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subject: cross sectional

Anatomy

Assignment: cross sectional

Anatomy viva

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Q5 - write a detail note on
cervical spine?

Ans:- Cervical Spine

→ C7

→ Seven cervical vertebrae.

→ 3rd-6th are typical

→ 1st-2nd, 7th are atypical

→ The neck is connected to the upper back through a series of seven vertebral segments.

→ Identified by the presence of foramine transversaria.

→ The cervical spine is delicate.

→ Housing the spinal cord that sends messages from the brain to control all aspects of the body.

→ while also remarkably strong and flexible, allowing the neck to move in all direction.

→ The neck is the Anatomic region that lies between the lower margin of the mandible and the superior nuchal line of the

occipital bone above and the
suprasternal notch and
upper body of the clavicle below.

→ The neck consists of a ventral
region, the cervix, and a
dorsal region or nucha.

→ The neck supports the weight
of the head and act as a
conduit for structure travelling
to and from the cranial
cavity, thoracic cavity, and the
upper extremities.

Typical cervical vertebrae

✓ Body

✓ vertebral foramina

✓ vertebral arch

① Body

① Small

① Concave superior surface

① Anterior surface is beveled

① Inferior surface is saddle shape.

① Anterior border

(3)

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Date:...../...../20.....

① Articular Column

② Intervertebral foramina

vertebral foramen

→ Larger than body

→ Triangular in shape.

vertebral Arch

→ Pedicle

→ Laminae

Transverse process

→ Ant & Post tubercle

→ costotransverse bar

→ costoid tubercle

Attachment and relations

→ Ant & Pos longitudinal ligaments.

→ Ligament flava

→ Interspinal ligament

→ supraspinous ligament

→ Foramen transversarium

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(4)

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Date:...../...../20.....

- Anterior tubercle
- Posterior tubercle
- Costovertebral bar

Ossification

- ossifies from 3 primary and 6 secondary centers.

First cervical vertebrae - Atlas

- Ring shaped
- No body
- No spine
- Short ant arch
- Long post arch
- Rt and lf masses
- Transverse process
- Post arch
- Median post tubercle
- Lateral mass
- Atlanto-occipital joint
- Inferior surface
- Medial surface

Second cervical vertebrae - Axis

- Identified by the presence of

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dense

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Date:...../...../20.....

TYPICAL cervical vertebrae C₂, C₄, C₅, C₆

- ① → Body
- ② Transverse process
- ③ foramen transversarium
- ④ Ant. Tubercle
- ⑤ Post. Tubercle
- ⑥ Superior Articular facet
- ⑦ Post-Lamina
- ⑧ pedicle
- ⑨ spine (Short & bifid)
- ⑩ vertebral canal

Seventh cervical vertebrae

→ Long, thick, horizontal spinous process

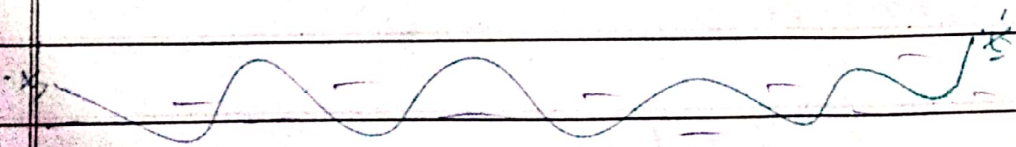
→ vertebrae prominent.

→ Not bifid, end in a tubercle.

→ Transverse process

→ Ant tubercle is absent

→ Small foramen transversarium



Q1:- write about the MRI of Human Heart?

Ans:- Magnetic resonance imaging uses magnets and radio waves to capture images inside your body without making a surgical incision.

- > It allows your doctor to see the soft tissue in your body, along with your bones.
- > An MRI can be performed on any part of your body. However, a heart or cardiac MRI looks specifically at your heart and nearby blood vessels.
- > Unlike a CT scan, an MRI does not use ionizing radiation.
- > It's considered a safer alternative for pregnant women.
- > If possible, it's best to wait until after the first trimester.

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7

M T W T F S S

Date:...../...../20.....

Q why a heart MRI is done

→ Your doctor might order a heart MRI if they believe you are at risk for heart failure or other less severe heart problems.

→ A cardiac MRI is a common test used to assess and diagnose several conditions.

Some of these include:

- ⊗ congenital heart defects
- ⊗ coronary heart disease
- ⊗ damage from a heart attack
- ⊗ heart failure
- ⊗ heart valve defects
- ⊗ pericarditis

→ Because MRI show cross sections of the body, they can also help explain or clarify the result of other tests, such as CT scan and x-rays.

risk of a heart MRI

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→ There are no risks for an MRI and few side effects, if any.

→ The test does not use ionizing radiation, and to date, there have been no documented side effects from the radio and magnetic waves it uses.

Allergic reaction to the dye are rare.

→ If you have a pacemaker or any sort of metal implant from previous surgeries or injuries, you may not be able to receive an MRI b/c it uses magnets.

→ Be sure to tell your doctor about any implants you have before the test.

How to prepare for a heart MRI

→ Before the test, tell your doctor if you have a pacemaker.

→ Depending on your type of pacemaker, your doctor may

(9)

M T W T F S

Date:...../...../20.....

Suggest another testing method, such as an abdominal CT scan.

→ However, some Pacemaker models can be reprogrammed before an MRI so they are not disrupted during examination.

→ Because an MRI uses magnets, it can attract metals.

→ The metal implant from previous surgeries include:

• clips, implants, pins, plates, screws, artificial heart valves, staples, stents.

How a heart MRI is performed

An MRI machine may look intimidating. It's made up of a bench that slowly glides into a large tube attached to a doughnut shaped opening.

→ As long as you have followed your doctor's instructions to remove all metal such as body jewelry,

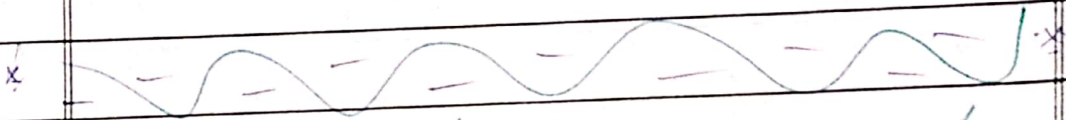
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(10)

watches and earrings, you will be completely safe.

After a heart MRI

→ After the test, you should be able to drive yourself home, unless you were given anti-anxiety medicine or sedation.



Q2: write about the bones of upper limb?

Ans: Bones of upper limb

- Bones of shoulder girdle: include: clavicle and scapula.
- Bones of the arm: Humerus.
- Bones of forearm: Radius (lateral) and ulna (Medial).
- Bones of the hand:
 - ⊗ Carpal bones (8)
 - ⊗ Metacarpal Bones (5)
 - ⊗ Phalanges (14)

C.P.T. 6

① Clavicle

- It is a long bone with 2 ends (medial & lateral) & shaft.
- The medial (sternal) end articulates with the sternum forming the sternoclavicular joint.
- The lateral (acromial) end articulates with the acromial process of the scapula forming the acromioclavicular joint.
- The medial $\frac{2}{3}$ of the shaft is convex forwards & lateral $\frac{1}{3}$ is convex backwards.
- It connects the upper limb to the axial skeleton.

② Scapula

- It is a flat triangular bone.
- 2 surfaces: Anterior & Posterior.
- 3 borders: upper, medial, lateral.
- 3 Angles: Superior, inferior, lateral.
- 3 processes: coracoid, acromial & spine of the scapula.
- 3 fossa: subscapular fossa, supraspinous fossa, infraspinous fossa.

→ two joints. ① Shoulder joint ② Acromioclavicular joint.

③ Humerus

- It is a long bone.
- 2 ends (upper & lower)
- Shaft
- upper ends consist of: Head, neck, (anatomical, surgical), lesser & greater tuberosity, groove.
- 3 borders
- 2 surface
- Lower ends contain 2 epicondyles (lateral & medial), 2 processes (trochlea & capitulum), 3 fossa.
- 2 joint:- Shoulder joint, Elbow joint.

④ Radius

- The shorter of the two long bones of the forearm, extending from the elbow to the wrist.
- It is the bone on the thumb side of the arm.

- It is long bone.
- 2 ends & shaft
- 3 Surfaces (Ant, Post, lateral)
- 3 borders (Ant, Post, medial)
- lower end 5 surface:- Ant, Post, lateral, medial, inferior.
- 1 process
- 4 joints:- Superior & Inferior radioulnar joint, Elbow joint, wrist joint

⑤ ulna

- long bone
- 2 ends.
- upper ends consist of 2 Processes (olecranon & coronoid processes) & trochlear notch.
- 3 Surfaces (Ant, Post, lateral)
- 3 borders (Ant, Post, lateral)
- Lower ends consist of head & styloid process.
- 3 joints.
 - ⊆ Elbow joint
 - ⊆ Superior & Infer radioulnar joints.

(6) Bones of the Hand

(1) Carpal Bones

→ 8 groups.

→ two rows (Proximal & distal)

Proximal Row (Lateral to medial)	Distal Row (Lateral to medial)
(a) Scaphoid	(a) Trapezium
(b) Lunate	(b) Trapezoid
(c) Triquetrum	(c) Capitate
(d) Pisiform	(d) Hamate

(2) 5 metacarpal bones.

(3) 14 Phalanges.

Joints of the hand

(1) wrist joint

(2) Midcarpal joint

(3) carpo-metacarpal joint

(4) Meta carpo-phalangeal joint

(5) Inter-phalangeal joints

Q3:- what are the planes used in cross-sectional Anatomy? Explain.

Ans → Body Planes are hypothetical geometric planes used to divide the body into sections. They are commonly used in both human and zoological anatomy to describe the location or direction of bodily structures.

Reference planes are the standard planes used in anatomical terminology and include:

① sagittal planes

→ The sagittal plane (lateral or Y-Z plane) divides the body into sinister and dexter (left and right) sides.

→ The mid (sagittal (median) Plane is in the midline through the center of the body, and all other sagittal planes are parallel to it.

② Coronal Plane

→ The coronal Plane (frontal or Y-X Plane) divides the body into dorsal and ventral (back and front) positions. It also separates the anterior and posterior positions.

③ Transverse Plane

→ Transverse Plane (axial or X-Z Plane) divides the body into superior and inferior (head and tail) positions. It is typically a horizontal plane through the center of the body and is parallel to the ground.

→ While these are the major reference planes of the body,

- other planes are commonly used in relation to these three. A longitudinal plane is any plane perpendicular to the transverse plane,
- while Parasagittal planes are parallel to the sagittal plane.
 - The coronal plane, the sagittal plane, and the Parasagittal planes are examples of longitudinal planes.

Q4 - what are the protocols used while performing CT abdomen?

Ans:-

Introduction

- Computed tomography (CT scan or CAT scan) is a noninvasive diagnostic imaging procedure that uses a combination of x-ray and

Computer technology to produce horizontal, or axial, images (often called slices) of the body. A CT scan shows detailed images of any part of the body, including the bones, muscles, fat, organs, and blood vessels. CT scans are more detailed than standard x-rays.

→ In standard x-rays, a beam of energy is aimed at the body part being studied. A plate behind the body part captures the variations of the energy beam after it passes through skin, bone, muscle, and other tissues. While much information can tell you on this prior to the procedure.

→ CT scans of the abdomen can provide more detail information about abdominal organs and structures than

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(19)

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Date:...../...../20.....

Standard x-rays of the abdomen, thus providing more information related to injuries and/or diseases of the abdominal organs.

→ CT scans of the abdomen may also be used to visualize placement of needles during biopsies of abdominal organs or tumors or during aspiration of fluid from the abdomen.

→ CT scans of the abdomen are useful in monitoring tumors and other conditions of the abdomen before and after treatment.

indications

→ ~~Routine abdominal scan for nonspecific referral.~~

How do I prepare for a CT scan

→ If you are having ct & angiography (CTA) or virtual colonoscopy with Johns Hopkins radiology, you will be given specific instructions when you make your appointment.

Precautions:- If you are pregnant or think you may be pregnant, please check with your doctor before scheduling the exam. other options will be discussed with you and your doctor.

Clothing:- You may be asked to change into a patient gown. If so, a gown will be provided for you. A locker will be provided to secure personal belongings. Please remove all metal.

Contrast MEDIA → CT Scans are most frequently done

(21)

M T W T F S

Date:...../...../20.....

with and without a contrast media. The contrast media improves the radiologist ability to view image of the inside of the body.

Allergy:- Please inform the access center representative when you schedule your CT discussed with your personal physician.

EAT/Drink:-

→ If your doctor ordered a CT scan without contrast, you can eat, drink and take your prescribed medications prior to your exam. If your doctor ordered a CT scan with contrast, do not eat anything three hours prior to your CT scan.

Diabetics:-

→ Diabetics should

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eat a light breakfast or lunch
three hours prior to the scan
time.

→ Depending on your oral medica-
-tion for diabetes, you may be
asked discontinue use of
medication for 48 hrs after CT
Scan.

Medication:- All patients can
take their prescribed medications
as usual.

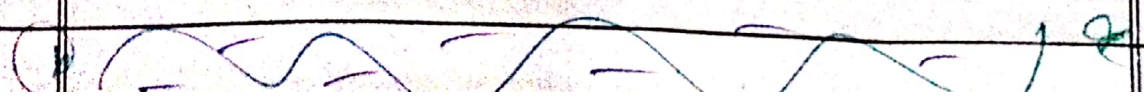
→ Based on your medical condition
Your doctor may request other
specific preparation.

Q what happens during a
CT scan?

→ CT scans may be performed
on an out patient basis or
as part of your stay in a
hospital. Procedures may vary
depending on your condition
and your physician's
practices.

Generally, CT Scans follows this process:

- ① You may be asked to change into patient gown. Please remove all metals.
- ② If you are to have procedure done with contrast, IV line will be start in the hand or arm.
- ③ Straps may be used to prevent movement during the procedure.
- ④ The Technologist will be another room where the Scanner controls located.
- ⑤ As the Scanner begins to rotate around you, x-rays will pass through the body short amount of time.
- ⑥ Speakers inside the Scanner will be enable technologist to communicate with and hear you.



24

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Date:...../...../20.....

The End