

Name:- Muhammad Majid

ID No = 13628

Program:- BS Radiology

Instructor Name:- Mam Maheen Gul

Subject:- CT Procedure

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(1)

Q 4 write the patient positioning and examination protocol for the CT procedure advised for Tarsal Condition?

Answer 1

### Patient Positioning of Ankle

- Lie patient supine, feet first.
  - Affected leg out straight.
  - Position ankle in middle of the FOU.
  - Toes pointing to ceiling.
  - Unaffected leg bent to remove foot from scan field.
- Positioning aids e.g. A water bottle could be used in case where the patient may move.

### Indications:

Tarsal coalition, talar or calcaneal pathology, ankle joint pathology, loose bodies.

### Patient Preparation:

Supine Feet first, ankle of interest at center of FOU, other leg bent up.

②

→ Ankle / foot immobilized.

### Image Protocol:

→ Ankle / Foot 2mm (0.5mm)

Scan Slice Thickness	0.5mm x 64
Pitch	Detail
KV	120
mAs	100
Rotation Time	0.5s

### Scan Ranges

Start ⇒ Above ankle joint

End ⇒ Below calcaneum

Plane ⇒ Straight Gantry

### Image Reconstruction:

2/2 mm ⇒ Bone Sharp

Volume ⇒ Bone Sharp

Volume for 3D ⇒ soft tissue standard.

# Reformatting

	Coronal	Sagittal
• Plane	• True Coronal	• True Sagittal
• Start	• Posterior To calcaneum	• Lateral To fibula
• End	• Anterior to navicular	• Medial To Tibia
• Thickness	2mm	2mm
• Spacing	2mm	2mm



## Answer No 5

### CAD (Coronary Artery Disease):

Atherosclerosis is a build-up of fat, plaque, and other substances, including calcium. Coronary artery calcification is a marker of coronary artery disease (CAD). Patient with CAD may exhibit no symptoms of the disease in many patient myocardial

(4)

infarction in the first sign of CAD. The goal of CT for Calcium Scoring is to determine the location and extent of Calcified plaque in the Coronary arteries. This is a helpful diagnostic tool, by measuring the amount of calcium that builds up in the coronary artery. CT can be used to predict the likelihood of subsequent cardiovascular events in people with no symptoms. The amount of calcium that builds calcification on cardiac CT is expressed as a Calcium Score. A negative examination shows no calcification within the coronary arteries and suggest that atherosclerotic plaque is minimal and that the chance of CAD developing during the next 2-5 years is low. A Positive Test means that CAD is present, regardless of whether or not the patient is experiencing.

5

## CTA Cardiac:-

### Indication:-

→ Investigation of CAD, assessment of coronary stents.

### Patient Positioning:-

→ Supine / Feet First.  
→ ECG dots placed on chest, arms above head.

### Imaging Protocol:-

Cardiac CTA → 0.5mm

→ Scan Slice Thickness	→ 0.5mm x 64
→ Pitch	→ Determined by Sure Cardio™
→ kV	→ 120
→ mA	→ 400
→ Rotation Time	→ Determined by Sure Cardio™

## ② Scan Range:

Start → Caring

End → Below apex of Heart

Plane → Straight gantry.

## Contract:

Single - Phase Contrast injection Protocol

Phase 1 → XX mL @ 4-5 mL/s

Phase 2 (saline) → 50 mL @ 4-5 mL/s

$XX = (\text{Scan time} + 10) \times \text{injection rate}$

Sure start on descending aorta at level of pulmonary trunk.

Trigger at 180 HU

## Image Reconstruction:

→ Use ImageXact to determine the optimal phase for motion-free images.

→ Volume - cardiac CTA

Comments: Sure cardio should be used to ensure that the pitch rotation speed and reconstruction method are

⑦

optimized for the scan.

Answer No 2

Indication:

- Sinusitis
- Polyps
- Post-nasal drip
- Facial bones
- Anosmia

Patient preparation:-

- Supine / Head First, taking care to position head symmetrically.
- Always ask if patient has had previous surgery and when it was performed, and documents.

Imaging Protocol:

Sinuses HCT 5mm (0.5mm)



8

Scan Slice Thickness	0.5mm x 64
Pitch	Detail
kV	120
mAs	150
Rotation	0.55

### Scan Range:

Start → Below Maxillary Sinus  
End → Above frontal Sinus  
Plane → Parallel to hard Plate.

### Image Reconstruction:

5/5mm → ~~Do~~ Bone Sharp  
volume → Bone Sharp

### Reformatting :-

Multiview	Coronal	Sagittal
Plane	Perpendicular to hard plate	Perpendicular to hard Plate
Start	Anterior to frontals	medial wall of left orbit
End	Posterior to sphenoid	medial wall of Right orbit.
Thickness	2mm	2mm
Spacing	2mm	2mm

9

## Comments:

- If there is a single opaque sinus or completely opaque sinuses, reconstruct 5/5 mm axial sections, sure Q<sup>TM</sup>. Soft tissue standard.
- If clinical indication is anosmia, reconstruct 5/5 mm axial sections, sure Q<sup>TM</sup>. Soft Tissue standard and be sure to check inferior cranial fossa for lesions. (Requires post-contrast head study).
- If scanning for a lump on the plate, scan patient with mouth open.

## Answer 3:-

### Indications:-

- Low back pain (LBP)
- Sciatica
- Femoral neuralgia
- Spinal Canal Stenosis

⑩

## Patient Preparation:

- Supine / Feet First
- Sponge under knees
- Can be Scanned lateral decubitus or prone position if unable to lie supine.

## Imaging Protocols:

- Lumbar Spine 3mm (0.5mm)
- Ltg Lumbar Spine 3mm (0.5mm)

Scan Slice Thickness	0.5mm x 64
Pitch	Detail
kV	135
mAs	sure Exposure 3D High Quality
Rotation Time	1.0s (1.5s)

## Scan Range:

- Levels Specified otherwise.
- Routine L1-S1

(11)

- If Patient < 30y.o then L3-S1  
Unless specific symptoms @ L2-3
- Start ⇒ Above pedicle of L2
- End ⇒ Below S1 (increase scan range to obtain sufficient data for MPRs for L5-S1 disc)

### Image Reconstruction:

- \* 3/3 mm → Spine Thoracic-Lumbar
- \* 3/3 mm → Bone Standard.
- \* Volume → Spine Thoracic-Lumbar.

### Image Reconstruction:

#### Reformatting:

- Use spine program in MPR.

### Answer 1

#### Hyper Vascular:-

#### Indication:-

- Rule out / flow follow up liver for hypervascular metastases from the following.

(12)

- ⇒ Primary Liver Tumors
- ⇒ Renal cells carcinoma, leiomyosarcoma, thyroid tumors, carcinooid and other neuroendocrine tumors.
- ⇒ Melanoma and breast (may be hypovascular)
- ⇒ Pancreatic islet cell tumors, GIST.  
(gastrointestinal stromal Cell Tumor)

### Patient Preparation:-

- 4-hr fast
- Positive oral Contrast 60/30/15 min prior, remainder immediately prior to scan.
- H<sub>2</sub>O may be suitable alternative (750ml 30 min prior, 250ml immediately prior to scan)
- Supine/feet first.

### Image Protocols-

→ 2 Phase Liver (mm (0.5mm))	
→ Large 2 Phase Liver (mm (0.5mm))	
Scan Slice Thickness	0.5mm x 64 (1mm x 32)
Pitch	Standard
kV	120
mA	Give exposure 3D standard
Rotation Time	0.5s (0.75s)

(13)  
Scan Ranges

	Arterial Phase	Portal Venous Phase
Start	Top of higher hemidiaphragm	Top of higher hemidiaphragm
End	Iliac crest	Below ischium
Plane	Straight gantry	Straight Gantry

Contrast:-

⇒ Volume → 70-120mL (depending on a patient weight)

⇒ Rate → 4mL/s

⇒ Delay → "Start" 180HU in abdominal aort + 10s Portal, venous @ 65s fixed delay.

Image Reconstruction:

⇒ 5/5 mm Body Standard Axial

⇒ Volume Body Standard Volume

Reformatting:-

Multi view	Coronal	Sagittal
Start	Posterior	Left
End	Anterior	Right
Thickness	4mm	4mm
Spacing	4mm	4mm

## Hypovascular-

⇒ Rule out follow up liver for hypovascular metastasis from the following.

→ Primary adenocarcinoma in digestive tract. (Esophagus, Stomach, Colon, and rectum)

→ Squamous cell carcinoma. (head, & neck, lung, anus)

→ Lymphoma.

### Patient Preparation:

→ ~~ET~~ 4hr fast.

→ Positive oral contrast  $60/130/15 \text{ min}$  prior, remainder immediately prior to scan.

→ H<sub>2</sub>O may be suitable alternative (750ml 30min prior, 250ml immediately prior to scan).

### Image Protocol:

Abdomen 5mm (005mm)

Cap Abdomen 5mm (1mm)

(15)

Scan Slice Thickness	0.5mm x 64 (1mm x 32)
Pitch	Standard
kV	120
mA	Low Exposure 3D standard
Rotation Time	0.58 (0.75s)

### Scan Range:

Start → Above higher hemidiaphragm  
End → Below ~~the~~ ischium  
Plane → ~~5-70~~ Straight Gantry

### Contrast:

Volume → 70 - 120 mL (depending on Patient weight)

Rate → 2-4 mL/s

Delay → 65-70s

### Image Reconstruction:

S/Smm → Body Standard Axial

Volume → Body Standard Volume

### Reformatting:

multiview

Start  
end

Thickness  
spacing

Coronal

Posterior

Anterior

4mm

4mm

Sagittal

Left

Right

4mm

4mm



THE END