

CRASH 2004

Basic TEE Workshop
Aortic Valve and Thoracic Aorta

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Aortic Valve

- anatomy
- echo views
- doppler exam
- stenosis
- insufficiency

Thoracic Aorta

- anatomy
- echo views
- plaque
- aneurysm
- dissection

2d Aortic Valve short axis

30-60° multiplane angle
work to get most “round” view of valve
normal valve has 3 thin freely mobile cusps
normal valve area 3-4 sq. cm.

2d Aortic Valve long axis

120-140° multiplane angle
cusps are freely mobile
good view for LVOT diameter measurement
good view for aortic root

Useful Views for Doppler Examination

trans-gastric long axis
start with trans-gastric short axis view of the LV, and rotate multiplane angle to approx. 120°. Use color to help locate LVOT and aortic valve

deep trans-gastric
insert probe deep into stomach, zero°, flex tip anteriorly and pull back slowly. Adjust if needed to get best view.

Aortic Stenosis

- usually a heavily calcified valve
- bicuspid or tricuspid
- turbulent flow in ascending aorta
- concentric LVH
- severe AS:
 - AVA < 0.75 sq. cm.
 - peak gradient >80 mm hg (with normal LV)
 - Mean gradient >50 mm hg (with normal LV)

Pressure gradient

use continuous wave doppler and align doppler trace most parallel to flow of blood (within 20 degrees is best)

modified Bernoulli equation

$$\text{Pressure gradient} = 4 (v)^2$$

Continuity Equation

$$\text{AREA}_{\text{lvot}} \times \text{TVI}_{\text{lvot}} = \text{AREA}_{\text{av}} \times \text{TVI}_{\text{av}}$$

$$\text{AREA}_{\text{lvot}} = (\text{diameter LVOT})^2 \times 0.785$$

TVI_{lvot} use pulse wave doppler

TVI_{av} use continuous wave doppler

Aortic Insufficiency

- degenerative calcified valve
- dilated aortic root
- endocarditis
- dissection

Aortic Insufficiency

severe

- jet width/LVOT >60%
- PHT <250 msec
- holodiastolic reversal
- restrictive LV filling
- dilated LV

mild

jet width/LVOT <30%
PHT >400 msec
early diastolic reversal

Thoracic Aorta

- anatomy
- imaging views
- plaque
- aneurysm
- dissection

Aortic Dissection

ascending vs. descending in origin
extent of dissection
size of aorta
evaluate aortic valve
associated pericardial effusion

Aortic Plaque

grade 1	normal
grade 2	intimal thickening
grade 3	< 5 mm
grade 4	> 5 mm
grade 5	mobile atheroma

References:

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