

Aspiration of Blood From The LV Cavity to Treat Refractory Ventricular Arrhythmias during Complex Coronary Interventions.

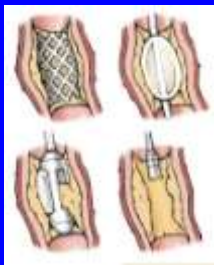
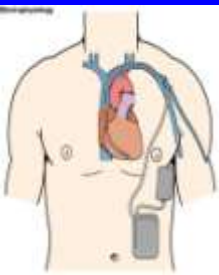
WALEED Y. KADRO, MD

American Board Certified in:

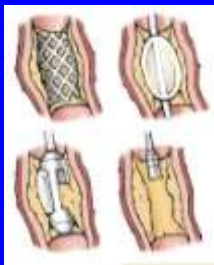
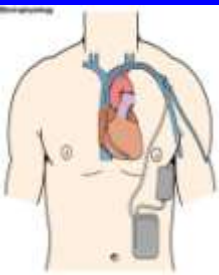
*Interventional Cardiology, Heart Rhythm, Cardiovascular Medicine
and internal Medicine*

Director: The Golden Center For Advanced Cardiovascular Interventions
and Clinical Research.

I Have Nothing to Disclose.



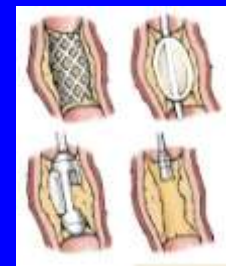
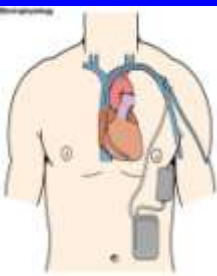
- **Maya Turkmani.**
- **Yaman Rai Balha.**
- **Tarek Alsaied**
- **Hussam Rahim.**
- **Ali Dbs.**
- **Reda Shehadat.**
- **Ismael Eid.**



BACKGROUND



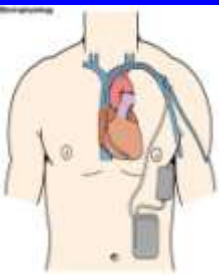
- Ventricular fibrillation (VF) may occur during coronary angiogram or during complex coronary intervention.
- It can happen during wire or catheter manipulation, balloon inflation or stent deployment.
- The reason for that is mainly due to ischemia induced by these maneuvers.
- Ventricular fibrillation occurs frequently in the cath lab when the ischemic substrate is already present as in the setting of acute myocardial infarction or unstable angina.
- VF may also occur as a reaction to the contrast material used during angiogram.



BACKGROUND



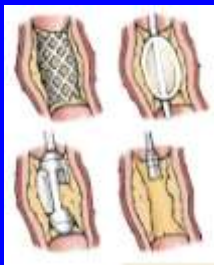
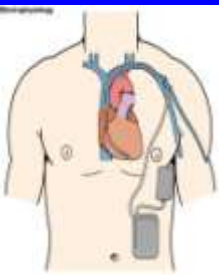
- VF is usually treated easily in the cath lab with prompt cardioversion.
- VF may become refractory for cardioversion, especially in the setting of severe ischemic burden.
- Reduced left ventricular (LV) function and LV cavity dilatation increase the incidence of VF during ischemia and may make it refractory for cardioversion.
- Ischemia and LV dilation result in elevation of left ventricular filling pressure (LVEDP).
- Elevated LVEDP by itself causes subendocardial ischemia and predispose for VF.



BACKGROUND



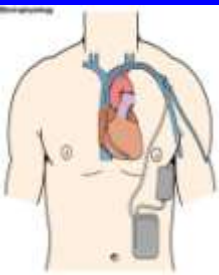
- When VF doesn't respond to cardioversion, myocardial ischemia continue to be present, more LVEDP elevation, more LV dilation, more refractory VF.



BACKGROUND



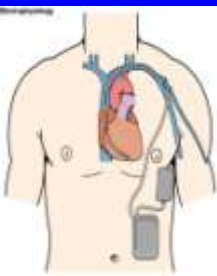
- *V Fib Begets V Vib*



BACKGROUND



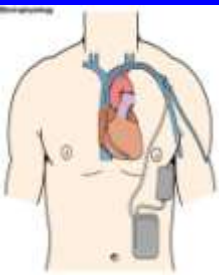
- After prolonged V fib cardioversion may sometimes results into an electrical sinus rhythm with QRS complex on the monitor but without any mechanical (contractile) activity on the hemodynamic monitor or fluoroscopy i.e. Electro- mechanical dissociation (EMD).



BACKGROUND



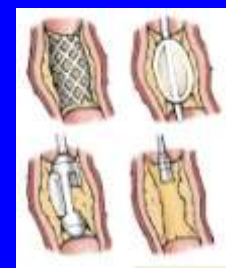
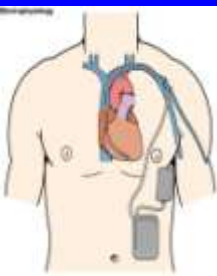
- Insertion of intra aortic balloon pump (IABP) reduces ischemia, LVEDP and LV dilation by unloading the LV only when the contractile activity is present.
- IABP will not be able to unload the LV unless there is a mechanical and an electrical activity with whom the device should be synchronized.



BACKGROUND



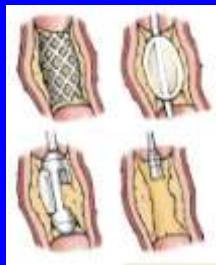
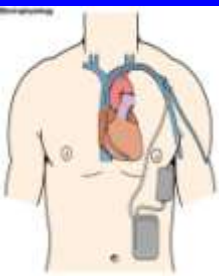
- ***IABP doesn't work in V fib or EMD.***



METHOD

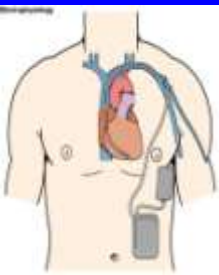
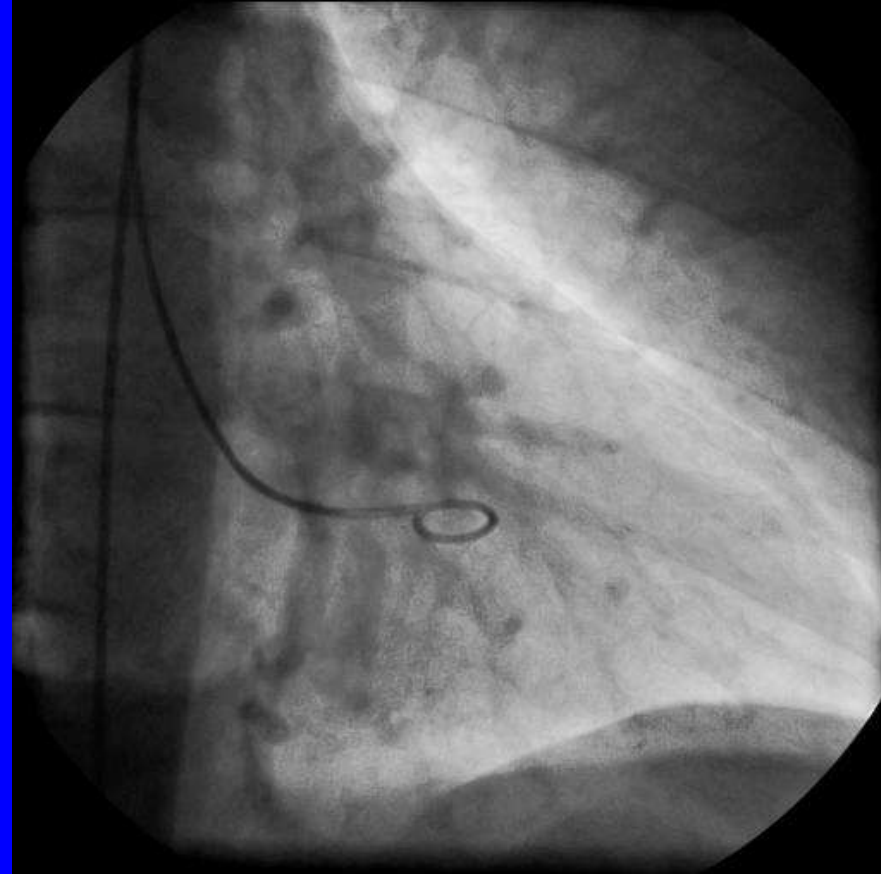


- We report a new and a quick simple method to unload the LV cavity and reduce LVEDP.
- A pigtail or a JR catheter is inserted inside the LV cavity.
- A manual aspiration of 80 –100cc of blood from the LV cavity is done through the catheter using a 20ml syringe.
- The aspirated blood is thrown away.
- This maneuver will quickly reduce the LVEDP.
- It may make the refractory VF more responsive to cardioversion.
- It can also provide a simple decompression of the overfilled LV cavity after prolonged circulatory arrest.



METHOD

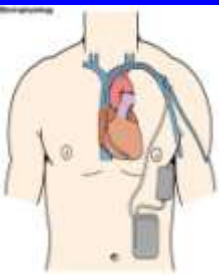
- *It is as simple as this.*



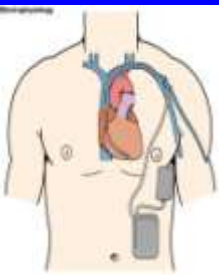
RESULTS



- This method was used in 5 cases of refractory VF in the cath lab in the setting of AMI or severe unstable angina.
- Three of these case failed 3 attempts of DC cardio version.
- After doing this maneuver, those three cases responded immediately to the next attempt of cardioversion.



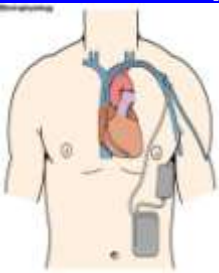
METHOD



RESULTS



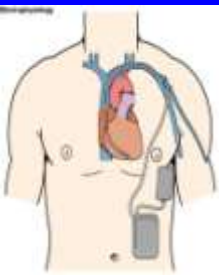
- The 2 other cases of VF responded to cardioversion with electrical sinus rhythm however the 2 patients remained pulseless in electromechanical dissociation (EMD).
- No arterial BP on hemodynamic monitor and no cardiac movement on fluoroscopy were seen.
- Despite ruling out tamponade and mechanically treating cardiac ischemia the two patients remained in EMD.
- After doing the pigtail maneuver EMD resolved and active cardiac movement were seen on fluoroscopy with acceptable arterial pressure recovery.
- One of those two patients required further insertion of IABP to support his BP, IABP was removed after 24h.



RESULTS



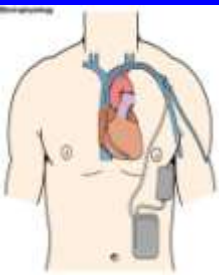
- *All of these 5 patients survived till hospital discharge.*



RESULTS



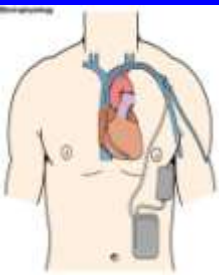
- This method was used in 3 elderly patients who entered the cath lab on IABP due to cardiogenic shock.
- The maneuver was helpful in restoring SR and getting the patients outside the cath lab in a stable hemodynamic condition on IABP.
- None of those 3 patient survived due to other co morbid conditions: massive stoke, acute renal failure and sepsis.
- No recurrence of V fib or ventricular arrhythmias were noted in those patient outside the cath lab.



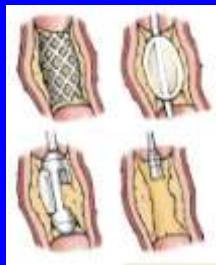
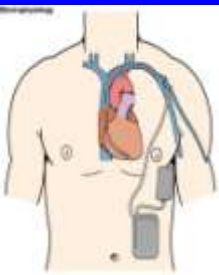
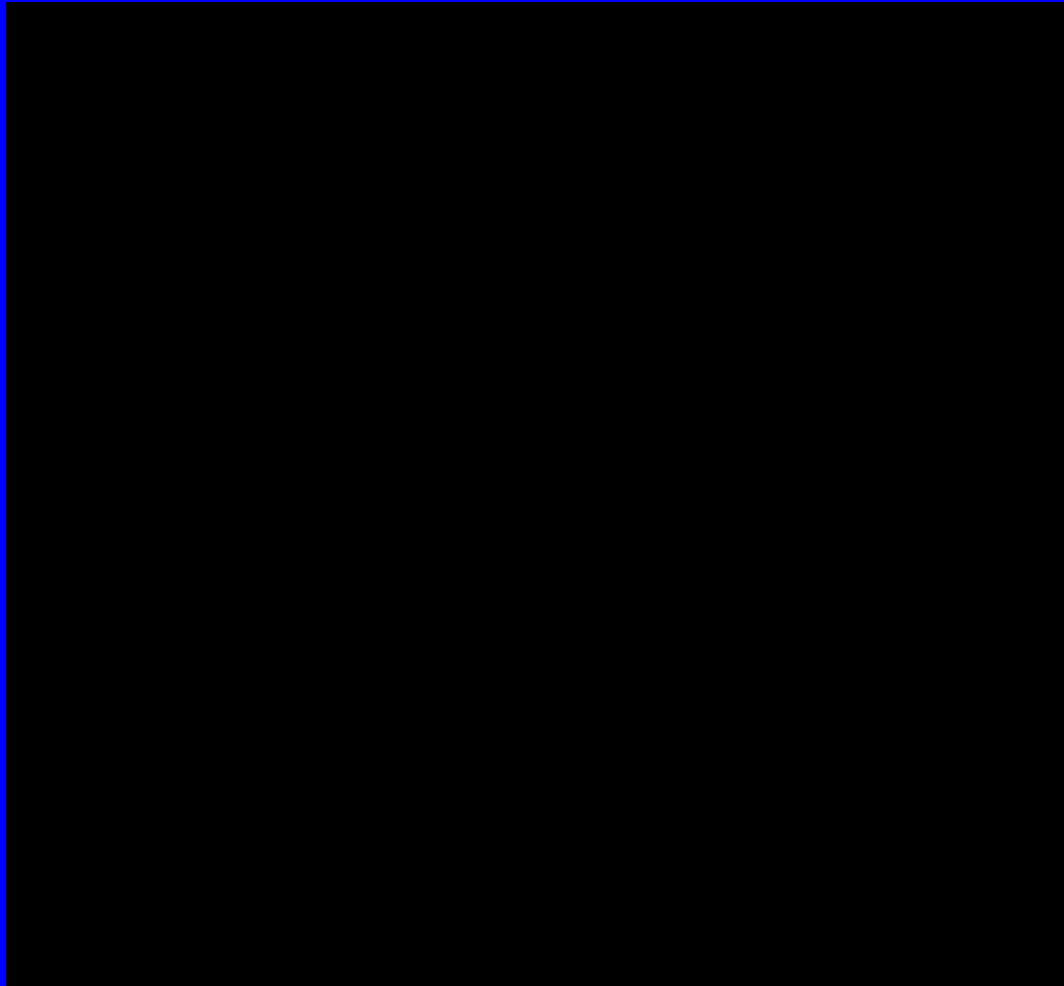
RESULTS



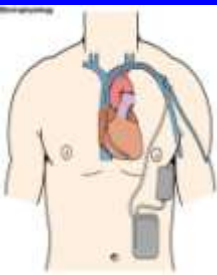
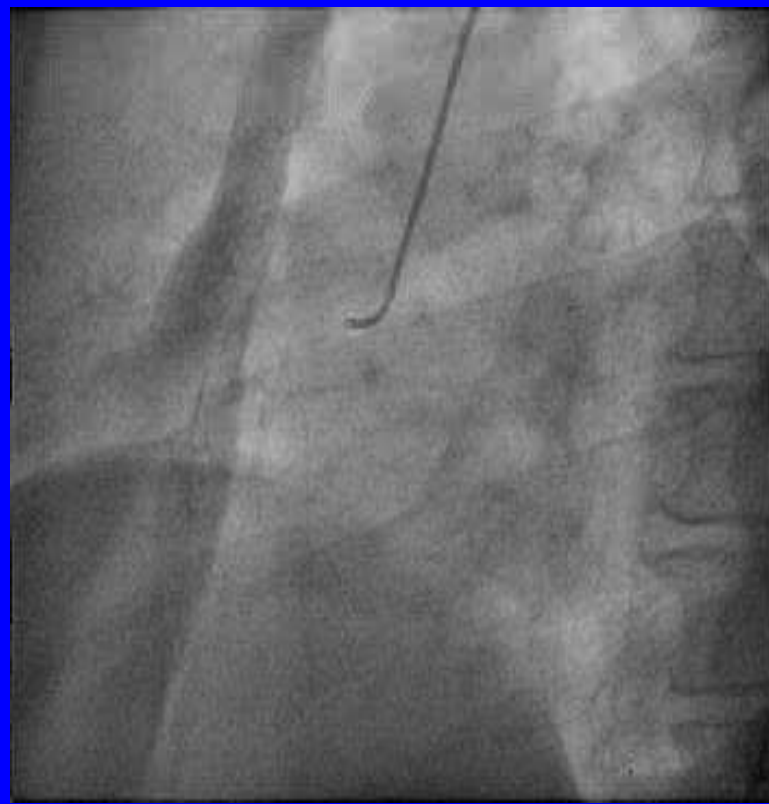
- The maneuver was used in one patient who developed a refractory V fib after the first injection of contrast during diagnostic coronary angiogram.
- The patient failed multiple attempts of cardioversion and was put on CPS.
- After the maneuver successful cardioversion was obtained from the first attempt.
- Coronary angiogram after that showed no obvious stenosis.
- She was took off CPS without any further problem.



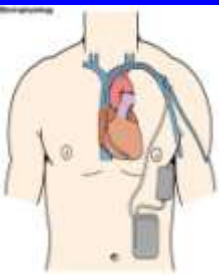
My Worst Nightmare



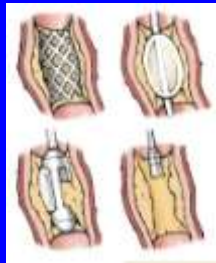
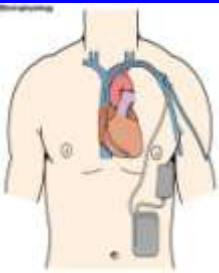
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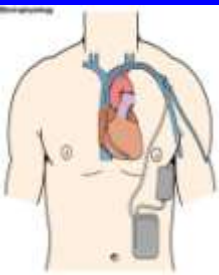
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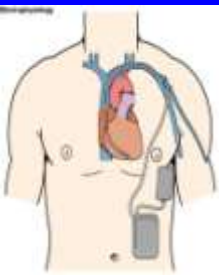
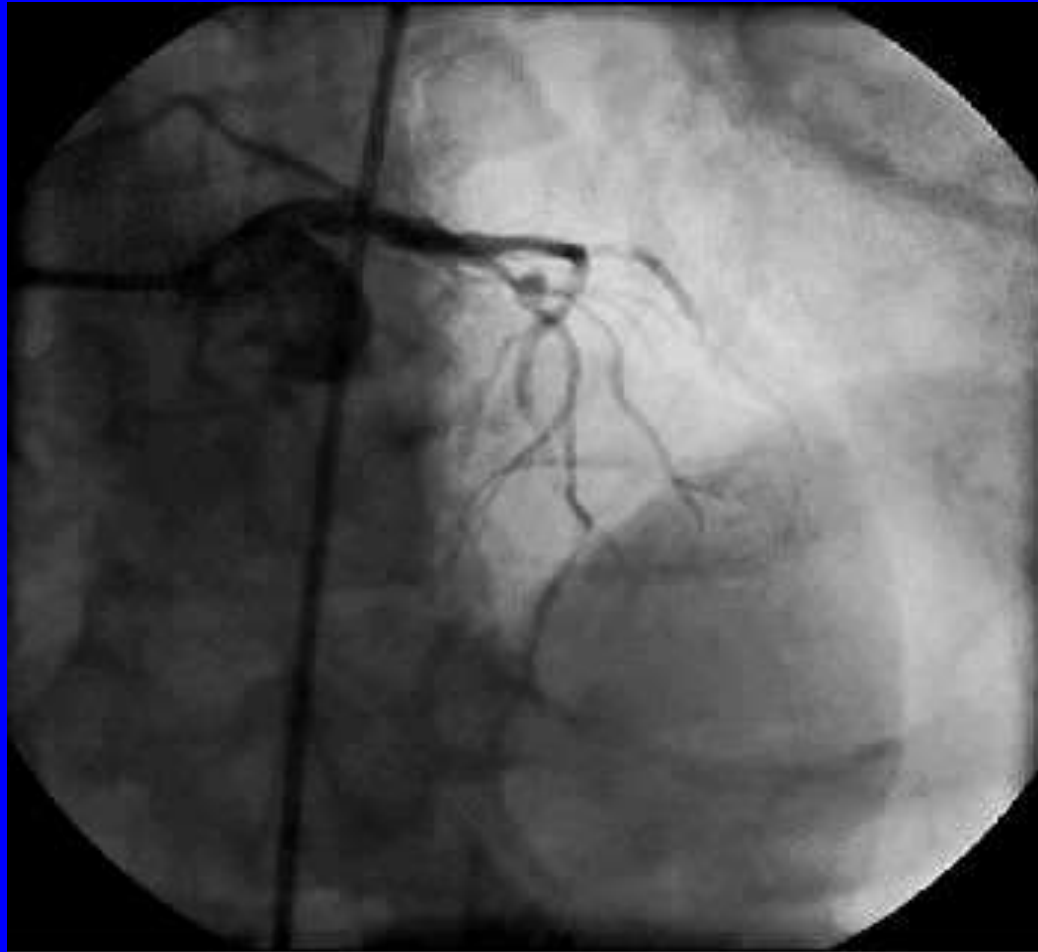
RESULTS



- The maneuver was used in one patient who developed standstill during unprotected LM stenting in the setting of occluded RCA.
- After a chest thumb the patient showed electrical activity on the monitor but there were no mechanical contractions on fluoroscopy.
- After the maneuver mechanical contraction started back and acceptable BP was restored.



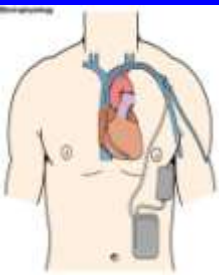
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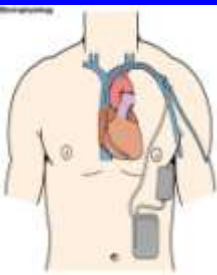
- The maneuver was used as a prophylactic method before LM stenting in 4 patients.
- No malignant arrhythmia was noted during or after LM stenting.
- No significant prolonged drop in BP was noted after stenting.
- None of those cases required insertion of an IABP.



CONCLUSION



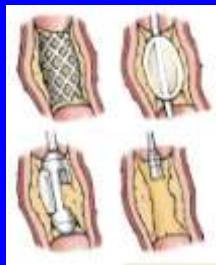
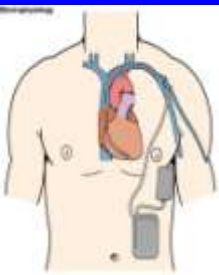
- Quick insertion of a catheter in the LV with quick blood aspiration facilitates response to cardioversion.
- It may relieve EMD not related to tamponade during coronary intervention.
- The catheter can be used to give intracardiac emergency medication during the code.
- This maneuver may reduce the need of inserting IABP during complex coronary interventions.
- This maneuver can be used as a prophylactic measure before and during complex coronary interventions.
- It looks that the interventional cardiologists need this simple way of LV venting in the cath lab.



FUTURE DIRECTIONS



- To Use this maneuver in the EP lab.
- To Use this maneuver during V fib threshold testing with ICD implants.
- To add the maneuver of direct aspiration of blood from the LV Cavity using a large needle through the chest wall to the algorithm of cardiac resuscitation for a coding victim.



- When you use this maneuver in the future please send me an e-mail with the details.

- Waleed Y. Kadro, MD

The Golden Cardiovascular Center

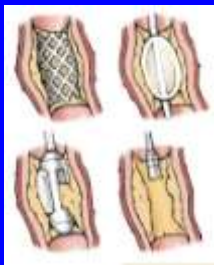
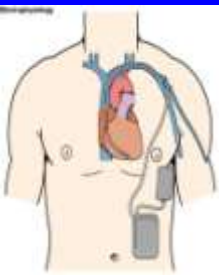
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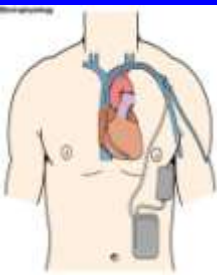
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THANK YOU



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