7.18 PROCEDURES: TRANSCUTANEOUS PACING

INDICATIONS

Adults: 2.07 Dysrhythmia: Symptomatic Bradycardia

Persistent bradycardia typically <50 bpm, causing one or more of the following:
Altered mental status • Hypotension (Systolic <90mmHg) • Signs of shock • Chest pain.

Pediatric: 8.03 Pediatric Dysrhythmia: Bradycardia

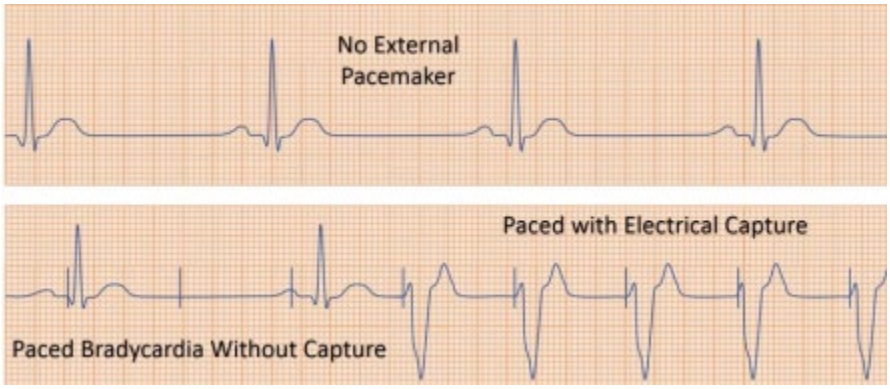
Persistent symptomatic bradycardia, refractory to medications.

CONTRAINDICATIONS

Asystole or PEA Cardiac Arrest (2.04 Cardiac Arrest).
Hypothermia (3.06 Cold Injury/Hypothermia).

PROCEDURE

1. Place pads in anterior/posterior position, if unable to place pad posteriorly can place in anterior/lateral position. Do not place pads over pre-existing implanted devices such as pacemakers or AICDs.
    a. ***Pediatrics:*** Continue CPR if <60 bpm and signs of poor perfusion throughout procedure until mechanical capture is achieved
2. Attach pacing cables to pads.
3. Switch to pacing mode.
4. Adjust pacing rate to:
    a. *Adults (>12 yo):* 60-80bpm (ideally >30 bpm above patient's initial rate).
    b. ***Pediatrics (<12 yo)****:* 100 bpm.
5. Set initial current to zero mA, increasing mA until pacing is captured on monitor (Max 120mA).
    a. If patient is unconscious increase by 20mA intervals, if conscious increase by 10mA intervals.
    b. Electrical capture can be identified on monitor when every pacer spike is followed by a wide QRS morphology with peaked T waves (see example below under "Paced with Electrical Capture").



6. Ensure mechanical capture by palpating a femoral pulse with every QRS capture If unable to quickly access femoral pulse a right radial pulse can be utilized until femoral pulse accessed.
7. If electrical/mechanical capture not achieved at 120 mA, change vector of pads and repeat above steps.
    a. ***Pediatrics****:* If unable to achieve electrical/mechanical capture continue CPR if <60 bpm and signs of poor perfusion.
8. Once both electrical and mechanical capture obtained, increase by 5-10mA.
9. Once appropriate current obtained for capture, slowly increase heart rate (*Adults:* max 100 bpm) if necessary to relieve patient's symptoms from bradycardia.
    a. ***Pediatrics***: please refer to length-based resuscitation tape for target heart rate and systolic blood pressure goals for age (13.IV.Normal Pediatric Vital Signs)
10. Consider sedation/pain management for all patients undergoing pacing Midazolam(Sedation);
    a. ***Pediatrics***: please refer to length-based resuscitation tape for systolic blood pressure goals for age (13.IV.Normal Pediatric Vital Signs)

CONSIDERATIONS

A. CPR is safe during TCP and should be performed in pediatric population until mechanical capture is achieved.
B. TCP should not be delayed for IV access, 12-lead ECG, or while waiting for atropine to take effect in an unstable patient.
C. Assessment of carotid pulse is not recommended as pacing can cause muscle contractions difficult to distinguish from pulse.
D. Electrical capture can happen without mechanical capture. Electrical capture can be assessed on monitor with identification of QRS complex after every pacer spike. Mechanical capture is evaluated with palpation of a femoral pulse with every QRS complex.
E. TCP is safe to perform in pregnant patients.