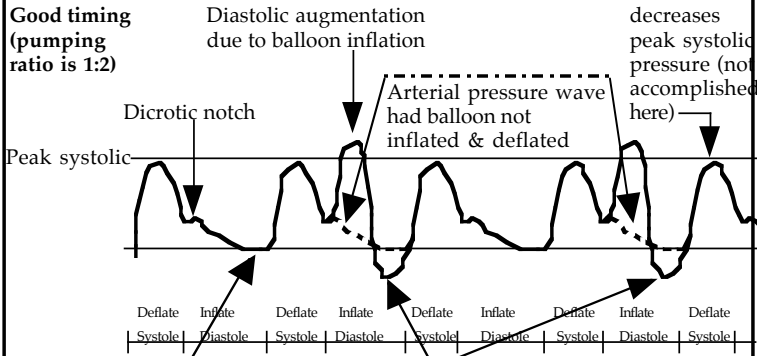


IABP Timing and Mistiming

Good timing
(pumping ratio is 1:2)



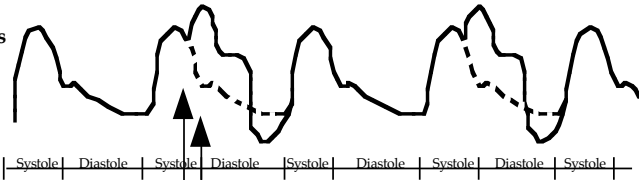
It is ideal if deflation decreases peak systolic pressure (not accomplished here)

End diastolic pressure without IABP

Reduced end-diastolic pressure due to balloon deflation

- Balloon inflation should begin at the dicrotic notch (the closure of the aortic valve and the beginning of diastole) to ↑ aortic root pressure early in diastole (diastolic augmentation). Balloon inflation increases perfusion of the coronary arteries, the cerebral arteries, and the peripheral circulation
- Balloon deflation should occur at the end of diastole, to decrease aortic root pressure just as the aortic valve opens. With a lower aortic pressure, the heart empties against a lower afterload, improving stroke volume and cardiac output. The afterload reduction should also produce a lower peak systolic pressure (not accomplished in the examples here).

Inflation is too early

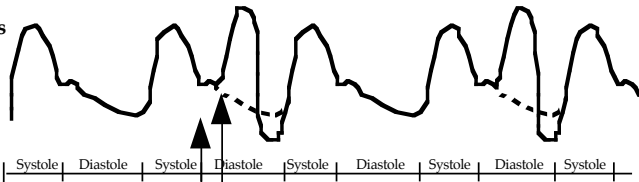


Inflation begins before the dicrotic notch occurs

Inflation should occur here, when the dicrotic notch occurs

- Balloon inflation begins before the dicrotic notch occurs (the end of systole), which causes ↑ aortic root pressure while the aortic valve is still open. Balloon inflation during systole increases the work against which the heart must beat.
- This is a serious mistiming error. Adjust the pump to inflate later.

Inflation is too late



Inflation should occur here, when the dicrotic notch occurs

Inflation begins late, after the dicrotic notch occurs

- Balloon inflation begins after the dicrotic notch and fails to perfuse the coronaries early in diastole.
- This mistiming error defeats one of the main purposes of the balloon, to increase perfusion of the coronary arteries and the periphery during early diastole. Adjust pump to inflate earlier.