

Assessment of Fluid Volume for Patients Undergoing PCI

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Methodist Hospital, Merrillville IN

At the Joint Coronary Revascularization

Busan Korea December 9th 2017

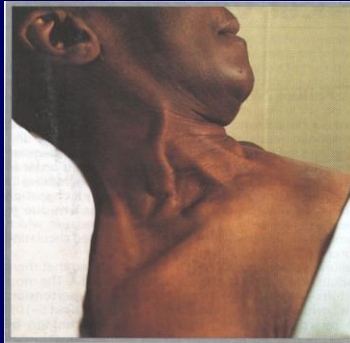
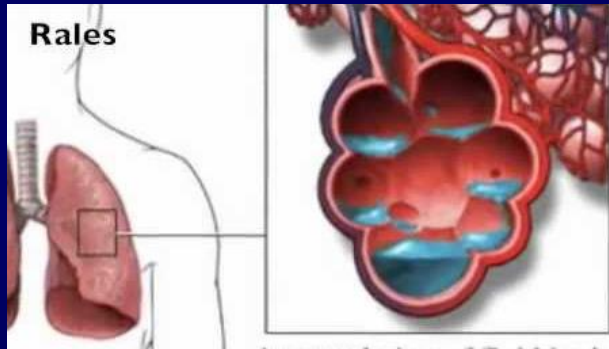
Grand Ballroom A 15:44PM

**Sicker, older patients and with structural
heart disease undergoing PCI**

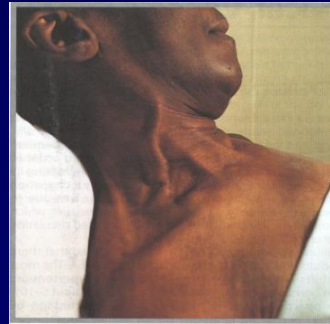
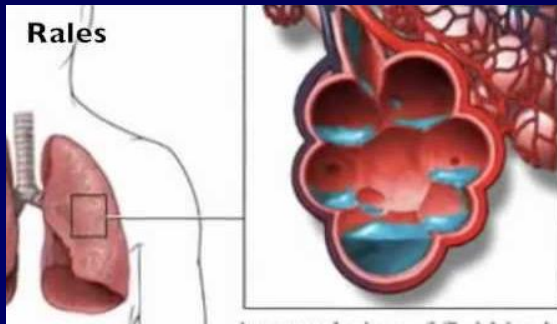
WHAT TO CHECK ?

1. The LVEDP or the PAM
2. The aortic diastolic blood pressure
3. Whether the patient is on betablockers or ACEI?

The Hallmark of Heart Failure is Fluid Overload



The Stressed and Unstressed Volume



Definition of Stressed and Unstressed Volume

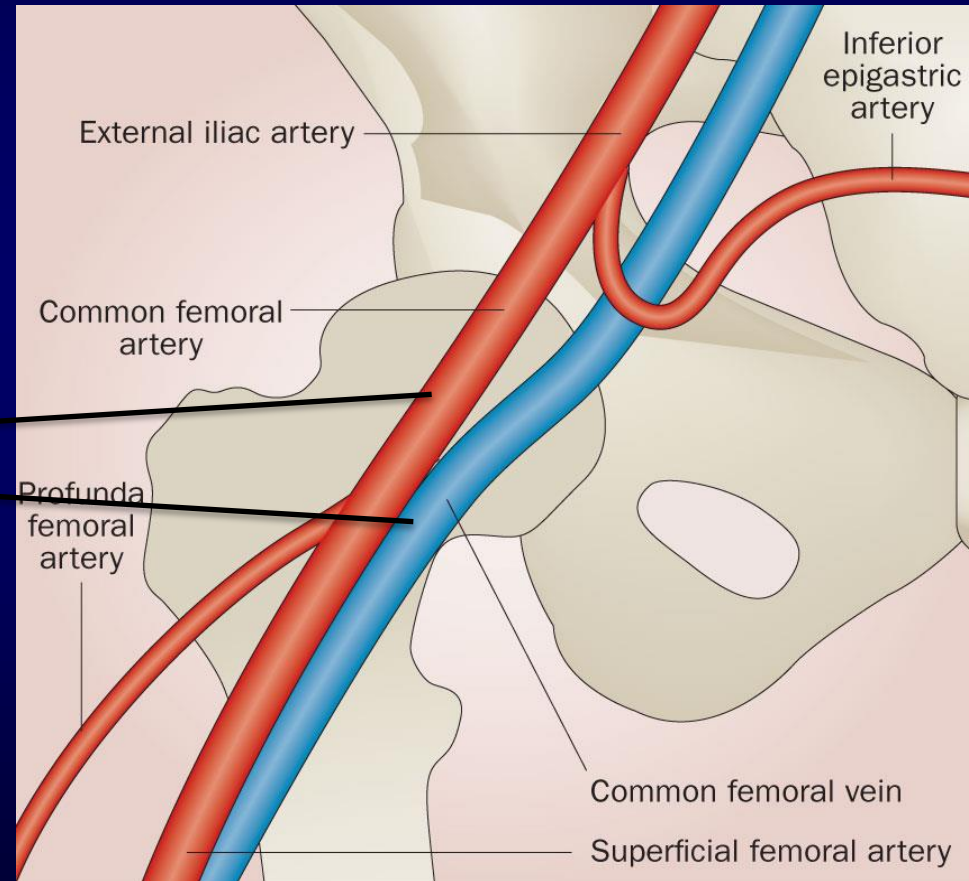
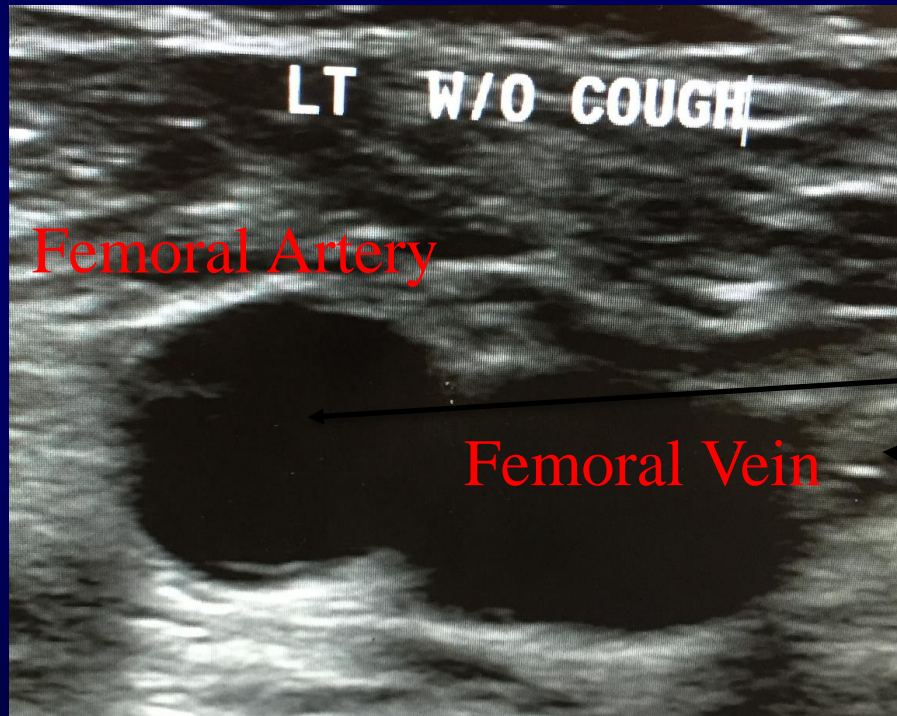
The unstressed volume is a volume of blood in a vein at **transmural pressure equal to zero**.

Stressed volume is a volume of blood within a vein under **transmural pressure above zero**.

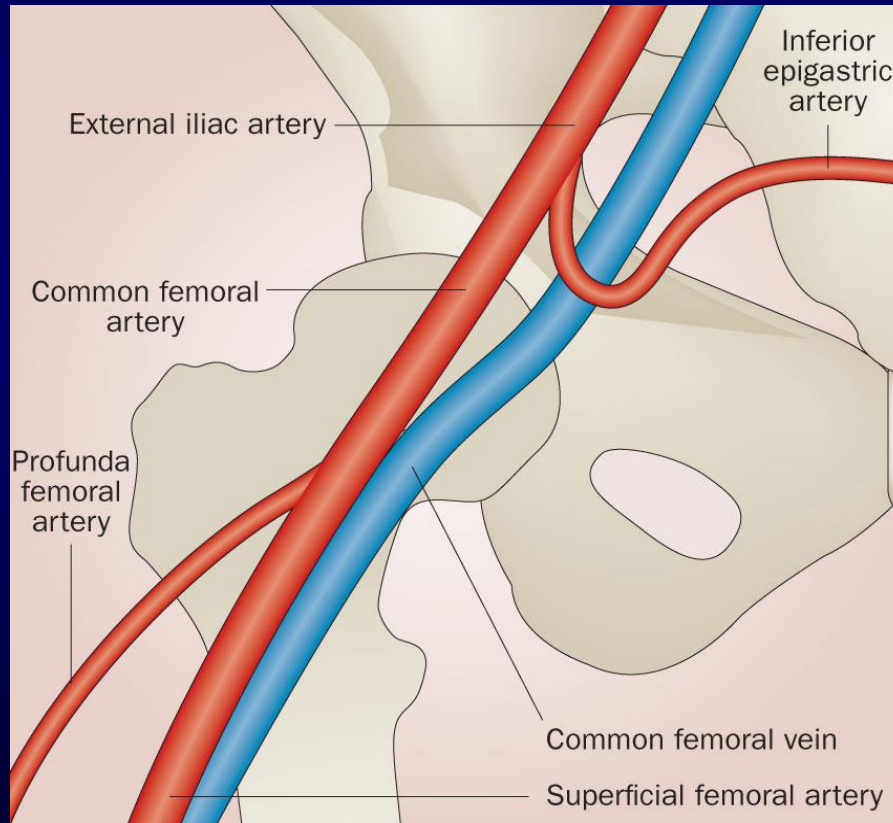
The sum of stressed (approximately 30% of total volume) and **unstressed (approximately 70% of total volume)** volumes is the total blood volume within the venous system.

**1. How to Detect Accurately Fluid Overload
before going for PCI?**

The Anatomy of the Femoral Artery and Vein and its Image by Ultrasound



The Antegrade Flow of the Femoral Artery and Return Flow in the Femoral Vein as assessed by their size



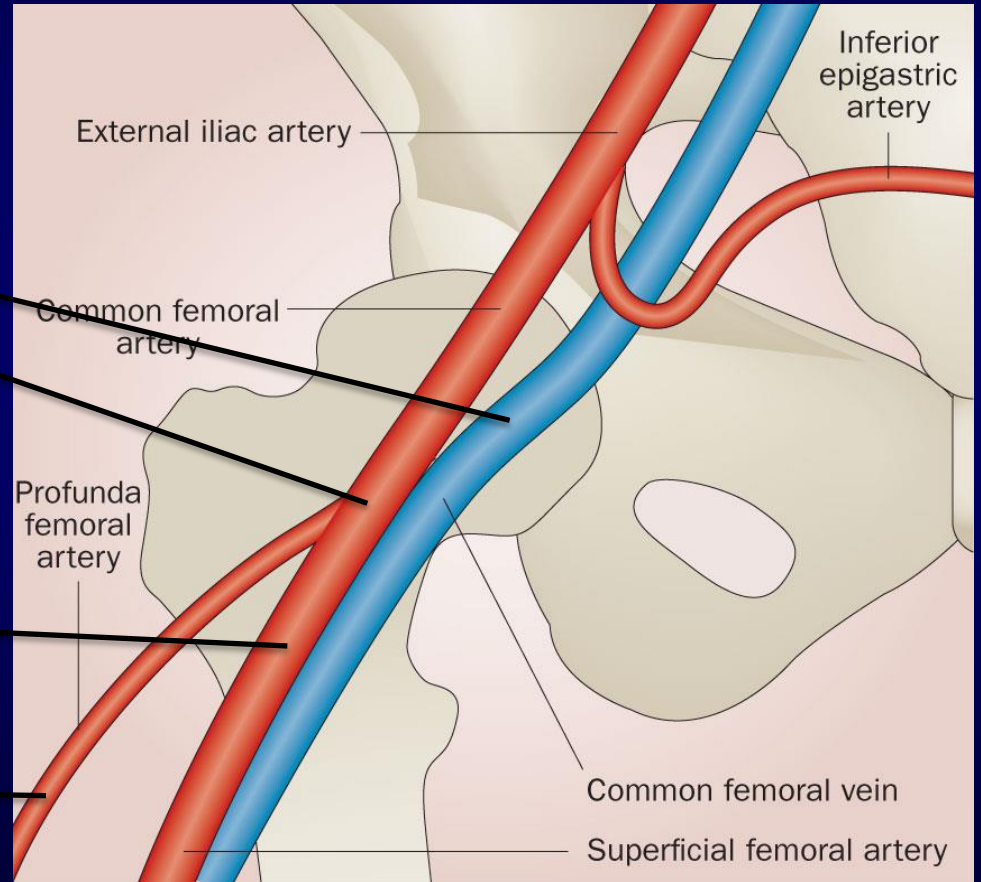
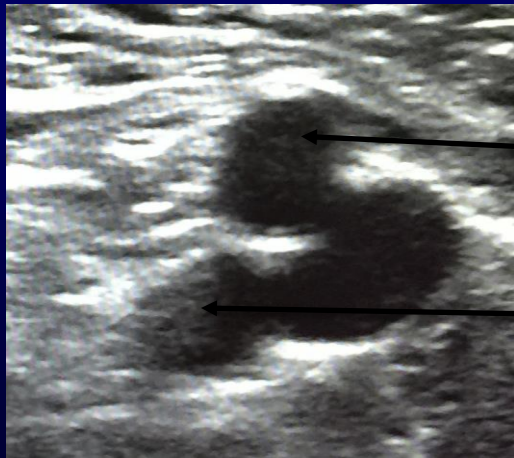
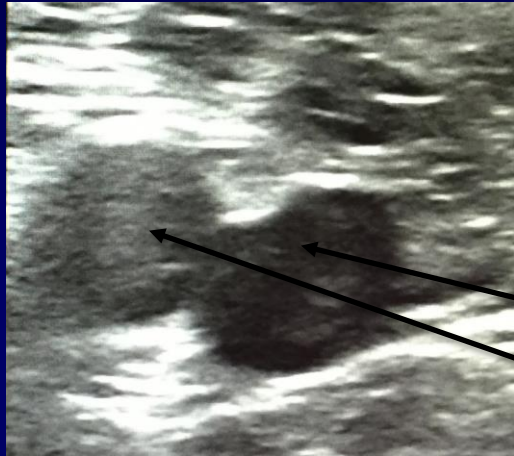
Vascular Probe with Regular Echo Equipment

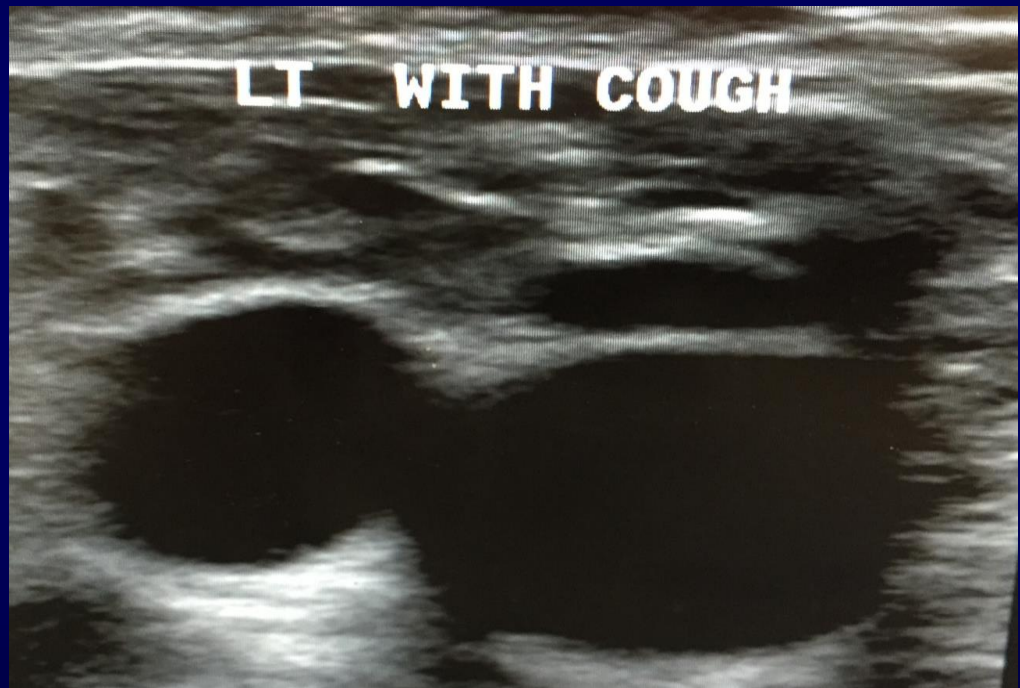
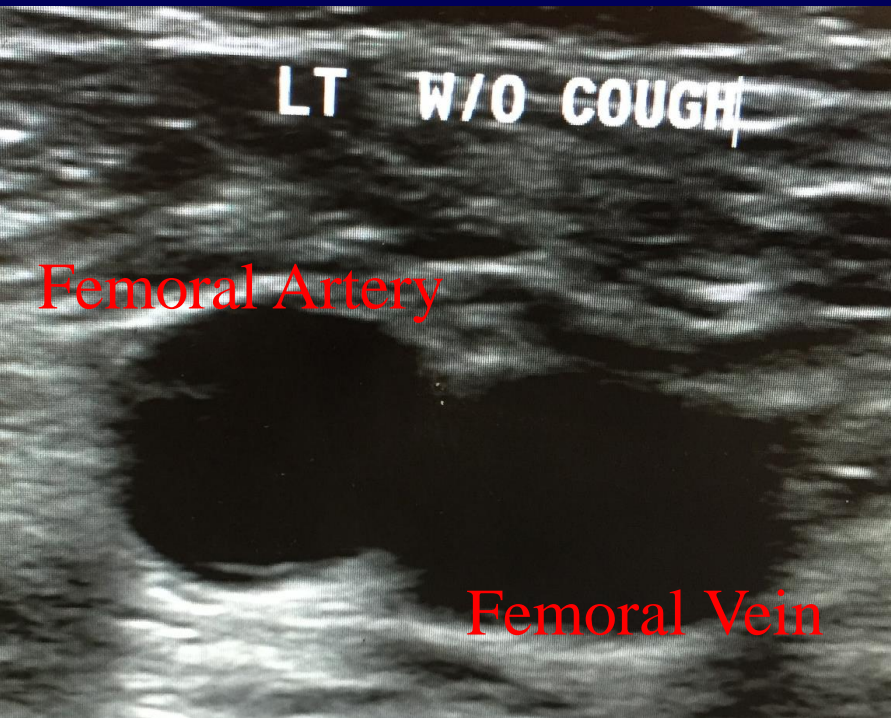


Location to Position the Probe: At the Location of the Strongest Femoral Pulse

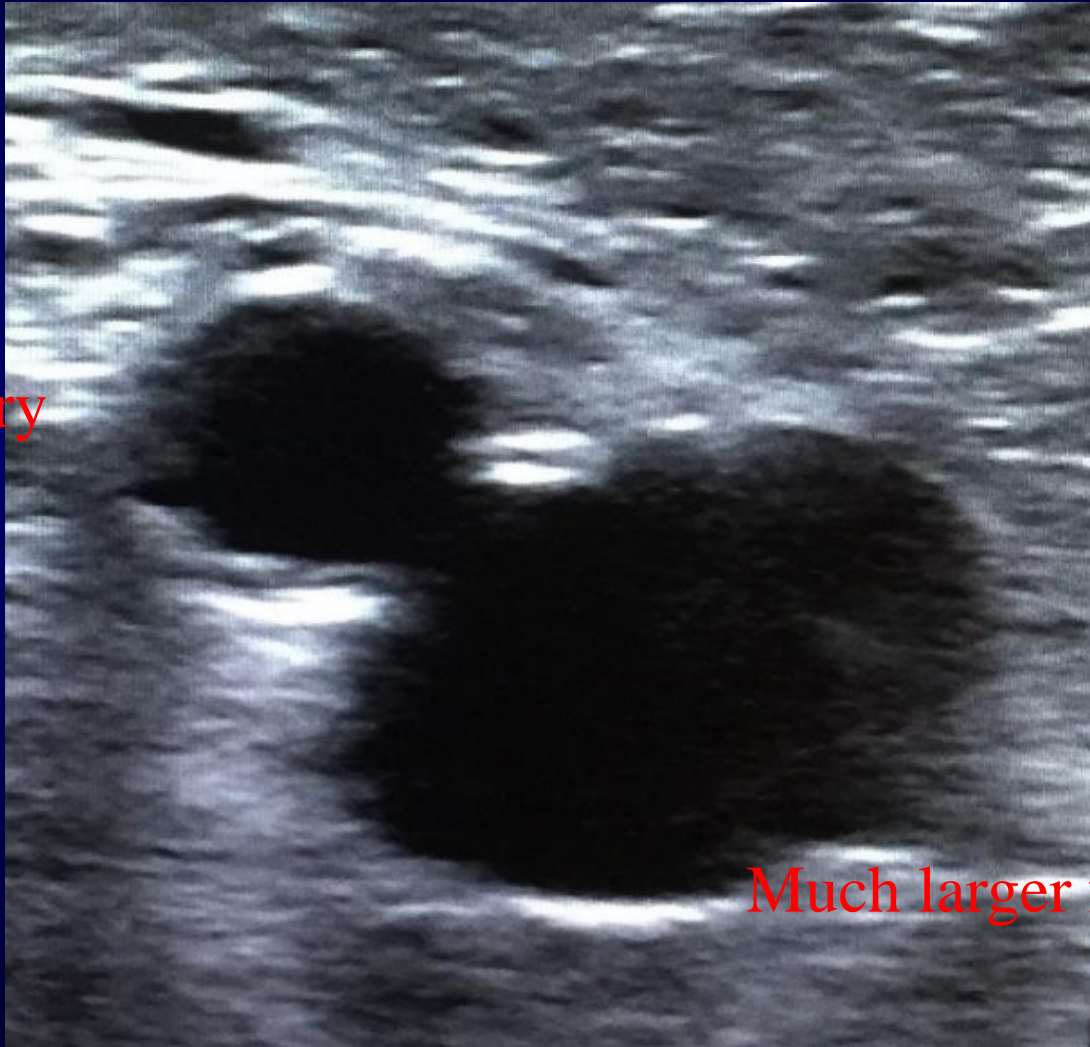


Location to measure the size of the femoral artery and vein: Just above the bifurcation of the Common Femoral Artery





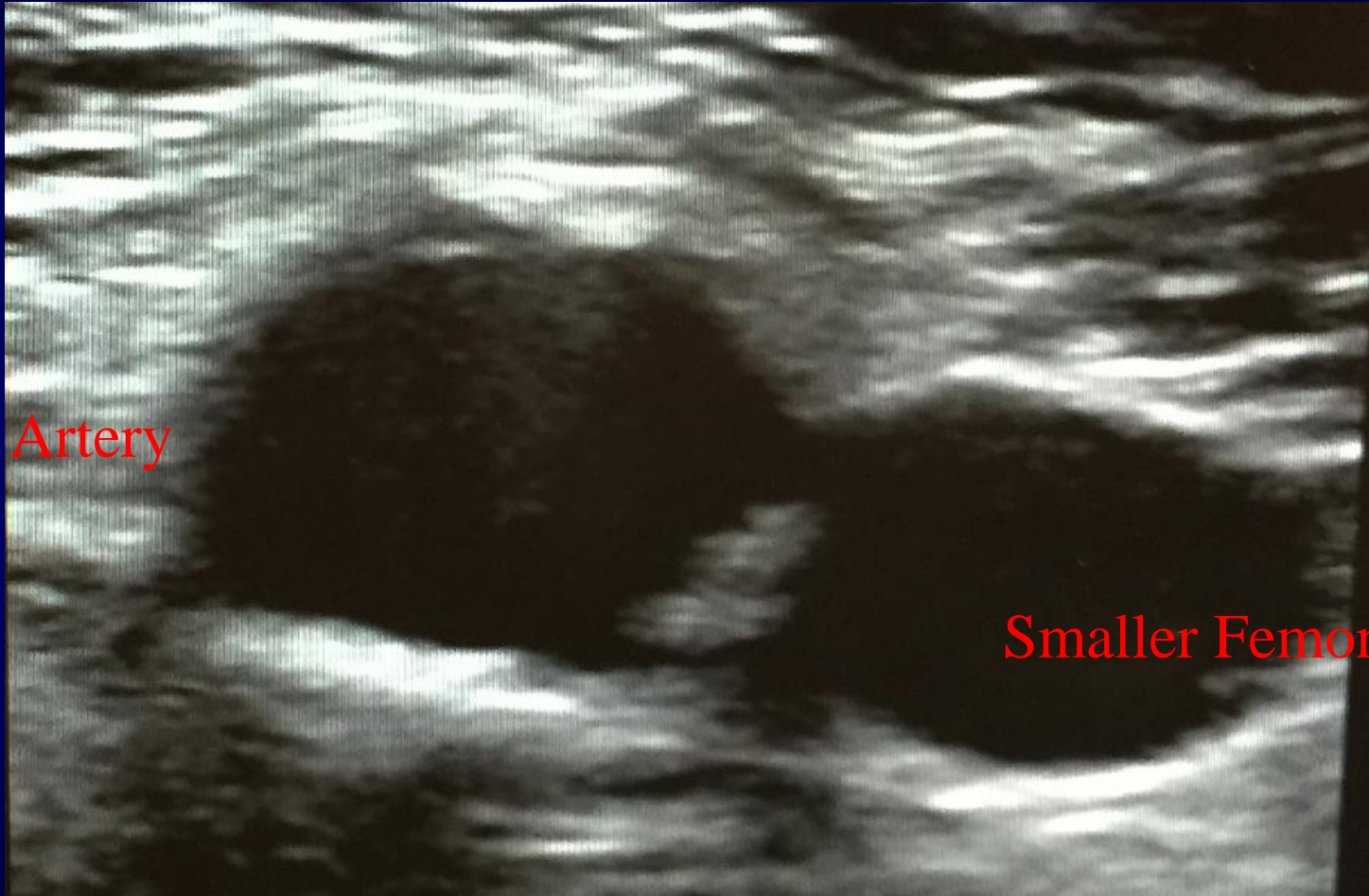
Patient with Fluid overload



Femoral Artery

Much larger femoral vein

Patient with Bleeding



Femoral Artery

Smaller Femoral Vein

2. Can Heart Failure Cause Chest Pain?

Lorraine R Hattabaugh Registered Nu	Signed	
Brittney N Bennett Registered Nu	Signed	ED Notes
Brittney N Bennett Registered Nu	Signed	ED Triage No
Lorraine R Hattabaugh Registered Nu	Signed	ED Notes
Noah Thomas Lee ED PHYSICIAN	Signed	ED Provider N
Brittney N Bennett Registered Nu	Signed	ED Notes



Lorraine R Hattabaugh, RN Registered Nurse Signed

Date of Service: 10/21/2017 8:30 PM

Creation Time: 10/21/2017 8:30 PM

Pt here for chest pressure, states he feels short of breath and can't breathe well. Pt pale, cool, dry, but feels like he has "hot flashes. Pt reports having a defibrillator, kidney transplant and is being "worked up" for a heart transplant. Unable to palpate peripheral pulses, BP not reading. Will recheck manual. PT placed on monitor, aed. Normally on 4L o2 per NC continued.



Chest pain

PR 152
QRSD 80
QT 332
QTc 439

--AXIS--

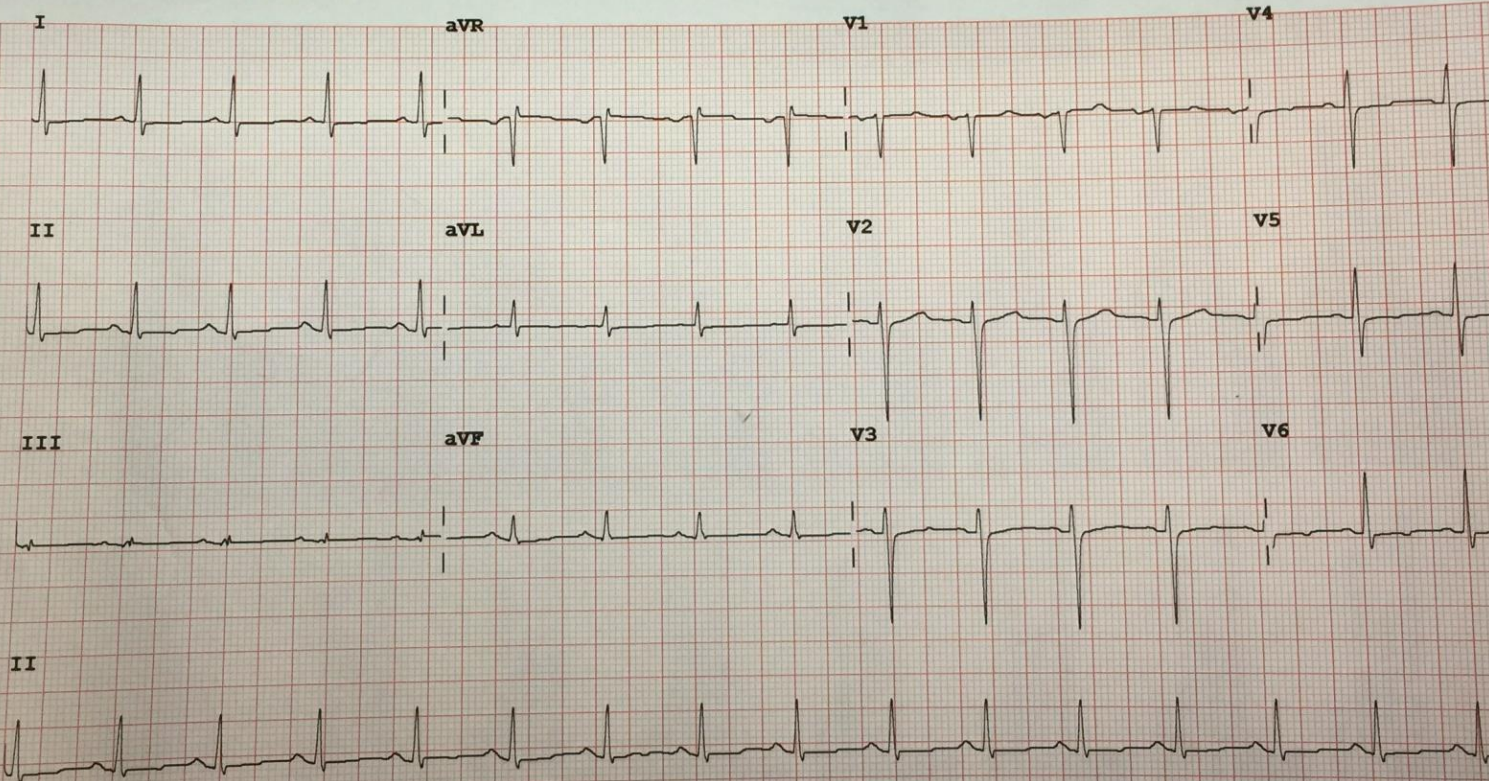
P 55
QRS 37
T 119

- ABNORMAL ECG -

Order:

Fac: St.

Unconfirmed Diagnosis



Dev: SM ICU

Speed: 25 mm/sec Limb: 10 mm/mV Chest: 10.0 mm/mV

F 60~ 0.50-100 Hz

10/21/2017

Yeste

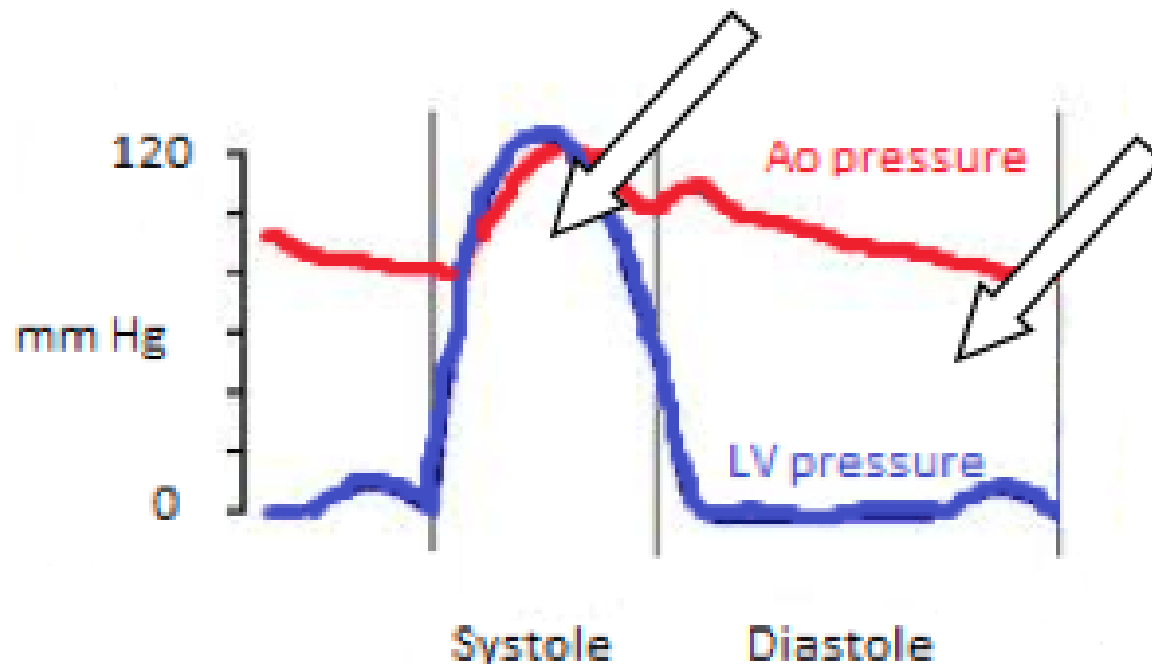
St. Mary Emergency Department

Time: ◀ 2032 2047 2049 2050 2056 2100 2108 2110

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	18	18		28				
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mcg/kg/min) Dopamine			10 mc...				15 mc...	
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	99	95		99	98	95		
ate				4				
evice	Cannula			Cannula				

Need Coronary perfusion pressure $AOD-LVEDP > 25\text{mmHg}$

No gradient, no
coronary filling



Gradient drives
coronary filling

- 10/22/17 0559 > ceftriaxone (ROCEPHAN) 1 g in sodium chloride
- 10/22/17 0246 > albuterol (PROVENTIL) nebulizer solution 2.5 mg
- 10/22/17 0246 > levothyroxine (SYNTHROID, LEVOTHROID) tablet
- 10/22/17 0246 > tacrolimus (PROGRAF) capsule 0.5 mg 0.5 mg, Or
"And" Linked Group Details

Current Continuous Medications

Ordered

- 10/21/17 2046 > DOPamine (INOTROPIN) infusion 10 mcg/kg/min,

Current PRN Medications

Ordered

- 10/22/17 0911 > 0.9% NaCl flush bag 21 mL, Intravenous, PRN
- 10/22/17 0638 > promethazine (PHENERGAN) injection 25 mg 25 m
- 10/22/17 0246 > metoclopramide (REGLAN) injection 10 mg 10 mg,
- 10/22/17 0246 > albuterol (PROVENTIL) nebulizer solution 2.5 mg 2
- 10/22/17 0246 > HYDROcodone-acetaminophen (NORCO) 10-325 M
SIG:Take 1-2 tablets by mou...

Lab Orders

Start

3. What is the effect of BB and ACEI on the unstressed volume?

Stressed and Unstressed Volume

The sum of stressed (approximately 30% of total volume) and **unstressed (approximately 70% of total volume)** volumes is the total blood volume within the venous system.

ACEI versus BB

1. ACEI increase stressed volume due to vasodilation
2. BB causes vasoconstriction in the unstressed volume (alpha receptors unopposed due to blockade of the beta receptors)

Vasoconstriction by betablockers: blue and cold hands



Vasodilation from ACEI: Pink and warm hands

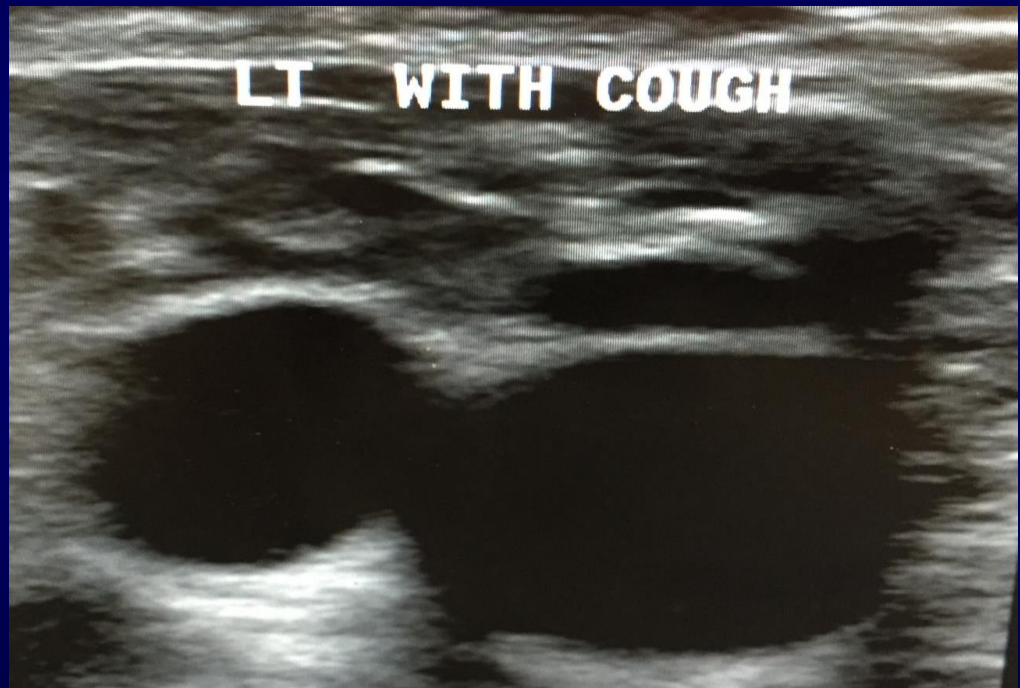
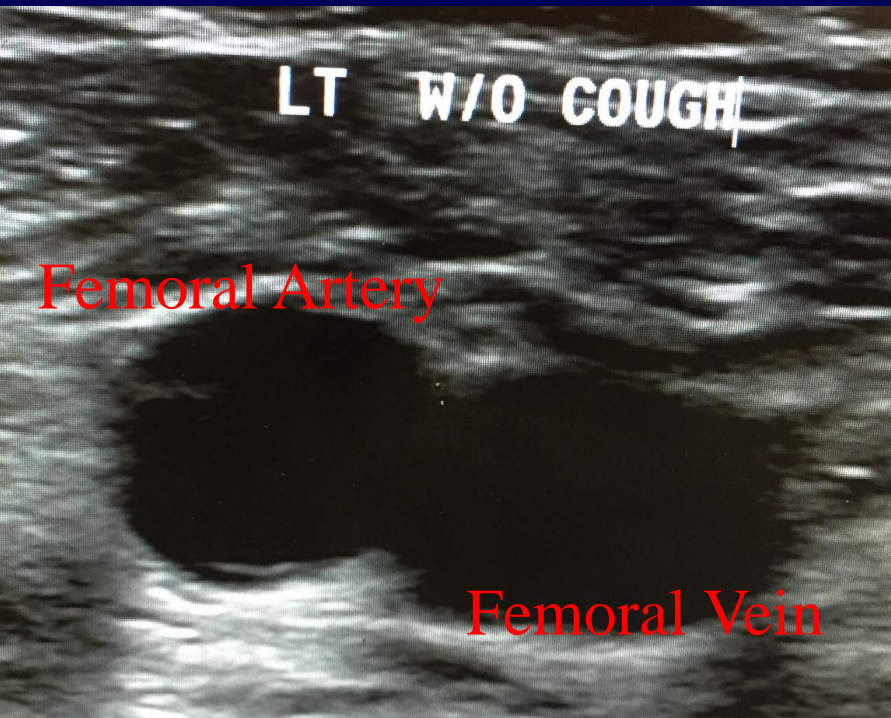


Low blood pressure: Give fluid

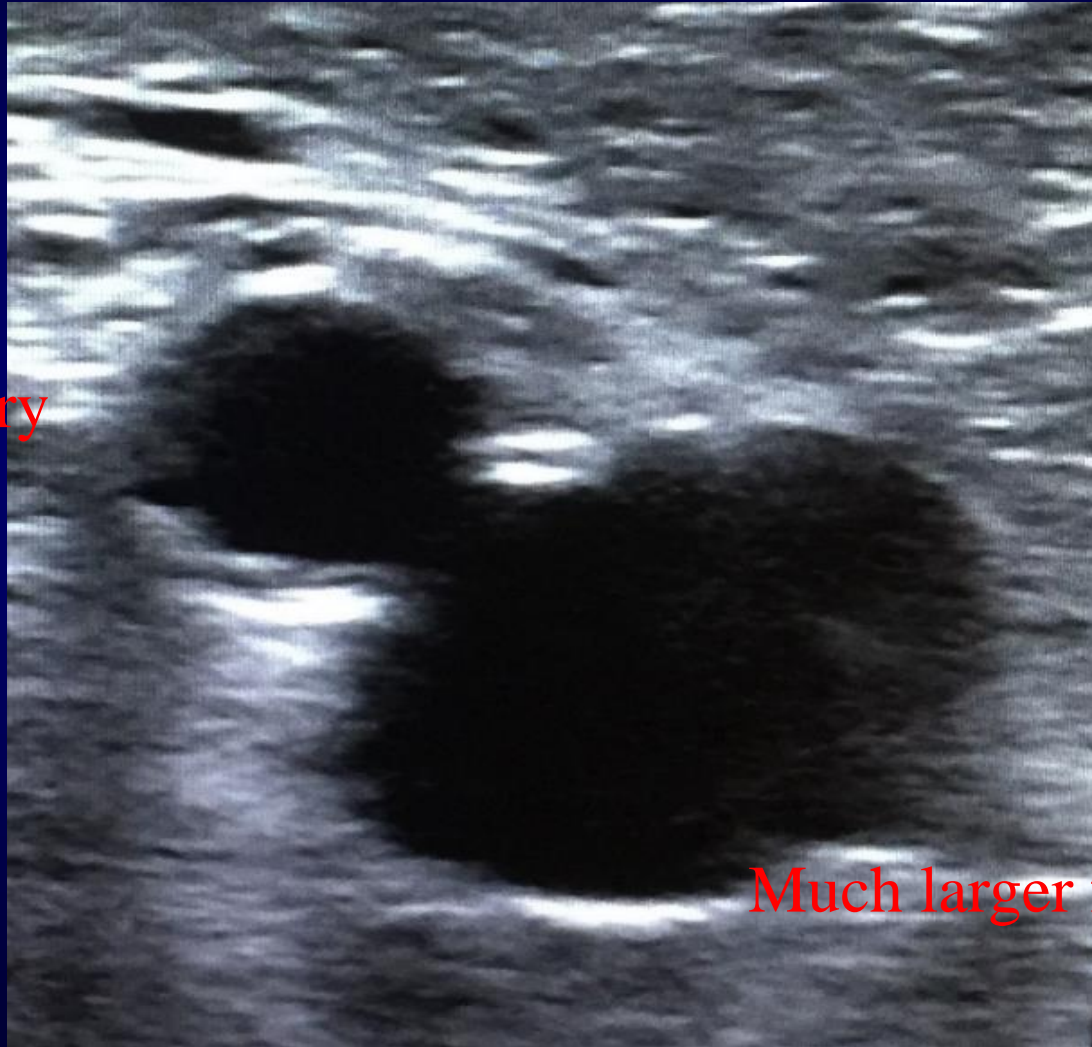


Low blood pressure: Start positive vasopressor





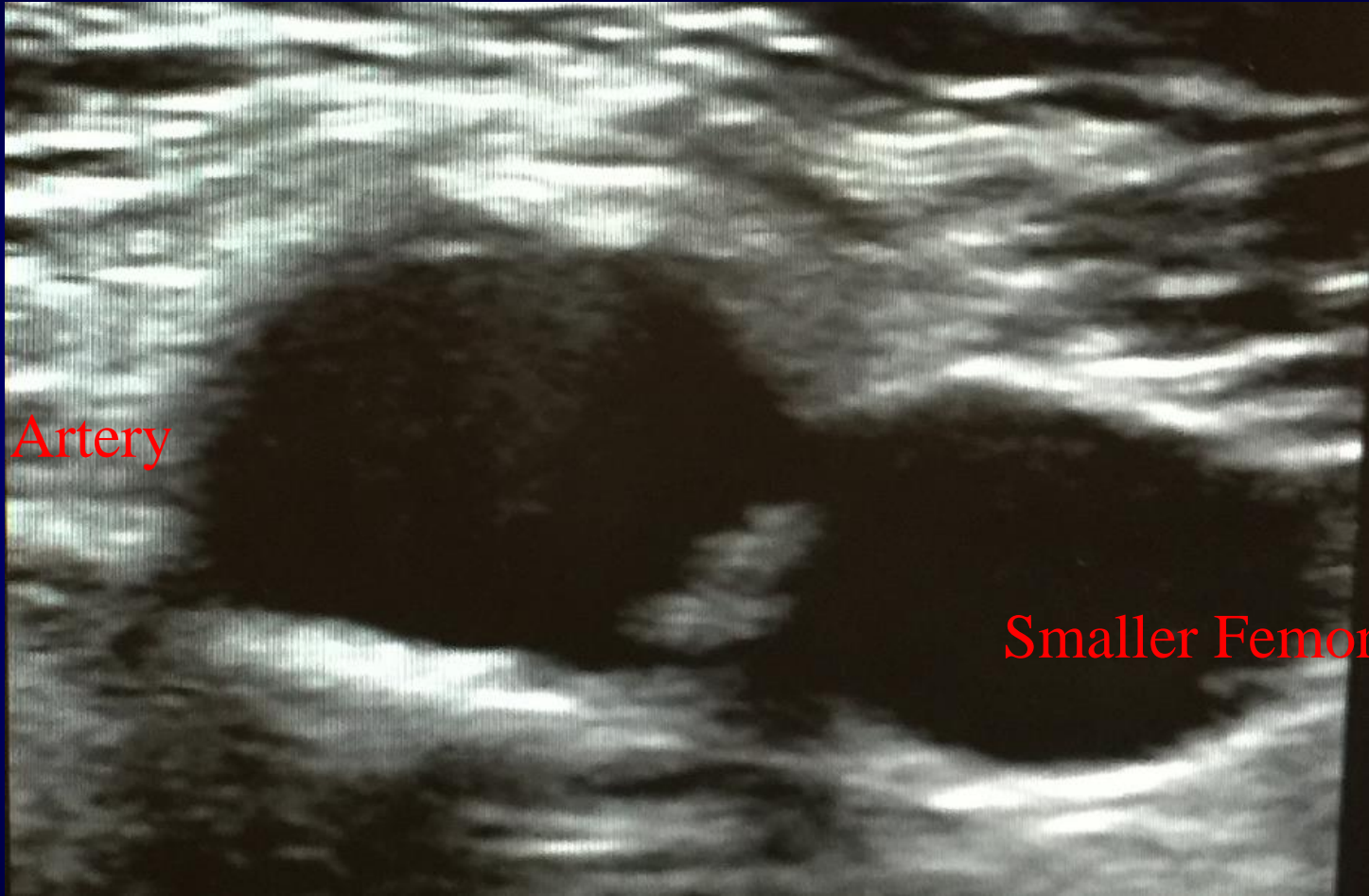
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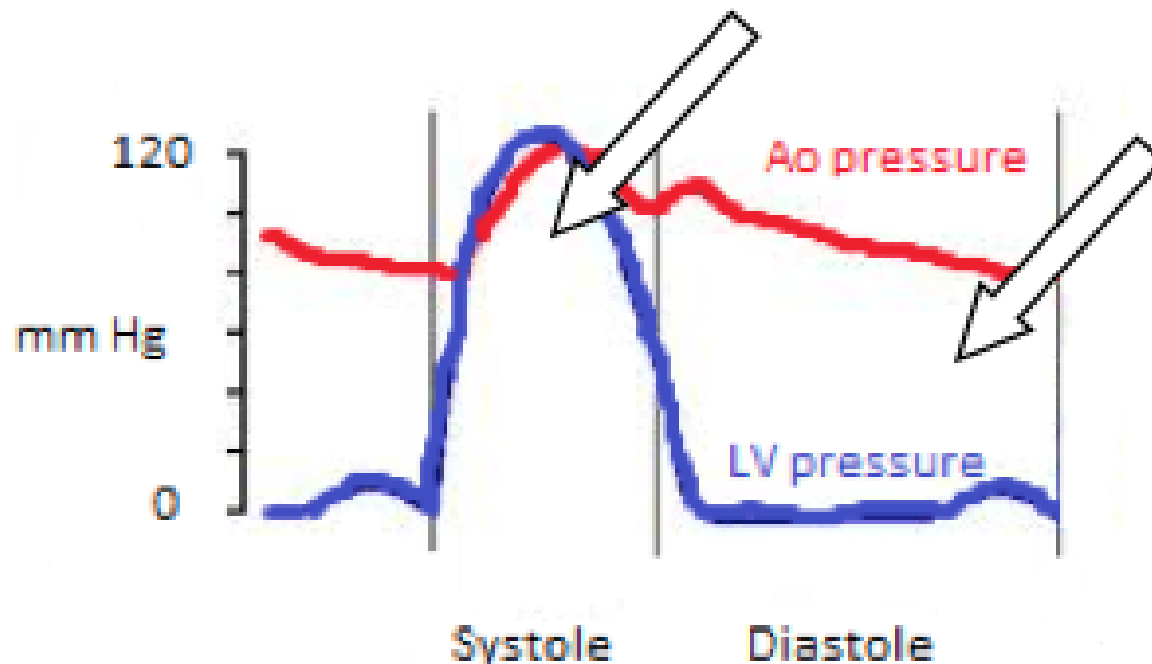


Femoral Artery

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Need Coronary perfusion pressure $AOD-LVEDP > 25\text{mmHg}$

No gradient, no
coronary filling



Gradient drives
coronary filling

Low blood pressure: Give fluid



Low blood pressure: Start positive vasopressor



Thank You

