St.Francis CVOR internship

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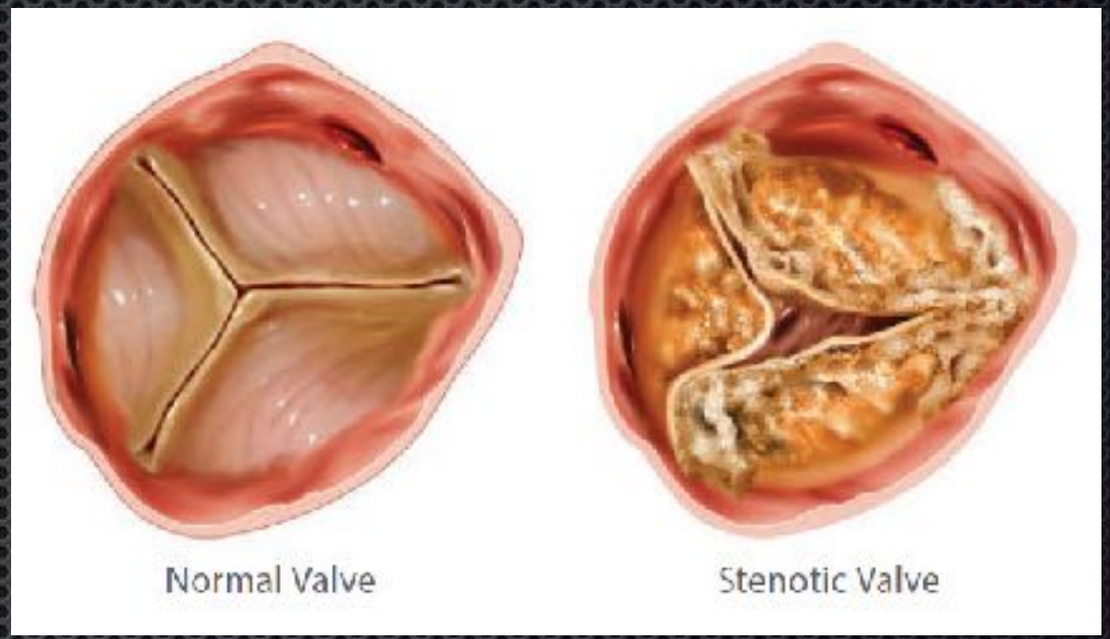
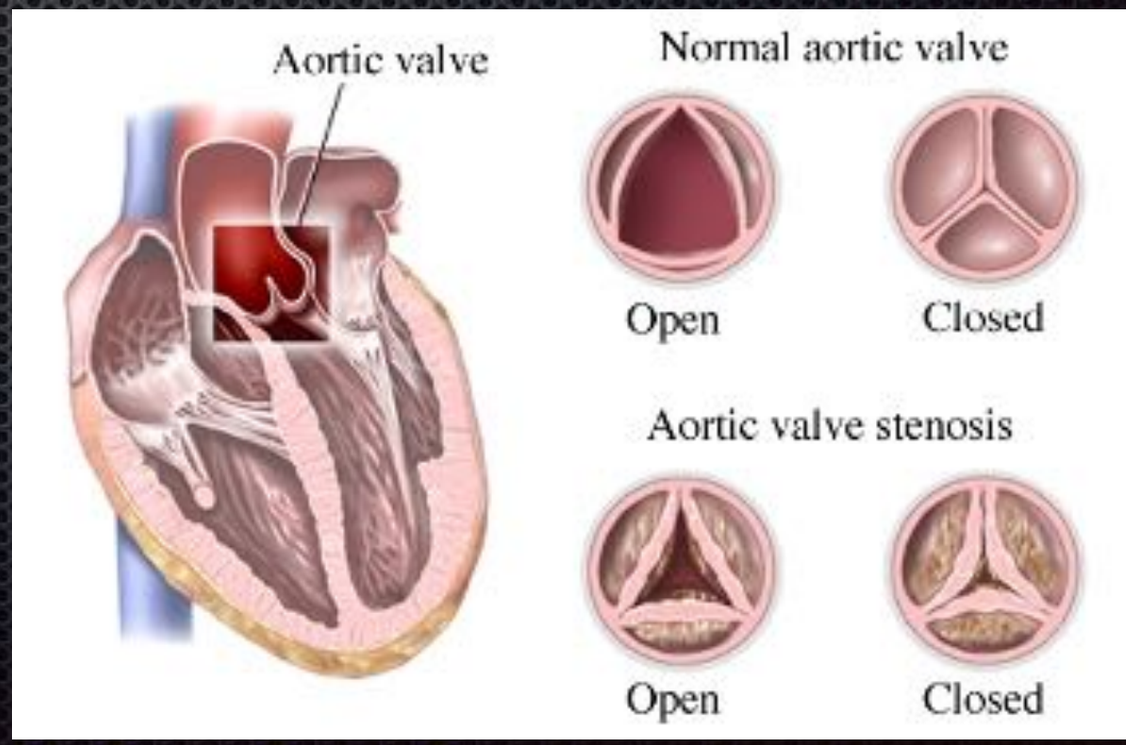
Case Study: Degenerative Calcific Aortic Stenosis

- Annulus of Aortic Valve narrows as a result of calcification.
- Narrowing results in regurgitation of blood back into the LA which can then enter the pulmonary circuit.
- This establishes a high pressure gradient due to the volume of blood that never leaves the heart.
- The regurgitation of blood into the pulmonary circuit causes one of the most notable symptoms of valve disease which is shortness of breath.



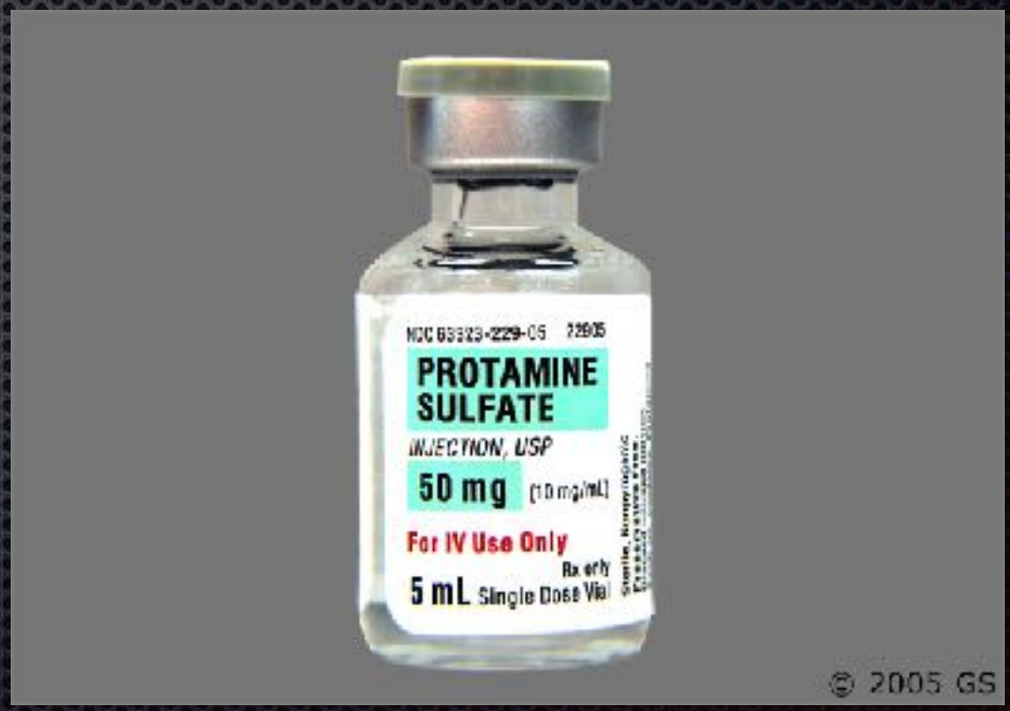


Details before surgery

Blood thinners

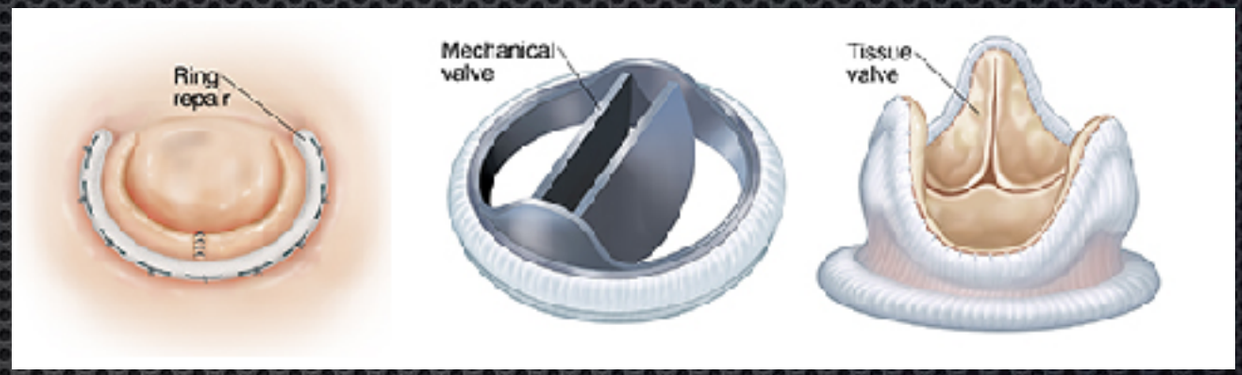
- Don't actually thin the blood.
- Just increase ACT
- Common drug is called Heparin

- Reverse the effects - Protamine
- Blood thinners = Anticoagulants
- Coagulation: tendency of blood changing from a liquid to a semi solid state.



Types of valves

- Tissue valve- Comes from Pigs and other animal donors. Lasts 10-20 years. No blood thinner needed.



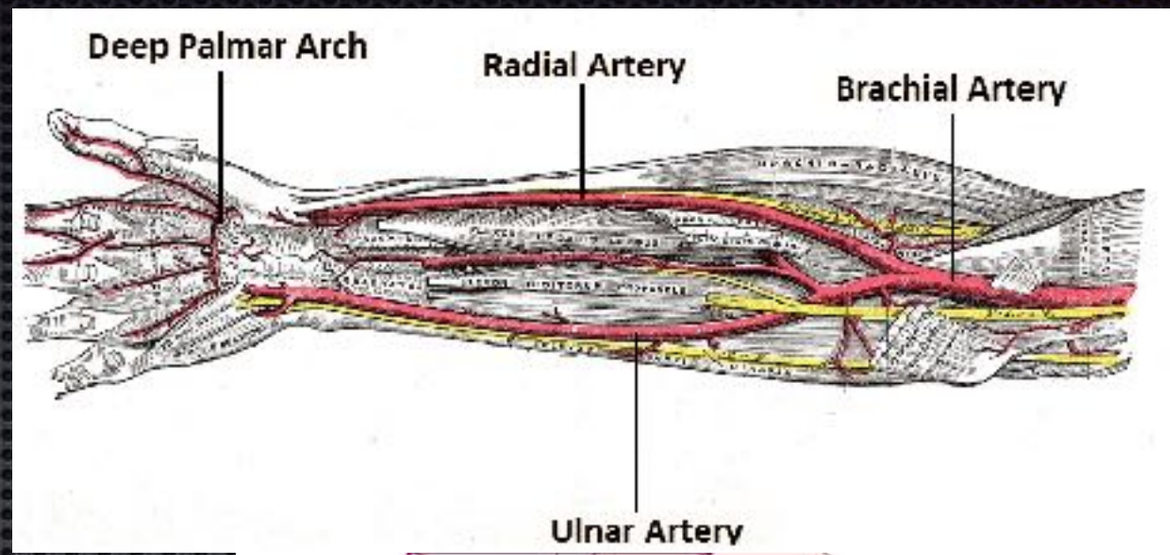
- Mechanical Valve- Blood thinner needed. Lasts much longer than a tissue valve.

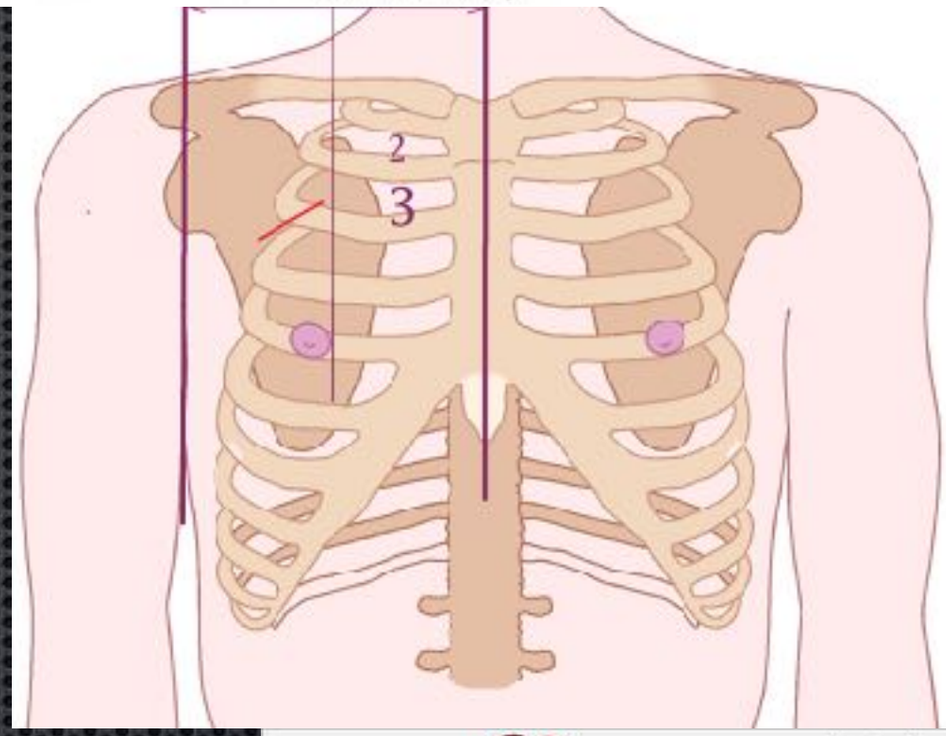
Monitor terms

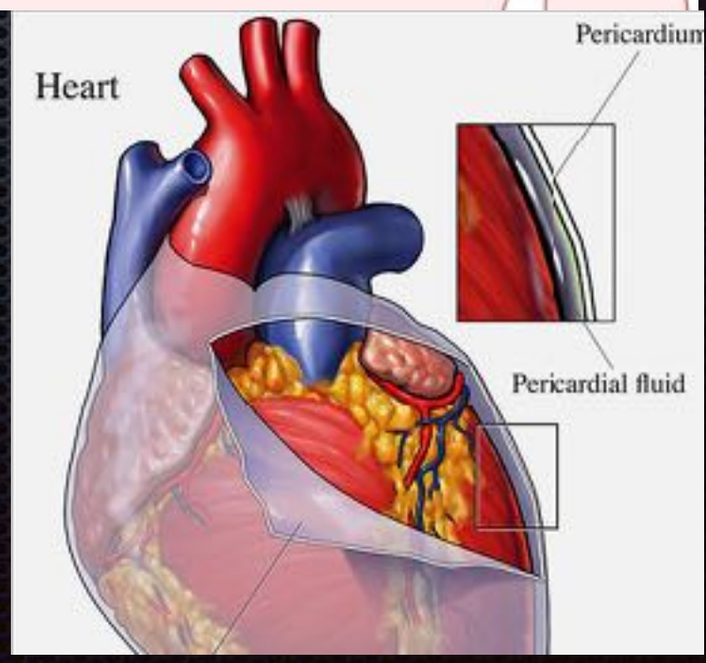
- PAP-Pulmonary Artery Pressure
- ABP-Arterial Blood Pressure
- CVP-Central Venus Pressure (Vena Cavae)
- SpO2-oxygen Saturation
- SVRI-Systemic Vascular Resistance- how tight your arteries are. Goes down with nitroglycerin
- Normal BP is 120/80.

Surgery

- Patient has already been given anesthetic
- Go through second intercostal space -between rib 2 and 3
- Separate rib from sternum
- Open pericardium
- Heparin in radial artery
- ACT is checked

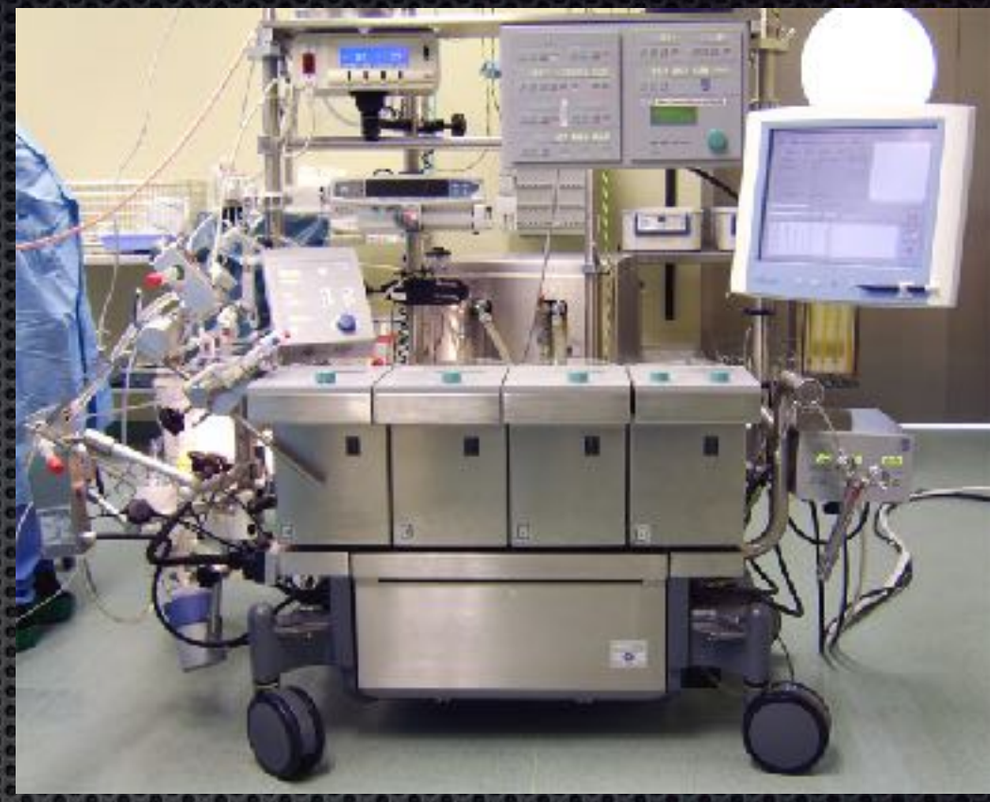


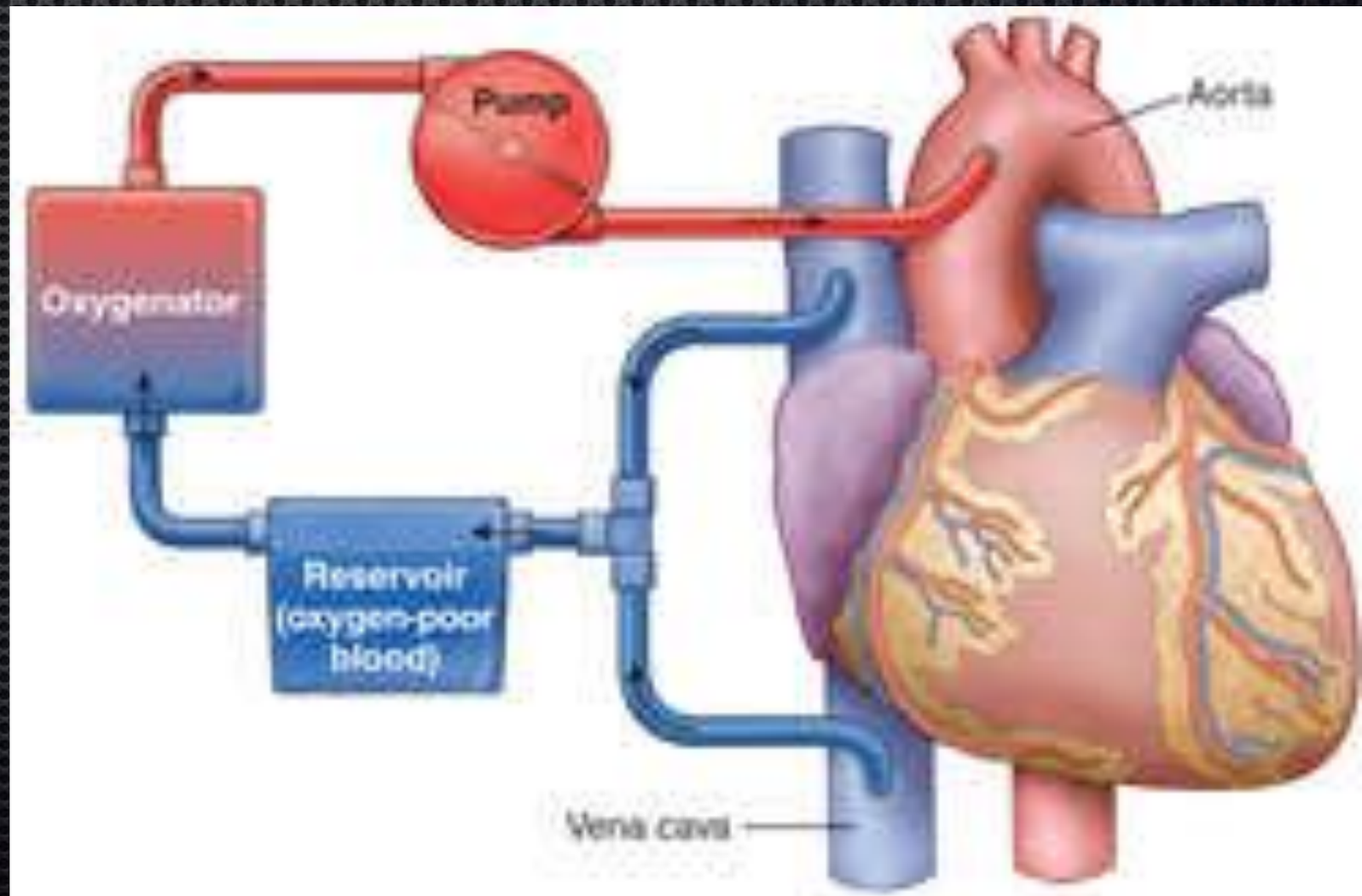




Establishing Bypass

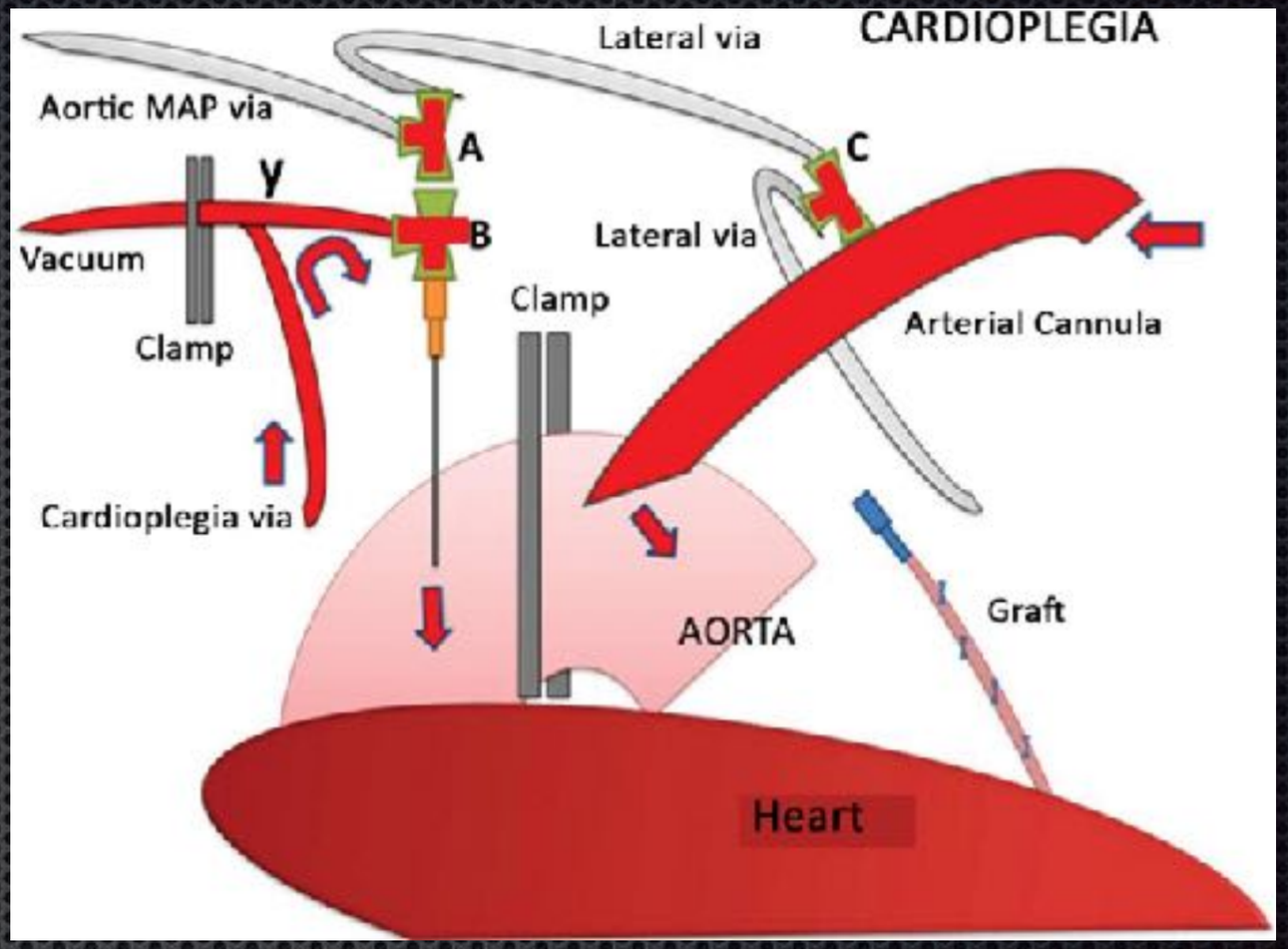
- First establish bypass by gaining vein and artery access.
- Seldinger technique- using guide wire and then expanding vessel with catheter.
- Cannula from bypass is inserted into Aorta
- Cannula from RA goes to bypass machine.
- Bypass machine takes the role of heart and lungs

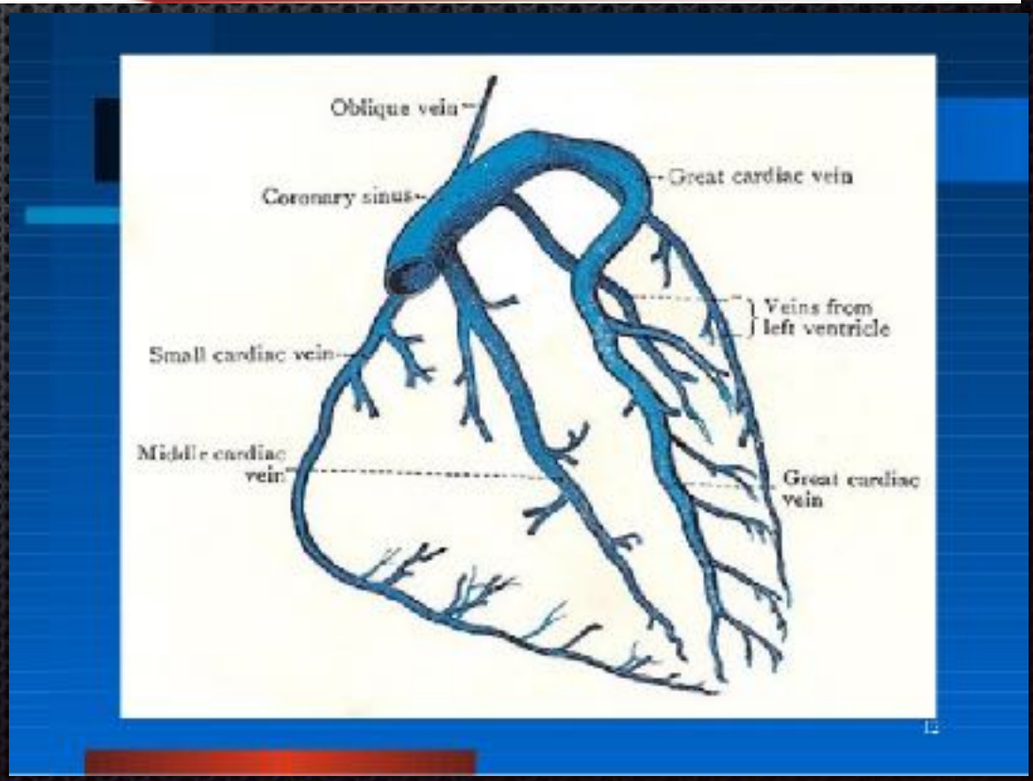




Arresting the Heart

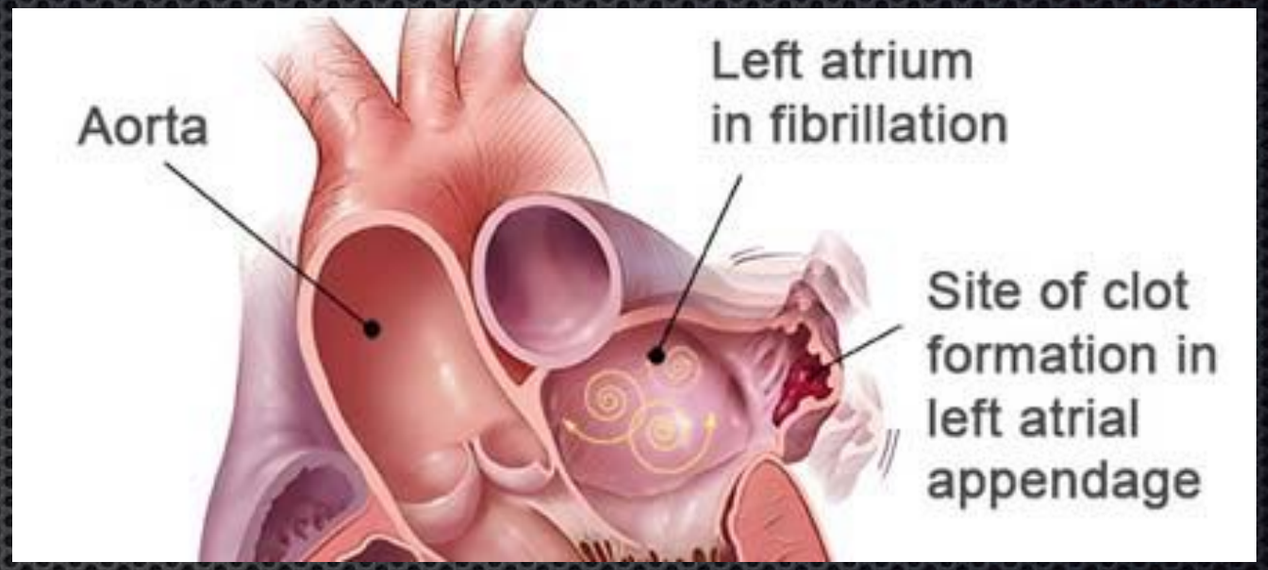
- Place cross clamp on aorta.
- Deliver cold cardioplegia via cannula before cross clamp so that it doesn't arrest the body instead.
- Antegrade- aortic root
- Retrograde-coronary sinus
- Potassium solution
- Cold slows cellular function.
- Check aortic sufficiency to see whether the fluid will leak through the valves.

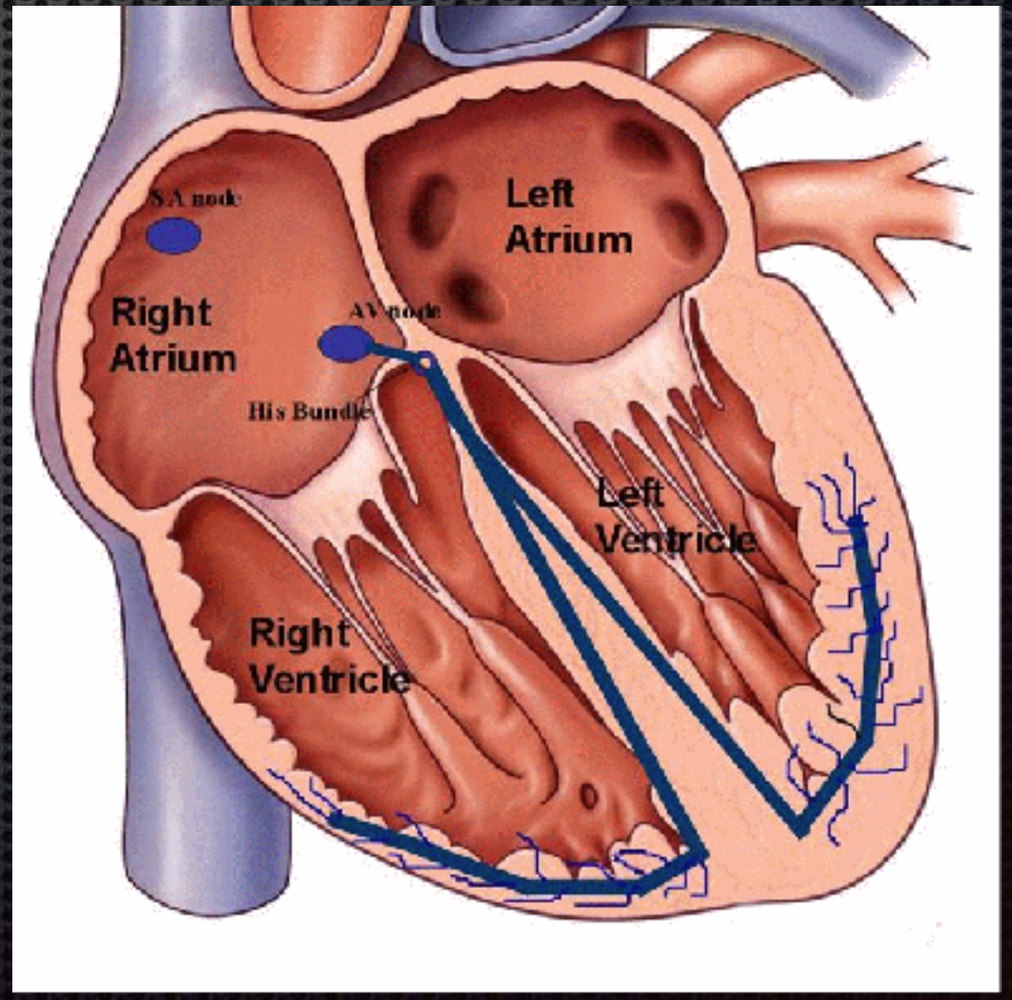




Left Atrial Appendage and more

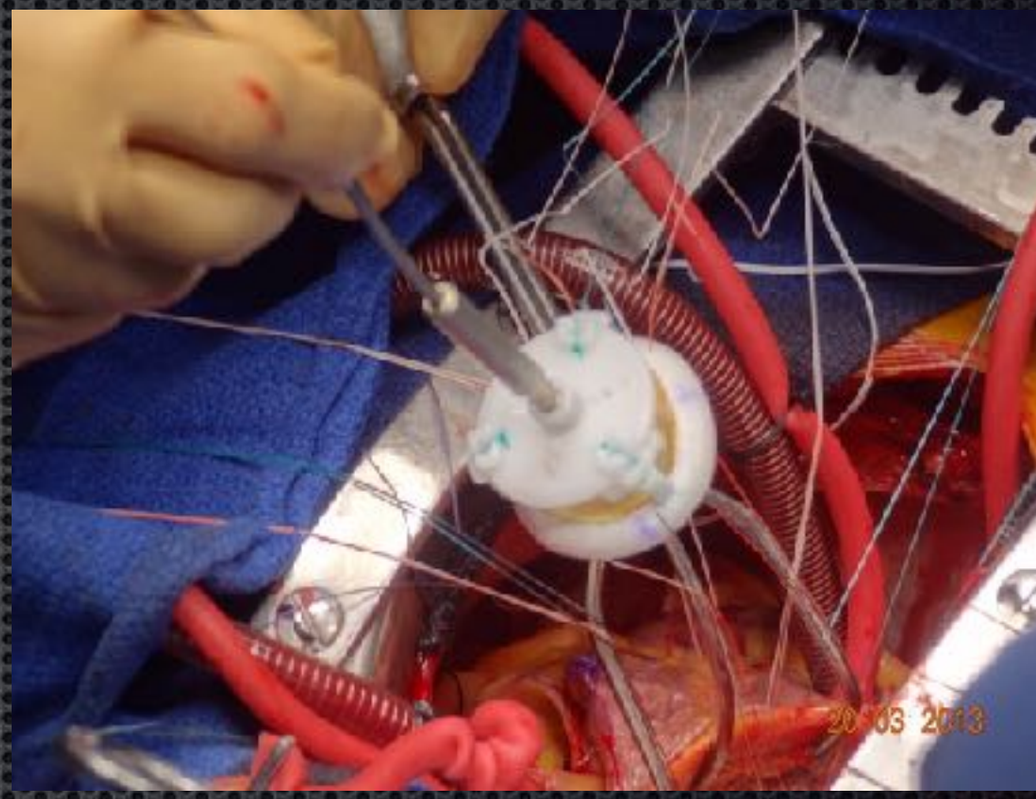
- New studies are coming out stating that clipping the left atrial appendage decreases the risk of stroke especially ones with Atrial Fibrillation.
- Blood clots here are why clipping it would reduce the chance of a stroke. The reason for this is because a clot in the Left Atrial Appendage would travel through the aortic root and into the carotid artery causing a stroke.
- Pacemaker wires in RV because of transient heart block
- Occurs when impulse delays from RA to RV

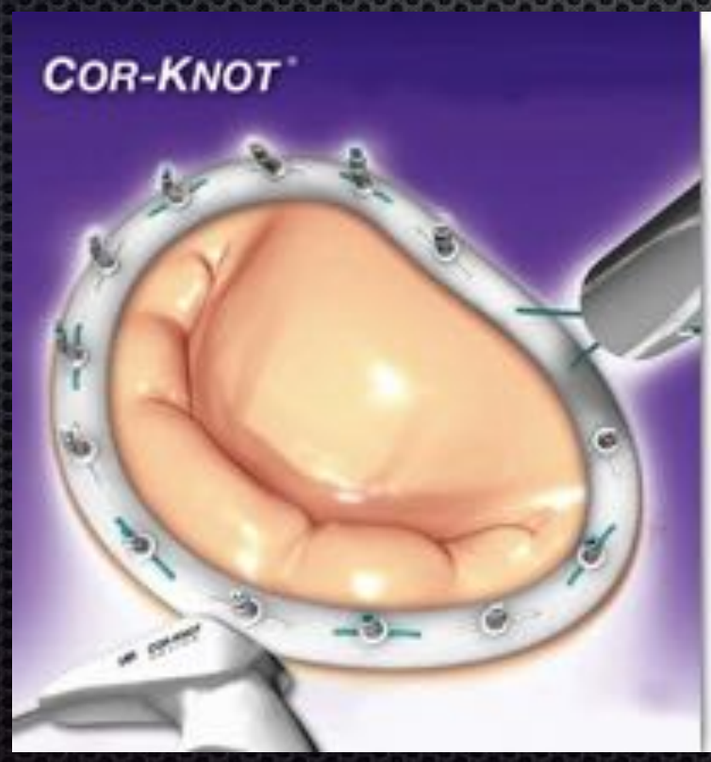




Open Aorta

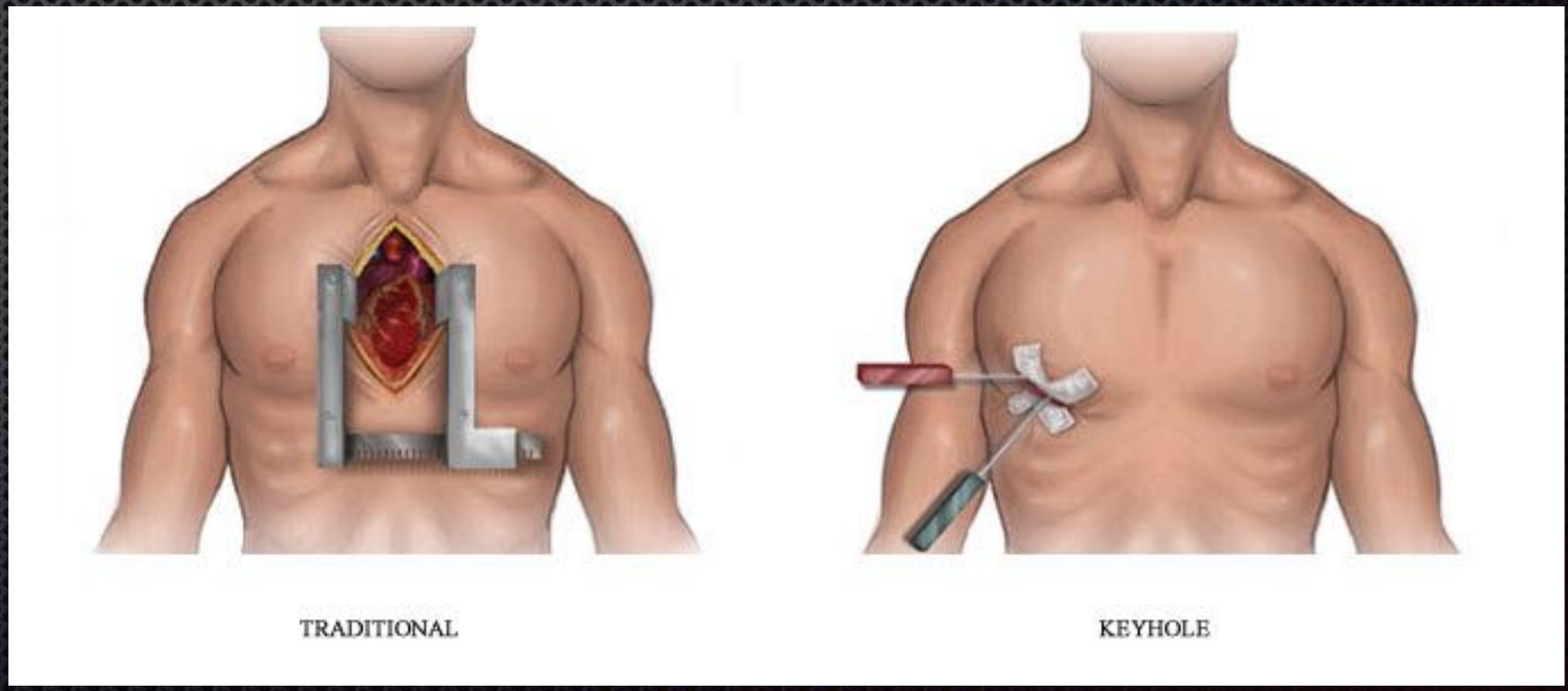
- Open the aorta and cut the leaflets
- Place Pledgets around the wound so that tissue is not harmed
- Insert strings through the surroundings of the new valve.
- Slide new valve in and use cor knot to automatically close knots.





Close Aorta

- Pacemaker wires secure
- Warm cardioplegia restores cellular function by warming blood.
- Stop cardioplegia slowly to restore beating heart
- Close chest.



Thanks for the Inspiration...