scan plane that is typically used for ongoing monitoring intra-op of the LV does not adequately visualize the LV apex.



III. PA catheter diagnosis of MI

- Recognized by combination of changes in filling pressures and cardiac output
 - Classic presentation: a drop in C.O. (C.I.) combined with increase in PAOP (wedge)
 - PAOP may not increase in ischemia (influenced by compliance of LA and MV disease)
- Interpretation may be complicated by peri-operative factors other than myocardial ischemia (bleeding, volume therapy, positioning issues, valvular disease)
- Much more challenging modality to correctly manage

