

11.1 Body Imaging

Part I
Sectional Anatomy of the Body
(Chest, Abdomen, Pelvis)

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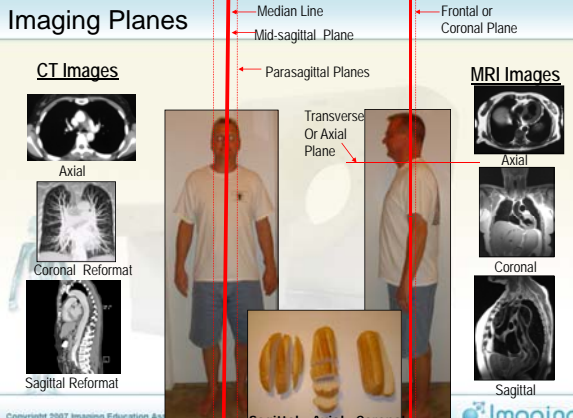
Outline

Part I

- Planes of the Chest, Abdomen & Pelvis
- Sectional Anatomy of the Chest & Heart
- MR imaging of the Chest
- Sectional Anatomy of the Abdomen & Pelvis
- MR imaging of the Abdomen & Pelvis

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Imaging Planes



CT Images

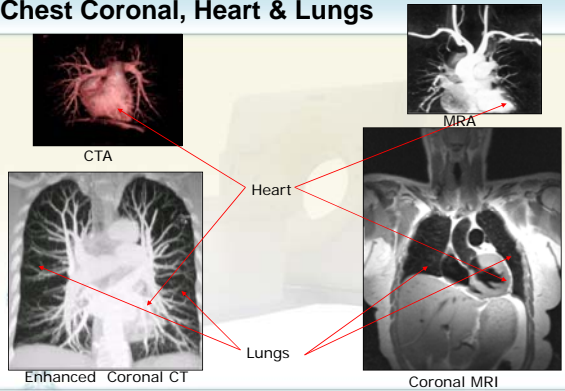
- Axial
- Coronal Reformat
- Sagittal Reformat

MRI Images

- Axial
- Coronal
- Sagittal

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Chest Coronal, Heart & Lungs



CTA

MRA

Heart

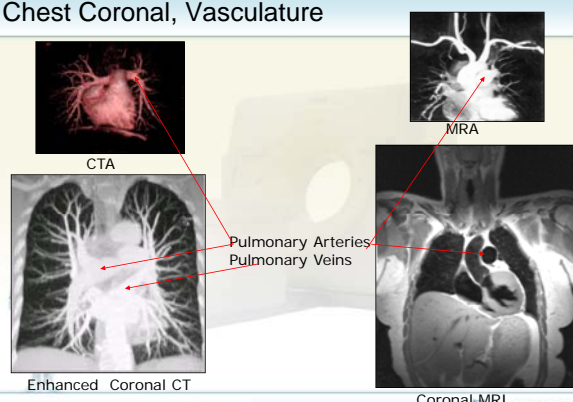
Lungs

Enhanced Coronal CT

Coronal MRI

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Chest Coronal, Vasculature



CTA

MRA

Pulmonary Arteries

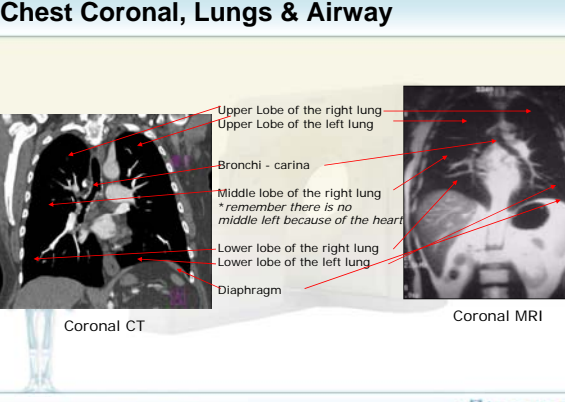
Pulmonary Veins

Enhanced Coronal CT

Coronal MRI

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Chest Coronal, Lungs & Airway



Upper Lobe of the right lung

Upper Lobe of the left lung

Bronchi - carina

Middle lobe of the right lung
**remember there is no middle left because of the heart*

Lower lobe of the right lung

Lower lobe of the left lung

Diaphragm

Coronal CT

Coronal MRI

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Chest Coronal Muscles of the Chest

Labels: Pectoralis muscles, Heart Muscle, Trapezius, Latissimus, Intercostal Muscles, Diaphragm.

Images: Axial CT, Axial MRI, Coronal CT, Coronal MRI.

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Sagittal Chest – “Candy Cane Shot”

Labels: Aortic Arch, Ascending Aorta, Descending Aorta, Heart.

Images: Sagittal CT, Sagittal MRI.

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Axial chest

Labels: Pectoralis Muscle, Aortic Arch, Latissimus Muscle, Spine (vertebral body), Ascending Aorta, Pulmonary arteries, Pulmonary veins, Descending Aorta, Heart.

Images: Axial slice #1, Axial slice #2, Axial slice #3.

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Heart anatomy

Labels: IVC & SVC (Inferior & Superior vena-cava), RA (right atrium), Tri, Rv, P valve, Pa, Lungs, Pv, La, Bi, Lv, Aortic valve, Aorta – coronary arch.

Images: CTA CORONAL, MRI CORONAL, CT AXIAL, MRI AXIAL.

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Heart Anatomy

Labels: SVC (superior vena cava), RA (right atrium), Tri cuspid valve, Rv, P valve, Pa, Lungs, Pv, La, Bi, Lv, Aortic valve, Aorta – coronary arch.

Images: CTA CORONAL, MRI CORONAL, CT AXIAL, MRI AXIAL.

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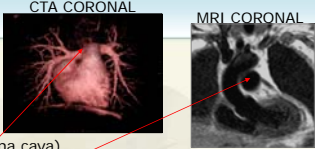
Heart Anatomy

Labels: IVC & SVC (Inferior & Superior vena cava), RA (right atrium), Tri cuspid valve, RV (right ventricle), P valve, Pa, Lungs, P-S v, La, Bi, Lv, Aortic valve, Aorta – coronary arch.


Images: CTA CORONAL, MRI CORONAL, CT AXIAL, MRI AXIAL.

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Heart Anatomy




Heart flow
 IVC & SVC (Inferior & Superior vena cava)
 RA (right atrium)
 Tri cuspid valve
 RV (right ventricle)
 Pulmonary valve
 PA (Pulmonary artery)



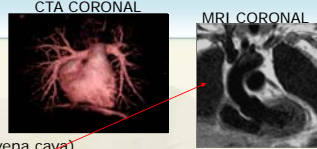
Lungs
 Pv
 La
 Bi
 Lv
 Aortic valve
 Aorta – coronary arch

CT AXIAL MRI AXIAL

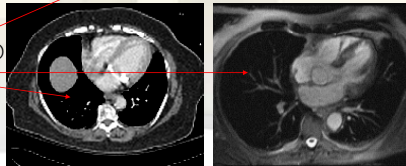
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Heart Anatomy




Heart flow
 IVC & SVC (Inferior & Superior vena cava)
 RA (right atrium)
 Tri cuspid valve
 RV (right ventricle)
 Pulmonary valve
 PA (Pulmonary artery)



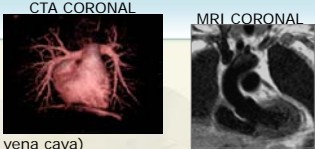
Lungs
 PV (pulmonary veins)
 LA
 Bi
 LV
 Aortic valve
 Aorta – coronary Arch

CT AXIAL MRI AXIAL

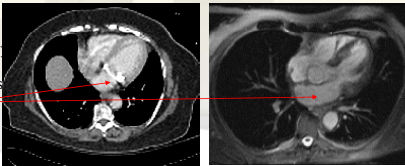
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Heart anatomy




Heart flow
 IVC & SVC (Inferior & Superior vena cava)
 RA (right atrium)
 Tri cuspid valve
 RV (right ventricle)
 Pulmonary valve
 PA (Pulmonary arter)



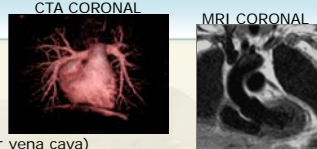
Lungs
 PV (pulmonary veins)
 LA (Left Atrium)
 Bi
 LV
 Aortic valve
 Aorta – coronary Arch

CT AXIAL MRI AXIAL

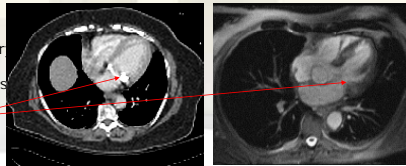
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Heart anatomy




Heart flow
 IVC & SVC (Inferior & Superior vena cava)
 RA (right atrium)
 Tri cuspid valve
 RV (right ventricle)
 Pulmonary valve
 PA (Pulmonary arter)



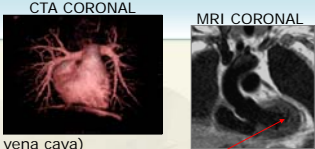
Lungs
 PV (pulmonary veins)
 LA (Left Atrium)
 Bi cuspid valve
 LV
 Aortic valve
 Aorta – coronary Arch

CT AXIAL MRI AXIAL

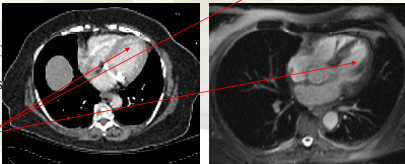
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Heart anatomy




Heart flow
 IVC & SVC (Inferior & Superior vena cava)
 RA (right atrium)
 Tri cuspid valve
 RV (right ventricle)
 Pulmonary valve
 PA (Pulmonary arter)



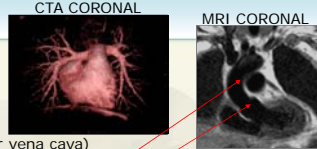
Lungs
 PV (pulmonary veins)
 LA (Left Atrium)
 Bi cuspid valve
 LV (Left Ventricle)
 Aortic valve
 Aorta – coronary Arch

CT AXIAL MRI AXIAL

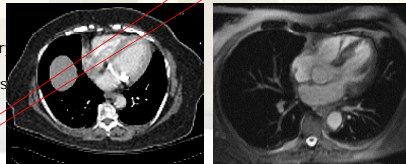
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Heart anatomy




Heart flow
 IVC & SVC (Inferior & Superior vena cava)
 RA (right atrium)
 Tri cuspid valve
 RV (right ventricle)
 Pulmonary valve
 PA (Pulmonary arter)



Lungs
 PV (pulmonary veins)
 LA (Left Atrium)
 Bi cuspid valve
 LV (Left Ventricle)
 Aortic valve
 Aorta – coronary Arch

CT AXIAL MRI AXIAL

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Aortic Arch – the “A, B, C’s”

Ascending aorta
Coronaries
Brachiocephalic (aka Innominate)
right common carotid
right subclavian
right vertebral
Left common carotid
Left Subclavian
Left vertebral

CTA CORONAL

MRA CORONAL

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Aortic Arch – the “A, B, C’s”

Ascending aorta
Coronaries
Brachiocephalic (aka Innominate)
right common carotid
right subclavian
right vertebral
Left common carotid
Left Subclavian
Left vertebral

CTA CORONAL

MRA CORONAL

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Aortic Arch – the “A, B, C’s”

Ascending aorta
Coronaries
Brachiocephalic (aka Innominate)
right common carotid
right subclavian
right vertebral
Left common carotid
Left Subclavian
Left vertebral

CTA CORONAL

MRA CORONAL

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Aortic Arch – the “A, B, C’s”

Ascending aorta
Coronaries
Brachiocephalic (aka Innominate)
right common carotid
right subclavian
right vertebral
Left common carotid
Left Subclavian
Left vertebral

CTA CORONAL

MRA CORONAL

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Imaging Planes

Frontal or Coronal Plane
Median Line
Mid-sagittal Plane
Parasagittal Planes
Transverse Or Axial Plane

Sagittal Axial Coronal

CT Images

Axial Coronal Sagittal

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Imaging Planes

Frontal or Coronal Plane
Median Line
Mid-sagittal Plane
Parasagittal Planes
Transverse Or Axial Plane

Sagittal Axial Coronal

CT Images

Axial Coronal Sagittal

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Coronal Abdomen

Approximate Slice location

Approximate Slice location

- Kidneys
- Adrenals
- Spleen
- Liver
- Psoas Muscles
- Gluteus Muscles

Coronal MR image

Coronal CT image

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Coronal Abdomen

Approximate Slice location

Approximate Slice location

- Liver
- Liver Mass
- Spleen
- Stomach
- Bowel
- Small Bowel
- Structures of the Small bow
- Duodenum
- Jejunum
- Ileum

Coronal MR image

Coronal CT image

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Coronal Abdomen

Approximate Slice location

Approximate Slice location

- Liver
- Spleen
- Stomach
- Lesser curvature
- Structures of the stomach:
 - Lesser curvature
 - Fundus
 - Pylorus
 - Greater curvature
- Small Bowel
- Structures of the Small bow
- Duodenum
- Jejunum
- Ileum
- Large bowel (colon)
 - Ascending colon
 - Transverse colon
 - Descending colon
 - Sigmoid colon

Coronal MR image

Coronal CT image

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Axial Abdomen

Approximate Slice location

Approximate Slice location

- Diaphragm
- Liver
- Spleen
- Stomach
- Aorta
- Vertebral body

Axial MR image

Axial CT image

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Axial Abdomen

Approximate Slice location

Approximate Slice location

- Liver
- Spleen
- Stomach
- Aorta
- Vena cava
- Vertebral body

Axial MR image

Axial CT image

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Axial Abdomen

Approximate Slice location

Approximate Slice location

- Liver
- Spleen
- Pancreas
- Kidneys

Axial MR image

Axial CT image

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Axial Abdomen

Approximate Slice location

Rectus abdominus muscles

Liver

Gall bladder

Pancreas

Kidneys

Axial CT image

Axial MR image

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Sagittal Abdomen

Approximate Slice location

Thoracic Spine

Liver

Pancreas

Lumbar Spine

Aorta

Bowel

Sacrum

Coccyx

Bladder

Symphysis Pubis

Sagittal CT image

Sagittal MR image

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Abdominal Vasculature

“See Spot Run In..”

(“C” not see) Celiac, SMA, Renals (right & Left), IMA

“C” = Celiac
gastric
hepatic
splenic

Arises the aorta at the level of L1

Provides blood supply to the stomach, spleen and liver

Coronal CTA Image

Coronal MRA image

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Abdominal Vasculature

“See Spot Run In..”

(“C” not see) Celiac, SMA, Renals (right & Left), IMA

SMA
superior
mesenteric
artery

Arises anteriorly from the aorta at the level of L2-3

Provides blood supply to the stomach, small bowel and part of the colon

Coronal CTA Image

Coronal MRA image

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Abdominal Vasculature

“See Spot Run In..”

(“C” not see) Celiac, SMA, Renals (right & Left), IMA

Renal arteries
right
left

Arises Bilaterally and posteriorly from the aorta at the level of L3-4

Provides blood supply to the right & left kidney

Coronal CTA Image

Coronal MRA image

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Abdominal Vasculature

“See Spot Run In..”

(“C” not see) Celiac, SMA, Renals (right & Left), IMA

IMA
Inferior
Mesenteric
Artery

Arises anteriorly & inferiorly from the aorta at the level of L 4-5

Provides blood supply to the inferior colon, sigmoid and rectum

Coronal CTA Image

Coronal MRA image

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Abdominal Vasculature

"See Spot Run In.."
("C" not see) Celiac, SMA, Renals (right & Left), IMA

(AAA) Abdominal Aortic Aneurysm
Abdominal Aorta
Iliac arteries

Coronal CTA Image Coronal MRA image

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Abdominal Veins

Review Vasculature...

Almost ALL Arteries:

- Carry oxygenated blood away from the heart
- Carry oxyhemoglobin blood to organs

Almost ALL Veins:

- Carry deoxygenated blood to the heart
- Carry deoxyhemoglobin away from organs

Exceptions:

- Portal vein-
 - Carries deoxyhemoglobin to the liver
- Pulmonary veins-
 - Carries deoxyhemoglobin to the lungs
- Pulmonary arteries-
 - Carries oxyhemoglobin to the heart

(IVC) Inferior vena cava
Portal vein
Splenic vein
Left renal v (SMV)
Superior mesenteric Vein
(IVC) Inferior vena cava
Right iliac vein

Coronal abdominal venogram

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Peripheral Vasculature "Run-off's"

Abdominal Aorta
Iliac arteries (at the level of the Ileum)
Femoral Arteries Superficial femoral & common femoral (at the level of the Femur)
Popliteal Arteries (at the level of the Knee)
Trifurcation (Lower Leg)
Anterior Tibial
Posterior Tibialis
Peroneus Brevis (at the level of the Foot)
Dorsalis Pedis
Medial Malaeal

Coronal CTA Image Coronal MRA Image

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Female Pelvis Anatomy

Fundus Endometrium
Approximate Slice locations
Sagittal ultrasound image
Uterus
Fundus Junctional Zone Endometrium
Cervix
Vagina
Bladder
Symphysis pubis

Sagittal Reformatted CT Sagittal MRI (T2 image)

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Female Pelvis Anatomy

Approximate Slice locations
Uterus
Junctional Zone, Endometrium
Ovary
Fallopian tube
Bladder
Muscles
Gluteal Muscles
Ilium
Acetabulum
Obturator internus muscles
Obturator externus muscles

Coronal Reformatted CT Coronal MRI (T2 image)

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Female Pelvis Anatomy

Approximate Slice locations
CT #1
CT #2
Approximate Slice locations
MR #1
MR #2
rectus abdominus muscles
Uterus, endometrium
Gluteal muscles
rectum
Bladder
Ovary
Femoral head
Obturator Internus muscle
Cervix
Vagina

Axial CT #1 Axial MR #1
Axial CT #2 Axial MR #2

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Male Pelvis Anatomy

Approximate Slice locations

Approximate Slice locations

Psoas Muscles
Bladder
Prostate (base)
Seminal vesicles
Vas deferens
Urethra
Apex of the Prostate
Pubic bone

Coronal Reformatted CT

Coronal Oblique MRI (T2 image)
High resolution (small FOV)

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Male Pelvis Anatomy

Approximate Slice locations

Approximate Slice locations

NAVEL

Symphysis Pubis
Prostate
Central gland
Peripheral zone (normal)
Peripheral zone (cancer)
Rectum
Neurovascular bundle
Gluteal Muscles
Obturator Internus Muscles

Axial CT

Axial MR
High resolution (small FOV)

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Male Pelvis Anatomy

Approximate Slice locations

Seminal vesicles
Urinary Bladder
Prostate Base
Peripheral zone
Prostate Apex
Rectum
Rectus abdominus Muscles
Symphysis Pubis

Sagittal Reformatted CT

Sagittal MRI (T2 image)
High resolution (small FOV)

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Outline

Part I

- Planes of the Chest, Abdomen & Pelvis
- Sectional Anatomy of the Chest & Heart
- MR imaging of the Chest
- Sectional Anatomy of the Abdomen & Pelvis
- MR imaging of the Abdomen & Pelvis

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11.1 Body Imaging
Part I – Anatomy of the Chest, Abdomen & Pelvis

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