

RADT 1641

Clinical Simulation- Cranium
Campus, Provo, and Outreach
Summer 2023

**RADT 1641 SUMMER
CLINICAL SIMULATION
EDUCATIONAL OBJECTIVES**

1. Cranium

a. Demonstrate proper positioning and technique while using the phantom skulls to obtain perfect cranium images and identify the anatomy for the following procedures:

1. PA / AP
2. AP Semi Axial (Towne's)
3. Lateral
4. Parietoacanthial (Waters) View
5. Specialty View

SMV, Zygomatic Arches, Orbits, and/or Mandible views

b. Group discussion concerning the difference in cranium positioning for the skull versus facial bones and sinuses.

2. Dry Skull

a. Assure each individual has a knowledge of the anatomy of the skull in 3-dimensions. Identify all anatomy listed on pages 9-15 BEFORE CLASS. Take a quiz on anatomy and positions in class.

b. Complete skull annotations on pages 16-20

3. Clinical Reasoning

a. Demonstrate your knowledge of skull pathology. Complete 1 clinical reasoning worksheet.

******Before coming to Clinical Simulation, please review the skull anatomy on pages 9-15 of this Clinical Simulation module. Also, please download or be able to access the app Kahoot. We will be having a quiz on skull anatomy during Clinical Simulation time. Filling in your workbook pages in chapter 11 will be very helpful for this.**

*****Please have all skull annotations (pages 16-20) filled in and ready to turn in by your scheduled Clinical Simulation date.**

******Please bring your clinical logbook to Lab, we will be comping four skull x-rays for you.**

SKULL CLINICAL SIMULATION SUMMER 2023 SCHEDULE		
May 8 (Monday) CAMPUS	8:30 am – 11:30 am Group 1	12:00 pm – 3:00 pm Group 2
May 9 (Tuesday) OUTREACH	8:00 am-11:00 am Group 1	
May 15 (Monday) CAMPUS	8:30 am – 11:30 am Group 3	12:00 pm – 3:00 pm Group 4
May 22 (Monday) CAMPUS	8:30 am – 11:30 am Group 5	No Afternoon Clinical Simulation -----
May 31 (Wednesday) PROVO	11:00am – 2:00 pm PROVO Group	
June 13 (Tuesday) OUTREACH	8:00 am-11:00 am Group 2	

CAMPUS SKULL CLINICAL SIMULATION SCHEDULE 2023

Campus Group Assignments		
<p style="text-align: center;">Group 1</p> <ol style="list-style-type: none"> 1. Abbie Burt 2. Jeannine Herbert 3. Janine Hunsaker 4. Tyler Johnson 5. Dandi Olvera 6. Kaitlyn Rockwood 7. Amanda Stephens 8. Shelby Stevens 9. Amie Squire 10. Travis Storey 11. Tess Woodward 12. Serena Griffith 13. Natalie Warr 14. Bethlyn Tanabe 	<p style="text-align: center;">Group 2</p> <ol style="list-style-type: none"> 1. Emily Aragon 2. Brooke Bedke 3. Janessa England 4. Cassie Johnson 5. John Long 6. Bree Cleverly 7. Nina Villaneuva 8. Jessica Cox 9. Makayla Harrison 10. Kaitlin Ryan 11. Keaton Kutschkau 12. Jessica Smith 13. Rachel Twede 	<p style="text-align: center;">Group 3</p> <ol style="list-style-type: none"> 1. Esther Allred 2. Daniel Allred 3. Slade Bowden 4. Hartley Doliwa 5. Abigail Fuller 6. Lindsay Griffin 7. Riley Marriott 8. Cassidy McQuivey 9. Emma Phillips 10. Jada Pieper 11. Michelle Vu 12. Jessalyn Smith 13. Sydney Smith 14. Karaghan Stahl
<p style="text-align: center;">Group 4</p> <ol style="list-style-type: none"> 1. Shea Bass 2. Jordyn Beddow 3. Eden Deveraux 4. Alison Jenkins 5. Krystal Kilpatrick 6. Maiya Montgomery 7. Kaylee Hadley 8. Annie Petersen 9. Andrew Pham 10. Ashley Robins 11. Jonathan Rogers 12. Ally Thorstensen 	<p style="text-align: center;">Group 5</p> <ol style="list-style-type: none"> 1. Ashlynn Barton 2. Nicholas Colvin 3. Sarah Grow 4. Madelyn Hatch 5. Jessica Rodriguez 6. Markelle Larson 7. Megan Miller 8. Kamryn Rutledge 9. Brett Stanger 10. Casey Sutton 	

PROVO SKULL CLINICAL SIMULATION SCHEDULE 2023

Wednesday June 5, 2023	
11:00am-2:00pm Provo Group	
Emma Brown	Audrey Good
Mary Greer	Carter Hinton
Amanda Jones	Kelsey Lamb
Kaylena Leakehe	Katheryn Phillips
Nicole Sheridan	Kalei Tofa
Jeffrey Witham	Esha Christenson
Elizabeth Skousen	Sarajane Sucher

OUTREACH RADIOGRAPHY
CLINICAL SIMULATION SCHEDULE
SUMMER 2023

Group 1	Group 2
<ol style="list-style-type: none"> 1. Sidney Clinger 2. Damon Davidson 3. Alexis Halladay 4. Camry Wright 5. Lauren Kelly 6. Kysia Poulsen 7. Annmarie Standifird 8. Alexander Stromsdorfer 9. Haley Paris 10. Rachel Warren 11. Rhaynee Mackey 12. Collin Carter 13. Colby Allred 14. Mallorie Hatch 15. Kristine Laws 16. Emily Luck 17. Jordan Lupo 18. Duwane Redmond 19. Darby Safford 20. Hunter Van Buren 21. Hailey Blanchard 22. Karlee Wilkes 23. Keely Danko 24. Grace Munoz 	<ol style="list-style-type: none"> 1. Maren Andersen 2. Haley DuCharme 3. Ashlynn Hollingshead 4. Kamryn Parkinson 5. Abigail Morgan 6. Marylu Pineda 7. Kammi Anaya 8. Sierra Anderson 9. Trenton Bagge 10. Brent Cady 11. Alejandra Carranza 12. Angel Medina 13. Sarah Thompson 14. Caitlin Tuthill 15. Marci Black 16. Kailee Jones 17. Rachel Opstein 18. Caitlin Tuthill 19. Porter Obroy 20. Grace Holland 21. Alexis Jones 22. Erika Calchera
Clinical Simulation time: Tues May 9, 8:00 am-11:00 am	Clinical Simulation time: Tues June 13, 8:00 am-11:00am

**CLINICAL SIMULATION
GRADE SHEET SUMMER
SEMESTER 2023
RADT 1641**

COURSE REQUIREMENT	POINTS AWARDED
Kahoot Quiz	100
Clinical Reasoning #1	50
Skull View Annotations	100
Skull Imaging Assessment	250
Attendance Attendance is <u>required</u> for skull Clinical Simulation. Students must produce 5 quality images that may be exchanged for 4 competencies in their Clinical Log Books, if needed. All work must be monitored by Clinical Simulation faculty, and students must be present to work in teams.	100
TOTAL POINTS AWARDED FOR RADT 1641	600
Your completed Clinical Simulation module should be turned in at the end of the entire Clinical Simulation experience. DO NOT tear out any pages.	

RADT 1641 DRY SKULL WORKSHEETS

(Review the following, be familiar with where
each of the following is located on the skull)

RADT 1641 CRANIUM DRY SKULL STUDY GUIDE

_____superciliary arches	bony prominence beneath the eyebrows
_____glabella	smooth area between the superciliary arches
_____acanthion	mid-line point at junction of the upper lip and nose
_____supraorbital groove	depression or groove above eyebrows
_____vertex	very top or most superior portion of the cranium
_____inion	bump at lower posterior cranium
_____E.A.M.	external auditory meatus
_____T.E.A.	top of the ear attachment
_____mental point	center of triangle of the chin
_____nasion	point where nasal bones meet frontal bone
_____gonion	the angle or lower posterior portion of the jaw or mandible
_____inner canthus	junction of the two eyelids near the nose
_____outer canthus	lateral junction of the two eyelids
_____supraorbital margin	superior rim of orbit
_____infraorbital margin	inferior rim of orbit
_____FRONTAL BONE	
_____squama or squamous	forms the forehead and the superior part of the orbit
_____supraorbital margin	arched ridge that forms upper margin of orbit
_____supraorbital groove	the depression above each eyebrow
_____frontal sinus	cavities inside bone just above the nasal bridge, lined with mucosa, contains air
_____superciliary arches	ridges of bone, the eyebrows lie over these ridges
_____frontal eminence	most prominent anterosuperior portion; located on each side of the median sagittal line of upper portion of the squama;

_____ TEMPORAL BONE

_____ mastoid process	protuberance just behind the ear
_____ mastoid sinuses	air-filled mucosa lined spaces within the mastoid process
_____ external auditory meatus	opening into ear and tube extending into temporal bone
_____ internal auditory	fairly large opening on posterior surface of petrous portion of bone; transmits eighth cranial nerve to inner ear structures
_____ zygomatic process	projection which articulates with malar (or zygomatic bone)
_____ squamous portion	thin, flaring upper part of the bone
_____ mastoid portion	rough-surfaced lower part of bone posterior to external auditory meatus
_____ petrous ridges	wedge-shaped process that forms part of the center section of the cranial floor between sphenoid and occipital bones
_____ mandibular fossa	oval-shaped depression anterior to external auditory meatus; forms condyle of mandible
_____ styloid process	slender spike of bone extending downward and forward from under surface of bone anterior to mastoid process; several neck muscles and ligaments attach to the styloid process

_____ OCCIPITAL BONE

_____ foramen magnum	hole through which spinal cord enters cranial cavity
_____ condyles	convex oval processes on either side of foramen magnum
_____ inion	External Occipital Protuberance; prominent projection on posterior surface in midline, a short distance above the foramen magnum; can be felt as definite bump externally
_____ internal occipital	projection in midline on the protuberance inner surface of the bone; it is a groove for the lateral sinuses and extends laterally from this process and one for sagittal sinus is superior from it

_____ SPHENOID BONE

_____ body	hollow, cubelike central portion of the bone
_____ greater wings	lateral projection from the body; forms part of the outer wall of the orbit
_____ lesser wings	these are thin, triangular projections from the upper part of the sphenoid body; forms posterior part of the roof of the orbit
_____ sella turcica	Turk's saddle; u-shaped depression on the upper surface of the sphenoid body; contains the pituitary
_____ sphenoid sinuses	irregular air-filled mucosa-lined space within the central part of the sphenoid
_____ pterygoid processes	downward projections on either side where body and greater wing unite; when compared to a bat these would appear to be the extended legs; forms part of the lateral nasal wall
_____ pterygoid hamulus	medial downward projections on either side where body and greater wing unite; these are longer and narrower than the processes; form part of lateral nasal wall
_____ optic foramen	opening into orbit at roof of the lesser wing; transmits the second cranial nerve
_____ superior orbital fissure	slit-like opening into orbit, lateral to the optic foramen; transmits the third, fourth and part of the fifth cranial nerve
_____ foramen ovale	opening in great wing that transmits mandibular portion of the fifth cranial nerve

_____ ETHMOID BONE

_____ horizontal plate	olfactory nerve passes through cribriform plate numerous holes in this place; the horizontal portion is located in the ethmoid notch of the frontal bone
_____ crista galli	the superior projection which has Crook's Comb, an appearance of a rooster's comb; meninges attach to this process
_____ perpendicular plate	thin, flat bone projected downward from inferior surface of the cribriform plate and forms upper part of the nasal septum

_____ethmoidal sinuses	honey combed air spaces within lateral masses of the bone; suspended downward from the under-surface of the horizontal portion of the ethmoid
_____superior turbinates	(concha) help to form lateral wall of the inferior turbinates (concha) nose; two thin, scroll-like projections downward from each medial wall of the lateral masses
_____lateral masses	comprises the sides of the bone; contain the sinuses; inner surface and forms the superior and middle conchae
_____coronal	joint between parietals and frontal bone
_____sagittal	line of articulation between two parietal bones
_____lambdoidal	joint between parietal and occipital
_____squamosal	joint between the temporal and parietal
_____bregma	the anterior end of the sagittal sutures
_____lambda	the posterior end of the sagittal sutures

**RADT 1641
FACIAL BONES**

___Nasal bones	these form the superior bony wall (bridge) of the nose
___Lacrimal bones	thin, small, situated at anterior part of medial wall of the orbits
___Maxillae	largest, immovable bones of face, forming part of the lateral walls and most of the floor of nasal cavity, part of the floor the orbital cavity and 3/4 of the roof of the mouth.
___Alveolar process	a thick, spongy ridge that receives roots of teeth
___Anterior Nasal Spine	pointed, forward projecting process at junction of maxilla and vomer
___Acanthion	the midpoint of the anterior nasal spine
___Zygomatic bones	(Malar bones) these form the prominence of the cheeks and side wall and floor of the orbital cavities
___Palatine bones	L-shaped: horizontal plate forms part of bony palate and vertical forms part of posterior nasal cavity and posteromedial bony orbit.
___Inferior Nasal Conchae	extend inferiorly and diagonally from the lateral walls of the nasal cavity thin, bony plate situated in the median sagittal plane of the floor of the nasal cavity, forming the inferior part of the bony septum of the nose.
___Maxillae	largest immovable bones of the face; assists in the formation of the roof of the mouth cavity, the floor and lateral walls of nasal cavity, and the floor of the orbital cavities; key to the architecture of the face because all facial bones touch it except the mandible.
_____ Body	central portion lateral to the nose; contains the large triangular cavity, the maxillary sinus or antrum of Highmore

_____ Frontal process	projects upward along lateral border of the nose
_____ Zygomatic process	projects laterally to unite with the zygomatic or malar bone
_____ Alveolar process	the inferior or lower aspect of the body; on the inferior margin, eight teeth are embedded on each side
_____ Anterior nasal spine	located at the acanthion at the skin surface
_____ Palatine process	forms the hard or bony palate the roof of the mouth anteriorly; united in the centerline forming a synarthrodial joint
_____ Maxillary sinus	large triangular-shaped, air-filled cavities found in the body

ZYGOMATIC OR MALAR

_____ Zygomatic arch	extend laterally from the zygomatic processes of the maxillary bones; forms prominence of the cheek and makes up the inferior lateral portion of the orbital ring formed by a slender process off of the malar bone connecting with the zygomatic process of the temporal bone
_____ Lacrimal	delicate bones forming a small portion of the medial side of the orbit; somewhat resembles a fingernail in form, thinness and size; contains part of the canal through which tear ducts from the eye drain into the nasal cavity; joins the maxillary frontal process
_____ Nasal	variable sized bones forming the bridge of the nose; joined at the midline forming a suture
_____ Nasion	junction of the two nasal bones with the frontal bone; joins with the frontal processes of the maxillary bones
_____ Inf. nasal conchae	two, thin, curved-or scroll-shaped bones; project from the lateral, nostril or outer wall of each side of the nasal cavity and extend medially

_____ Palatine

each is shaped somewhat like an "L"; the vertical portion of the "L" extends horizontal portion of the "L" forms the posterior portion of the hard palate; forms back of roof of mouth, lateral wall of nasal cavities and small portion of the floor of the orbits

_____ Vomer

plow-shaped bone which forms the lower and posterior part of the nasal system articulating with the ethmoid, sphenoid, the two palatine and the two superior maxillary bones; is thin and varies in individuals

Clinical Reasoning Skull Waters View

(Each question worth 5 pts)

Name _____ Date _____

For questions 1 and 2, please refer to your Merrill's Atlas. These two questions should be completed prior to your Clinical Simulation.

1. What is the position of the patient, part, and central ray for this image?
2. Which evaluation criteria are used to determine the image is acceptable?
3. Identify the anatomy demonstrated on the image (at least 10 structures)
4. Evaluate the image for positioning, exposure, artifacts, markers, and evidence of radiation safety. Should this image be repeated and why?
5. Identify the possible pathologies present and be specific (i.e. pleural effusion, atelectasis, COPD, etc.) and indicate the radiographic signs present to identify these pathologies.

RADT 1641

PA / AP SKULL ANNOTATION WORKSHEET

Skull - AP Skull, Lateral Skull
Study Date: 4/15/2013
Skull, x-ray

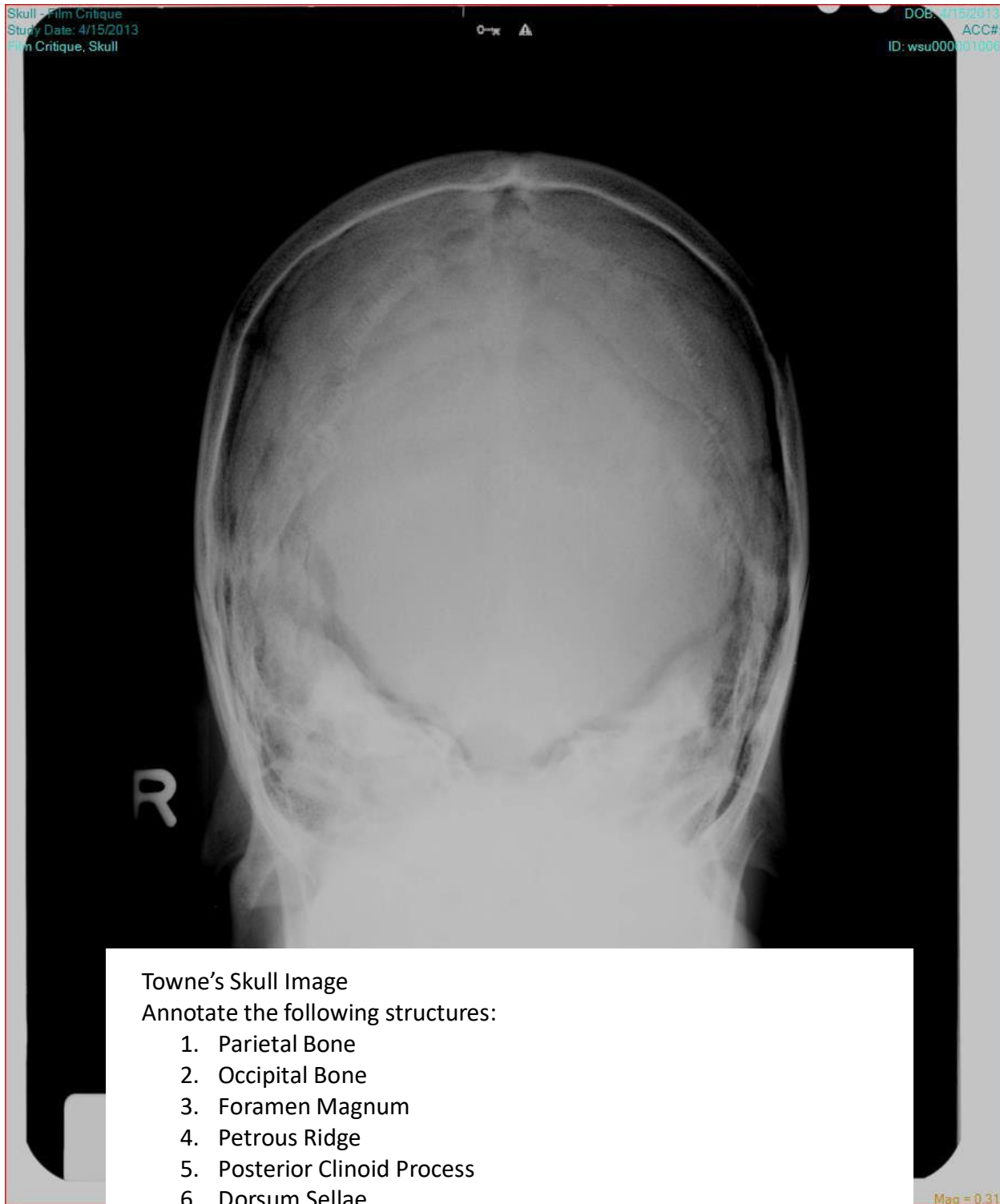
DOB: 4/15/2013
ACC#: F.B. Rail Gun Nail
ID: wsu000001014

PA / AP Skull Image
Annotate the following structures:

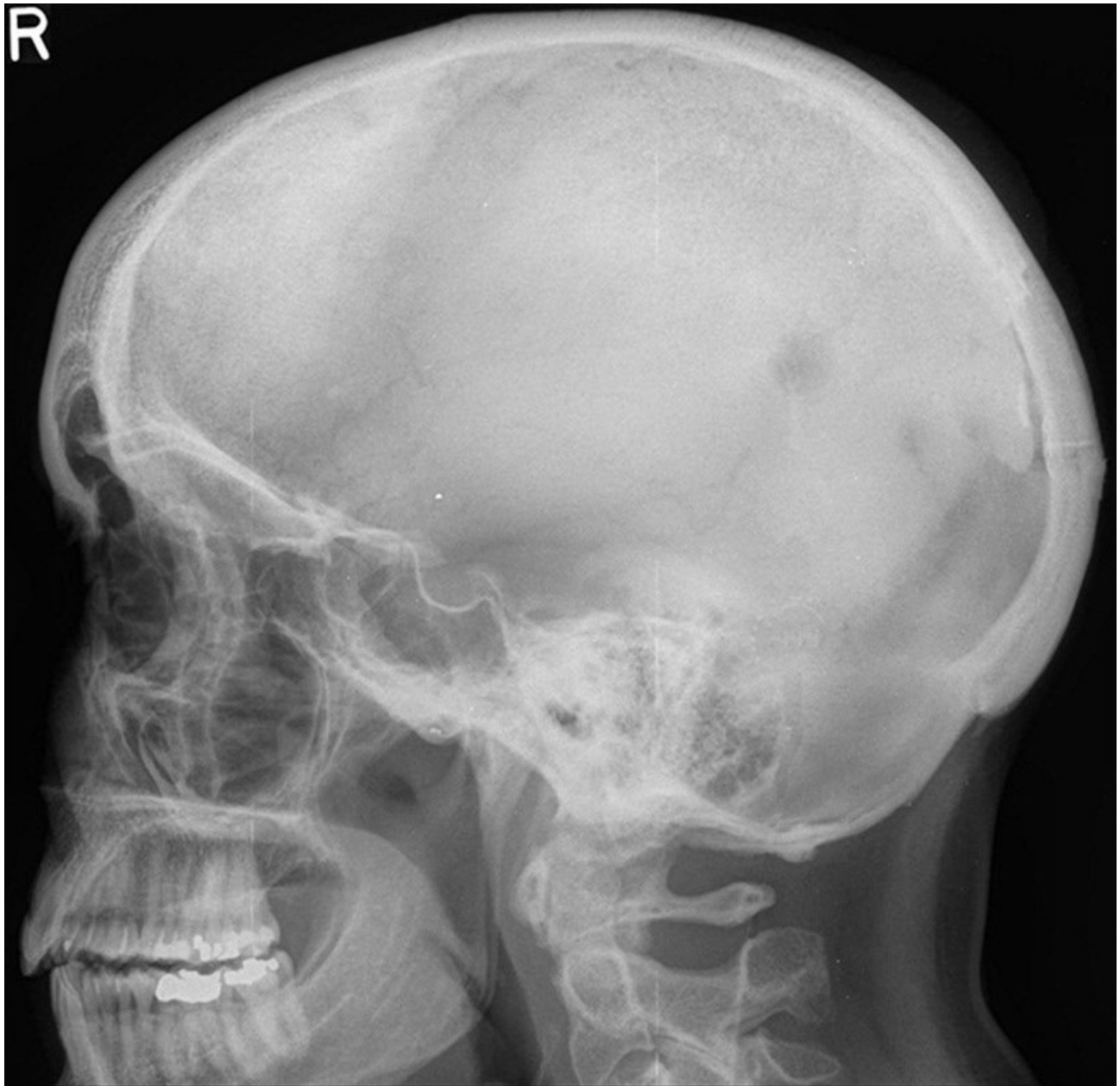
1. Frontal Sinus
2. Dorsum Sellae
3. Superior Orbital Margin
4. Petrous Ridge
5. Ethmoidal Sinus
6. Inferior Orbital Margin
7. Crista Galli

Mag = 0.22

RADT 1641
AP SEMI AXIAL (TOWNE'S) ANNOTATION WORKSHEET



RADT 1641
LATERAL ANNOTATION WORKSHEET



Lateral Skull Image- Annotate the following structures:

1. Coronal Suture
2. Orbital Roof
3. Sella Turcica
4. Sphenoid Sinus
5. Petrous Portion of Temporal Bone
6. Temporomandibular Joint
7. External Acoustic Meatus
8. Mandibular Rami

RADT 1641
PARIETOCANTHIAL (WATER'S) VIEW ANNOTATION WORKSHEET



Water's Skull Image

Annotate the following structures:

1. Orbit
2. Zygomatic Arch
3. Maxillary Sinus
4. Maxilla
5. Petrous Ridge
6. Mandibular Angle

RADT 1641
CALDWELL VIEW ANNOTATION WORKSHEET



Caldwell Skull Image - Annotate the following structures:

1. Frontal Sinus
2. Crista Galli
3. Superior Orbital Margin
4. Superior Orbital Fissure
5. Ethmoidal Sinus
6. Petrous Ridge
7. Inferior Orbital Margin

SKULL IMAGING ASSESSMENT
AP, Towne's, Lateral, Water's, and Specialty View

Clinical Simulation Review Criteria (pts per image)	Points Awarded	Points Possible (Total)
Right or Left Marker visualized and accurately placed (2 pts)		10
Evidence of radiation protection (lead shielding, collimation, etc.) (2 pts)		10
Preventable artifacts not present on the radiograph (2 pts)		10
Correct Film Size Utilized (2 pts)		10
Correct detent of the machine and alignment of the film (2 pts)		10
Correct patient positioning and central ray alignment (10 pts)		50
Correct technical factors (kVp and mAs) utilized (10 pts)		50

What technical factors did the student utilize?

Image	kVp	mAs
AP		
Towne's		
Lateral		
Water's		
Specialty View (Specify)		

What images were repeated, how many times was the image repeated? What corrective action was observed?

How would you rate the student's overall competency at performing skull images on a scale from 1-10 (1 being unsatisfactory and 10 being above average)? (100 pts)

1 2 3 4 5 6 7 8 9 10

WSU Clinical Simulation Instructor Signature: _____ Total Points Awarded: _____/250