Thoracic Devices
What and Where is it?

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Disclosures - None

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Objectives

- Become familiar with frequently encountered devices in the Em
- Identify proper location of devices in the chest
- Recognize common complications of support devices

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Monitoring and Support Devices

Airway: ETT, tracheostomy tube

Vascular: Arterial and venous catheters and devices
Cardiac devices

Enteric: Nasogastric and feeding tubes

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Pacemakers

- Three types:
  - Pacemakers: pace the heart during periods of bradycardia.
  - Inplantable cardioverter-defibrillators (ICD's): capable of defibrillating the heart to prevent cardiac arrest.
  - Leadless: self-contained right ventricular single-chamber pacemakers that are implanted percutaneously

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Pacemaker Leads

- Right atrium - tip of lead is located in atrial appendage
- Right ventricle - tip in apex
- Left ventricle - lead through the coronary sinus ends in posterior cardiac vein, used for cardiac synchronization therapy in patients with bundle branch blocks
- Epicardial - placed on ventricle mainly used in cardiac surgery

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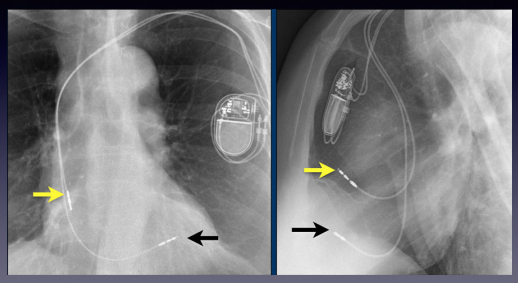
Pacemaker Leads



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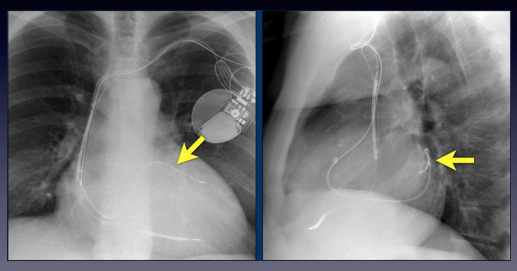
Defibrillator Leads - Coronary Sinus



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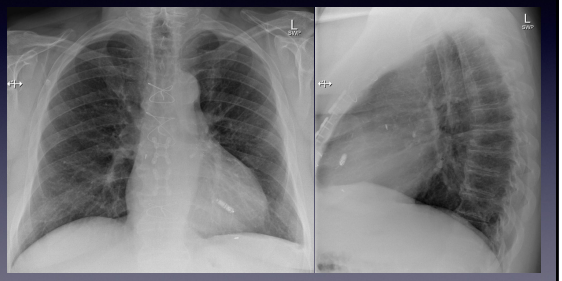
Leadless Pacing Device



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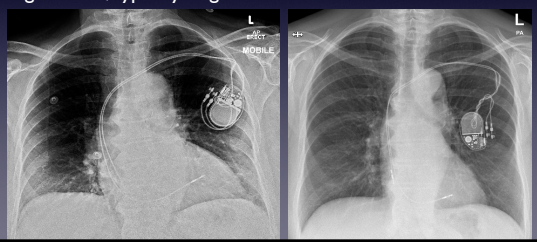
Complications - Twiddler's Syndrome

- Lead dislodgement as a complication of implanted cardiac conduction devices due to patient manipulation of the pulse generator, typically diagnosed on CXR



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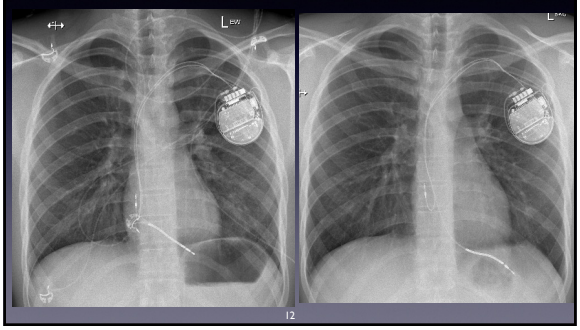
Complications - Lead Perforation



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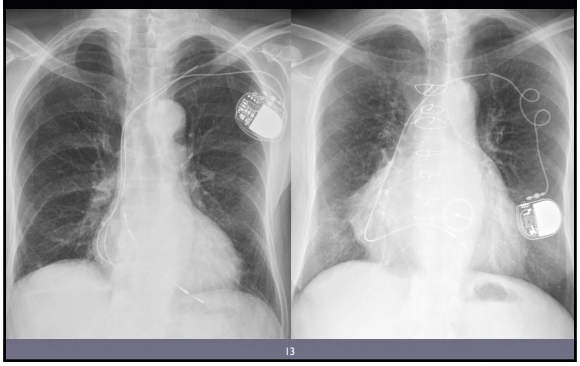
Complications - Lead Fracture



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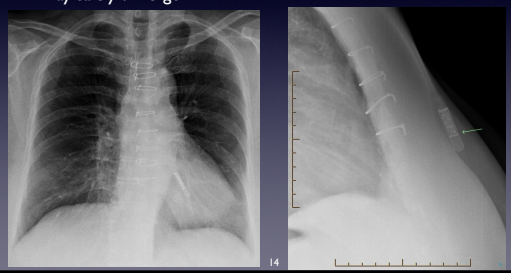
Loop Recorders

- Subcutaneous implantation
- Continuously record cardiac rhythm in patients with unexplained palpitations or syncope
- may safely undergo MRI



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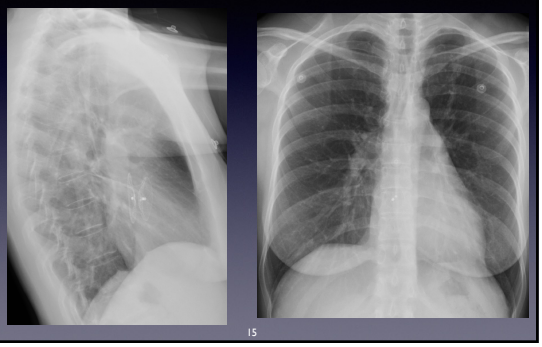
Cardiac Closure Devices



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Cardiac Closure Devices

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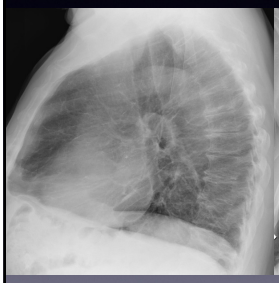
Cardiac Closure Devices



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Cardiac Valves

Minimally invasive valves

- Transcatheter aortic valve implantation (TAVI)
- Transcatheter mitral valve implantation (TMVI)

Femoral > axillary artery approach

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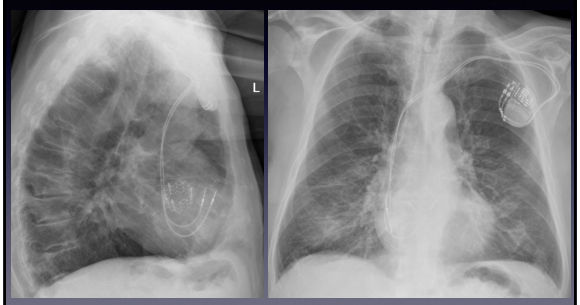
Cardiac Valves



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Left Ventricular Assist Device (LVAD)

- mechanical circulatory support device
- surgically implanted to aid in pumping blood in patients w/ severe refractory cardiac failure
- used as a bridge to heart transplantation

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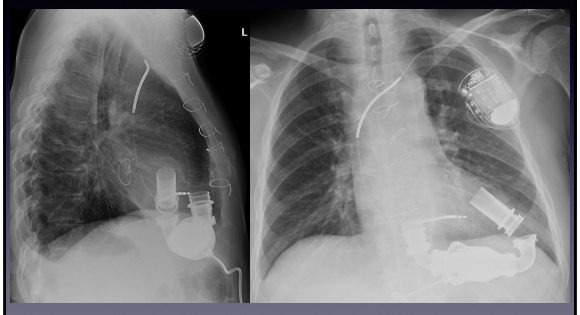
Left Ventricular Assist Device (LVAD)



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Temporary Ventricular Assist - Impella

Temporary VADs consist of an inlet, outlet & impeller pump all housed within a catheter
- inserted percutaneously usually via the femoral artery
- usually remain in situ for 4-6 days
- unsafe with MRI

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Temporary Ventricular Assist - Impella

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Cardiac Monitors - CardioMems

Wireless heart failure (HF) monitor
- placed within a pulmonary artery
- measures heart rate along w/ pulmonary artery pressures

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Cardiac Monitors - CardioMems

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Cardiac Monitors - Intra-aortic Balloon

Intensive care setting
- provide hemodynamic assistance to patients in cardiogenic shock

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Cardiac Monitors - Intra-aortic Balloon

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THANK YOU & BEST WISHES!

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