PROCEDURE GUIDELINES FOR GENERAL RADIOLOGY

Reviewed and approved by: Helen Shigemitsu, MD, and Lawrence Tang, MD

Last Reviewed: March 2019

This manual is intended as a guideline for the General Radiology Technologist and support staff working in the General Radiology Department for or under the direction of:

TRA MEDICAL IMAGING RADIOLOGISTS

This manual is the property of **TRA MEDICAL IMAGING** and is intended as a guideline for the technologist working for or under the direction of **TRA MEDICAL IMAGING.**

Please reference related Policies, SOPs and Resources –

Policies:

•Exam Verification
•Incomplete, Partial, Test and No Charge Exam
•Pediatric Examination
•Personnel Radiation Dosimetry
•Screening Patient for Pregnancy
•Written and Verbal Orders

SOPS:

•Completing an Exam
•Disinfection Room Stamp in RIS
•Using the Protocol List

Resources:

•Image Wisely: https://www.imagewisely.org/
•Image Gently: https://www.imagegently.org/
•ALARA Guidelines: https://www.cdc.gov/nceh/radiation/alara.html

•Thank You,

STRESS VIEWS:

Both inversion and eversion AP views are performed.

PACS PRESENTATION

General x-ray images should be oriented as listed below before sending to PACS for Radiologist for interpretation.

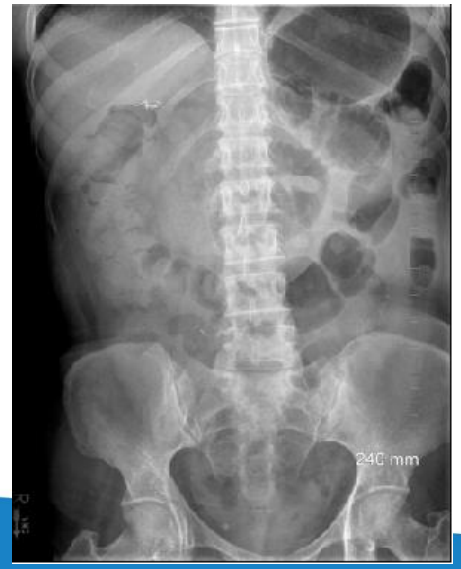
Lateral foot	Plantar surface oriented down as if patient was standing
Fingers or Toes	Digits facing up – toward the top of the monitor
Elbows or Ankles	Long bone extends from the top of the monitor down.
Lateral Chest	Lateral facing as the x-ray tube would view it (standard protocol)
C-T-L Lat Spine	Lateral oriented to match MRI sagital images – Dorsal to the right

ACUTE ABDOMEN

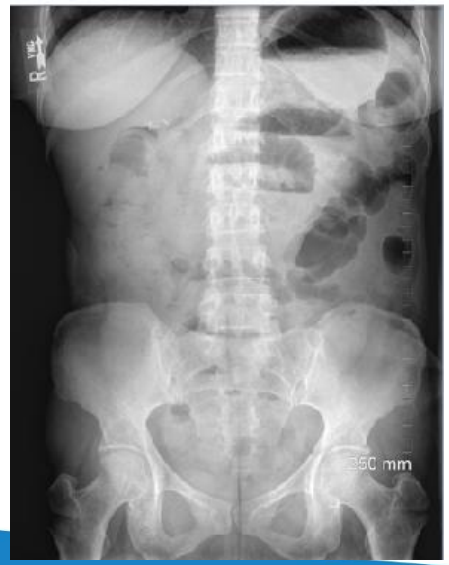
(This must include the entire abdomen and pelvic contents in all positions.)

*AP
*AP ERECT
*PA UPRIGHT CHEST, slightly darker than usual
* LEFT LATERAL DECUBITUS if unable to do upright.
Patient should be in the decubitus position for 10 min. prior to study
Do decubitus film first, then upright chest & abdomen.

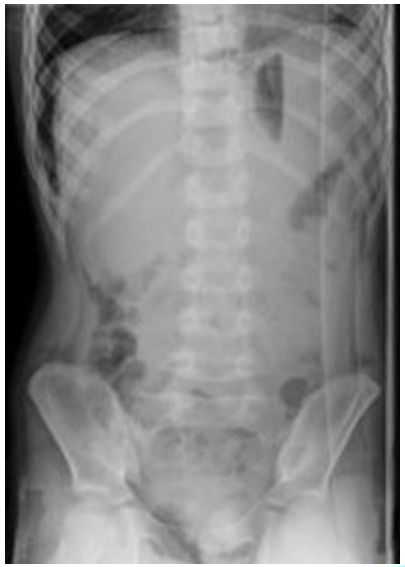
Supine



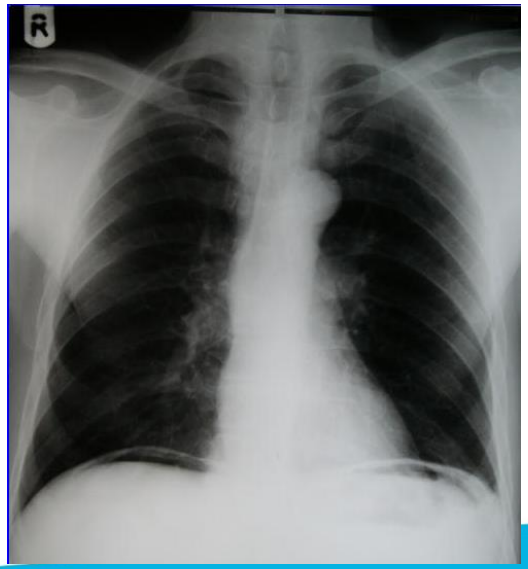
Upright



Left Decub



PA

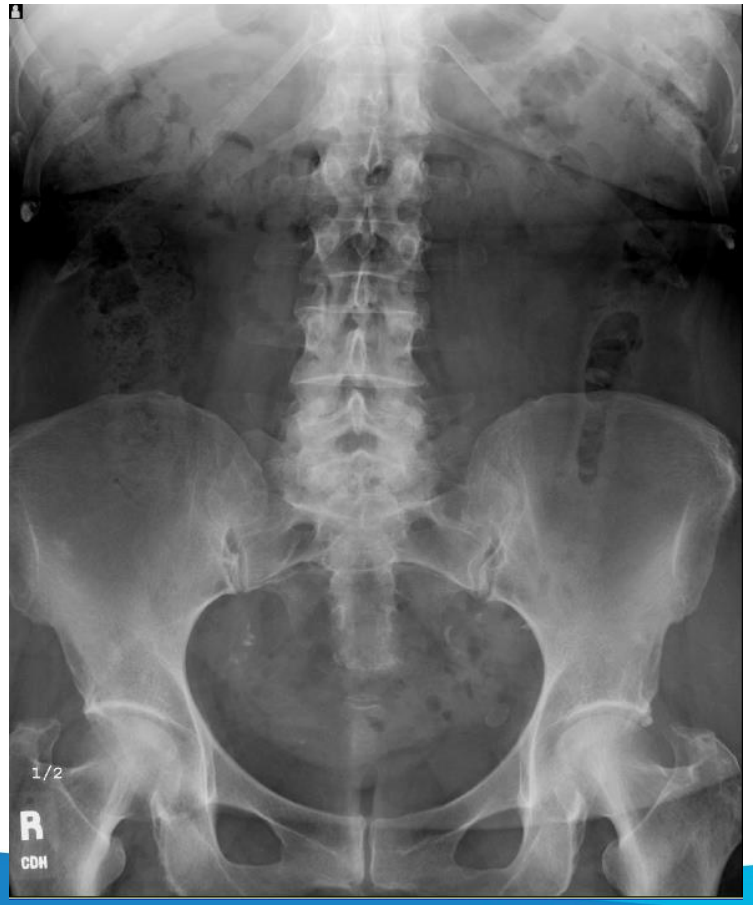


ABDOMEN for URINARY TRACT STONES / KUB

* AP, Supine
* Inspiration KUB to include symphysis
* Technique should be appropriate to visualize urinary stones while maintaining safe radiation protection techniques.

* Usually done as a follow-up for urinary tract stones

AP

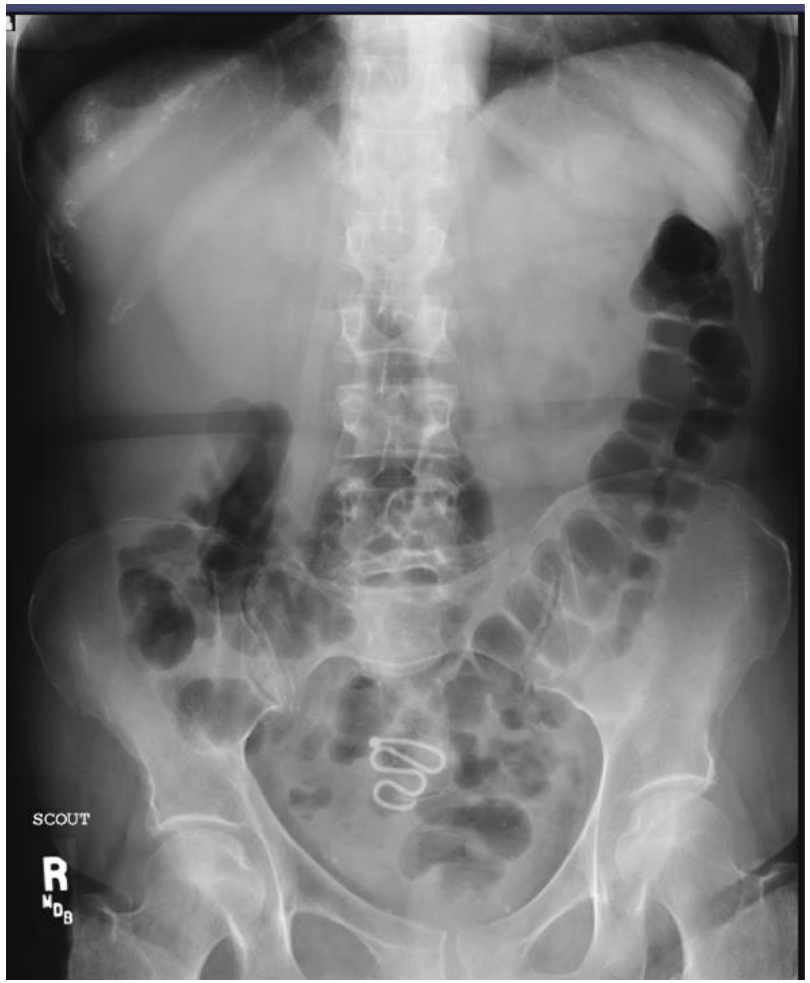


ABDOMEN (PELVIS) for IUD

*AP Abdomen on 14 X 17 to include the pubis

*Additional lateral view may be requested by Radiologist to confirm exact position

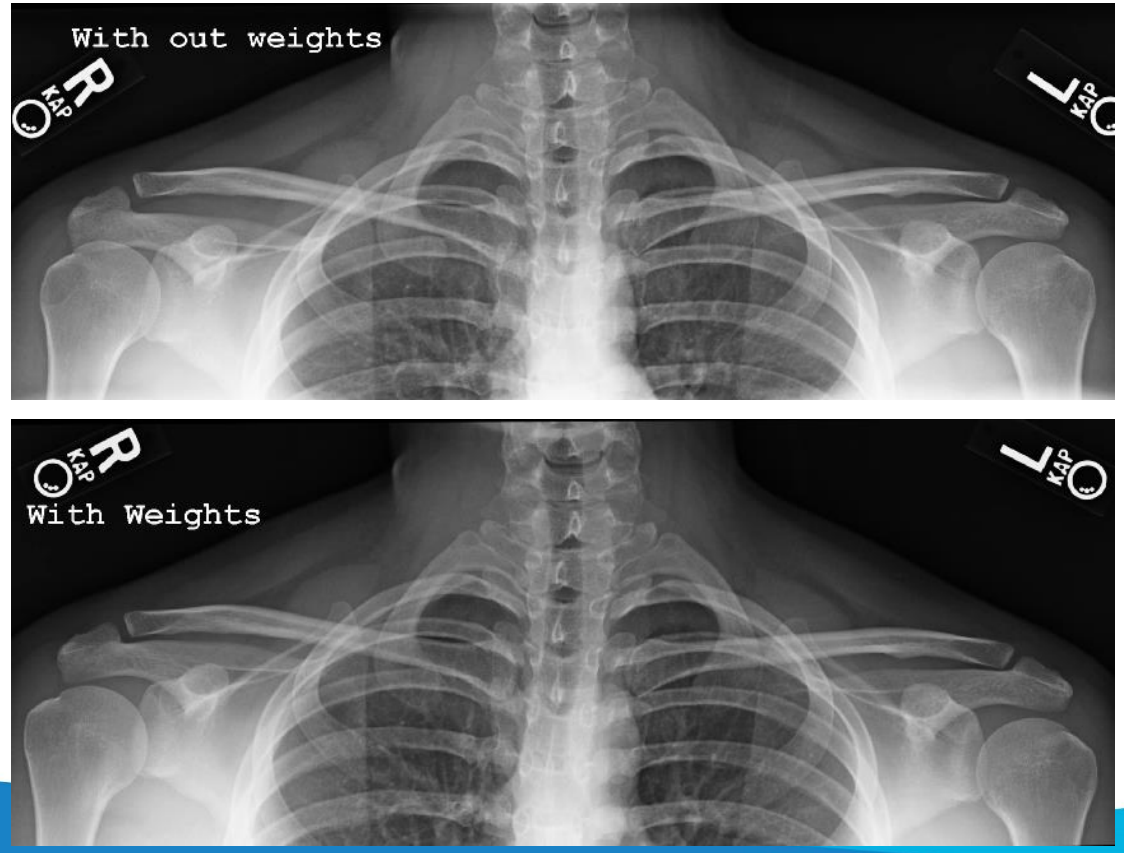
AP



ACROMIOCLAVICULAR JOINTS

*Do AP VIEWS of both shoulders simultaneously with the arms in anatomic position on 7 X 17 film crosswise at 72 inches.

*Do one film without weight and another film weight-bearing with ten pounds suspended from each hand.



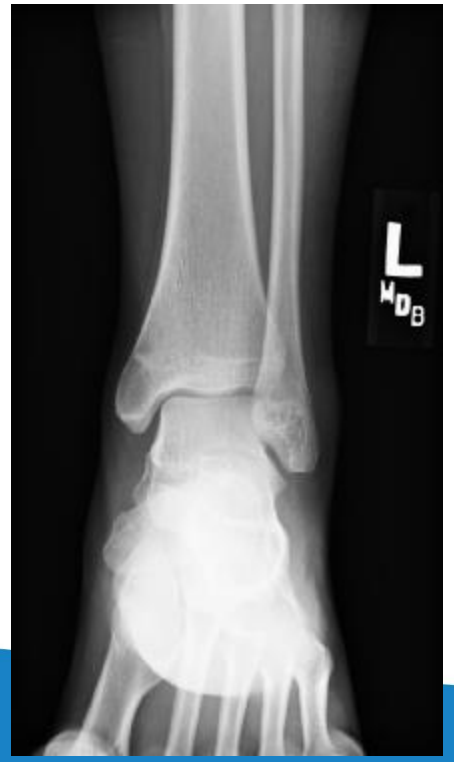
ANKLE

*AP
*INTERNAL OBLIQUE 15-20 degrees
*LATERAL *View must include the base of the 5th metatarsal

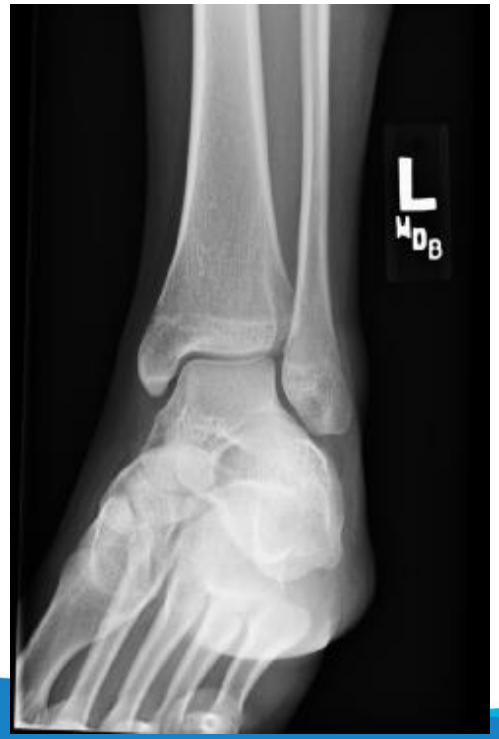
**Central Ray directed to the ankle joint- all views*

*All views with the ankle flexed at 90°, or as much as patient can tolerate
*If stress views are required, both inversion and eversion AP views are performed

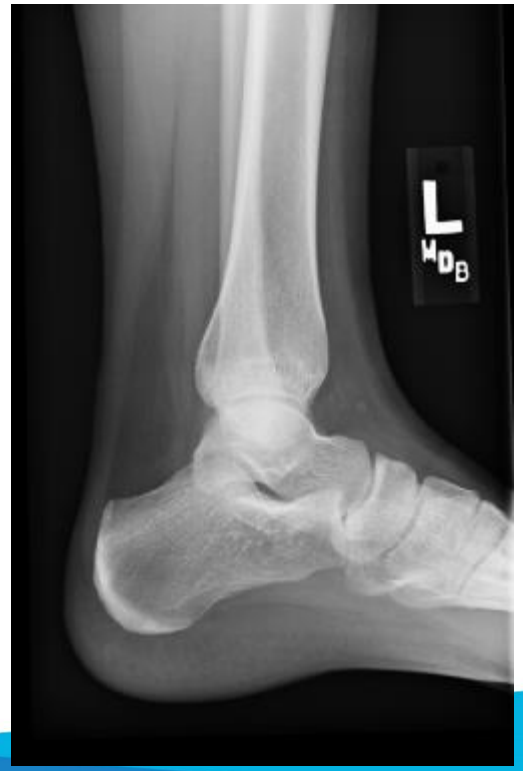
AP



Medial Oblique



Lateral

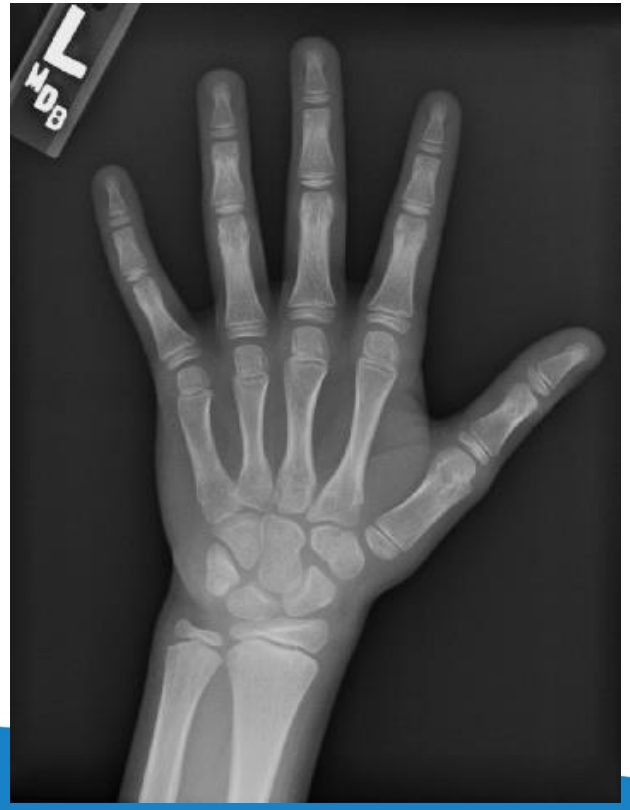


BONE AGE

*PA of the LEFT hand & wrist only

(Reference: *Radiographic Atlas of Skeletal Development of the Hand and Wrist by Greulich and Pyle*)

**Clearly indicate the patient's chronological age in month and days for radiologist



Age: 11 yrs. 1 month
DOB: 8-1-1999
Exam Date: 8-26-2010

11 yrs. August 1 to August 26 = 25 days
X 12 mos.
132 mos. Chronological age: 132 mos. 25 days

BONE SURVEY FOR METASTATIC DISEASE

*PA CHEST
*Lateral Skull
*Lateral Cervical Spine
*Swimmer's View, if needed
*AP and Lateral Thoracic Spine
*AP and Lateral Lumbar Spine
*Lumbar Spot, to include all of the sacrum and coccyx
*AP of Pelvis
*Bilateral AP Humerus
*Bilateral AP Femurs

Additional views as directed by Radiologist

PEDIATRIC BONE SURVEY
ALL IMAGES MUST BE OBTAINED SEPERATELY – DO NOT COMBINE IMAGES

AP Views
* AP Skull
* AP Thorax
* AP Abdomen
* AP Pelvis
* AP Humerus (Bilateral)
* AP Forearms (Bilateral)
* PA Hand (Bilateral)
* AP Femur (Bilateral)
* AP Tibia/Fibula (Bilateral)
* AP Foot (Bilateral)

Lateral Views
* Lateral Skull
* Lateral Thorax
* Lateral C-Spine
* Lateral Thoracolumbar Spine

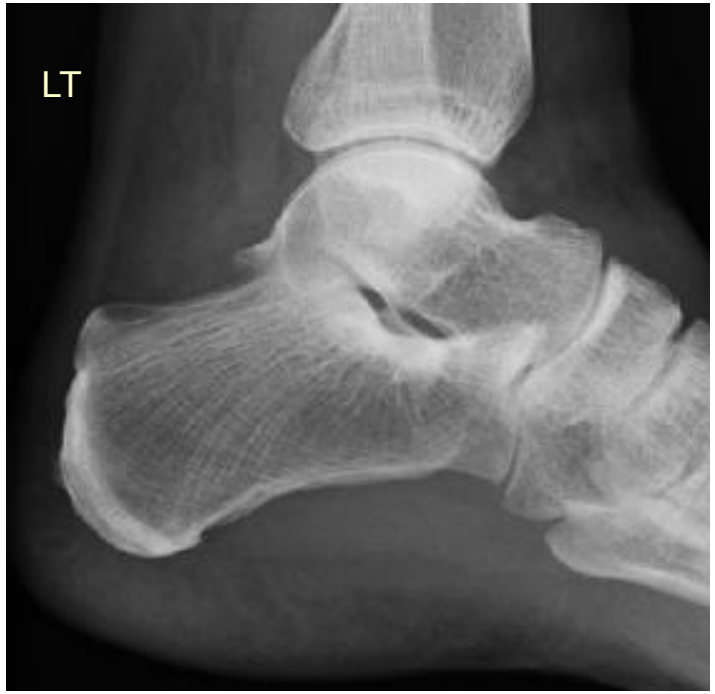
Other
* Oblique Ribs (Bilateral)

Technique Guidelines as per part.

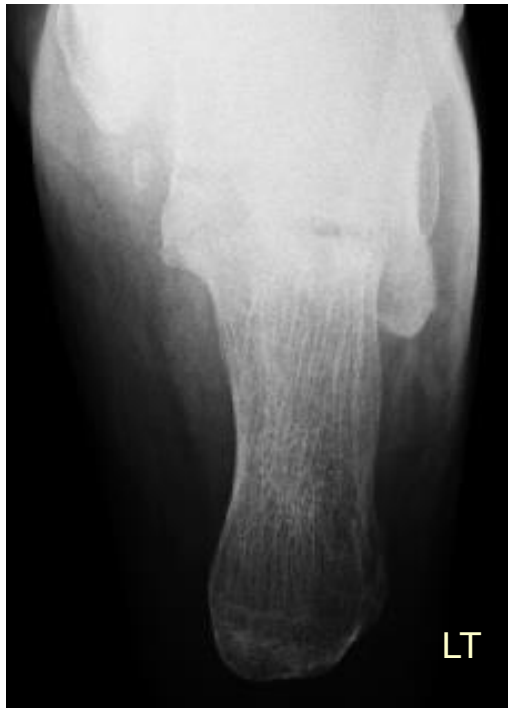
CALCANEUS - heel or os calcis

LATERAL
TANGENTIAL AP with toes flexed and tube angled 35-40 °

LATERAL

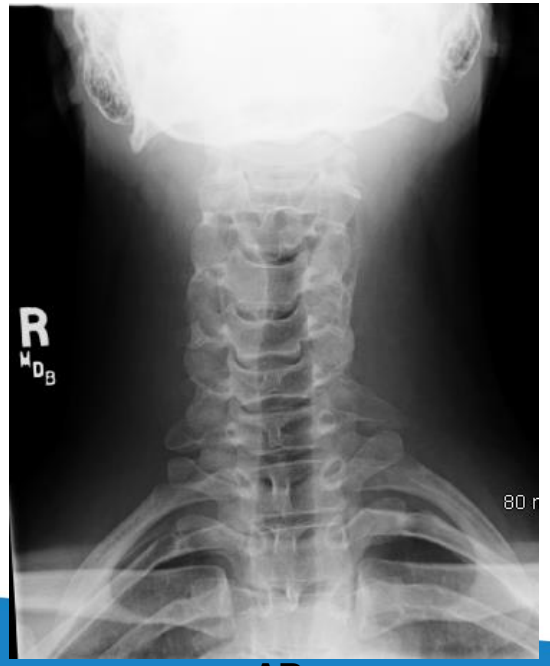


AXIAL

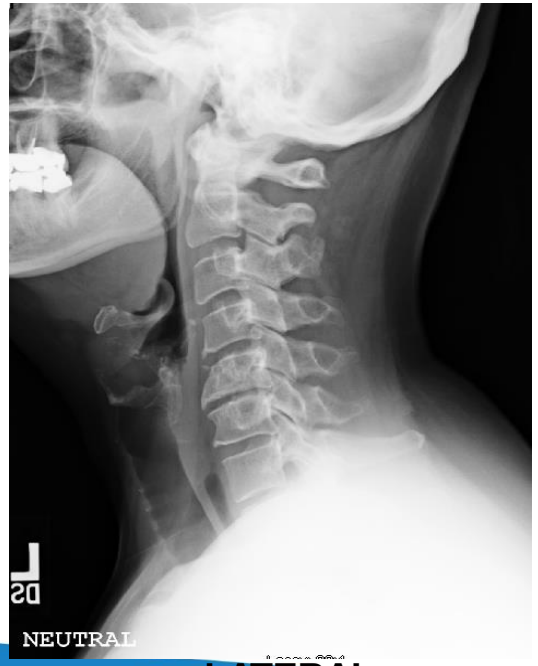


CERVICAL SPINE

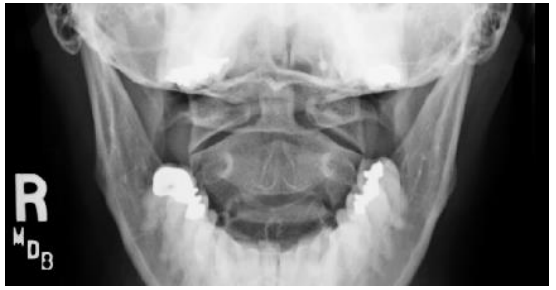
*LATERAL, Neutral upright with 72” SID
*SWIMMER’S VIEW, if C7-T1 joint space cannot be seen on LATERAL view
*AP of C-2 through C-7 15° - 20° cephalic angle with mouth closed, mandible and occiput in a perpendicular line.
*ODONTOID AP VIEW (mouth open), Fuch’s if necessary
*BILATERAL PA OBLIQUES, HEAD LATERAL , upon request
*AP OBLIQUES may be done upright if patient is large, upon request
*FLEXION and EXTENSION VIEWS, upon requested



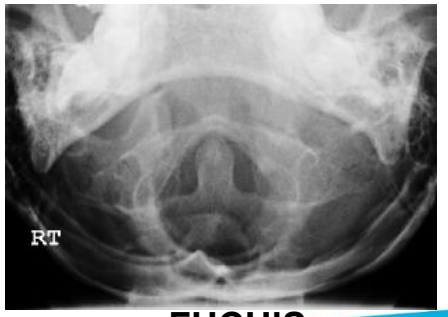
AP



LATERAL



AP ODONTOID

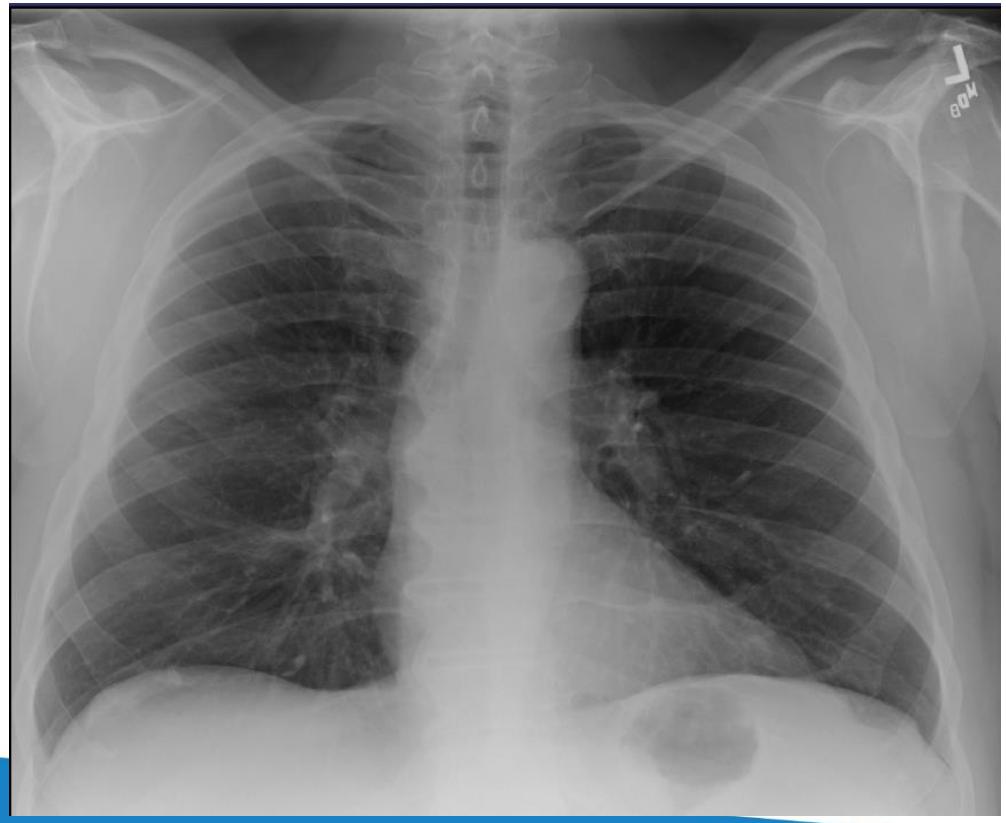


FUCH’S
(IF NECESSARY)

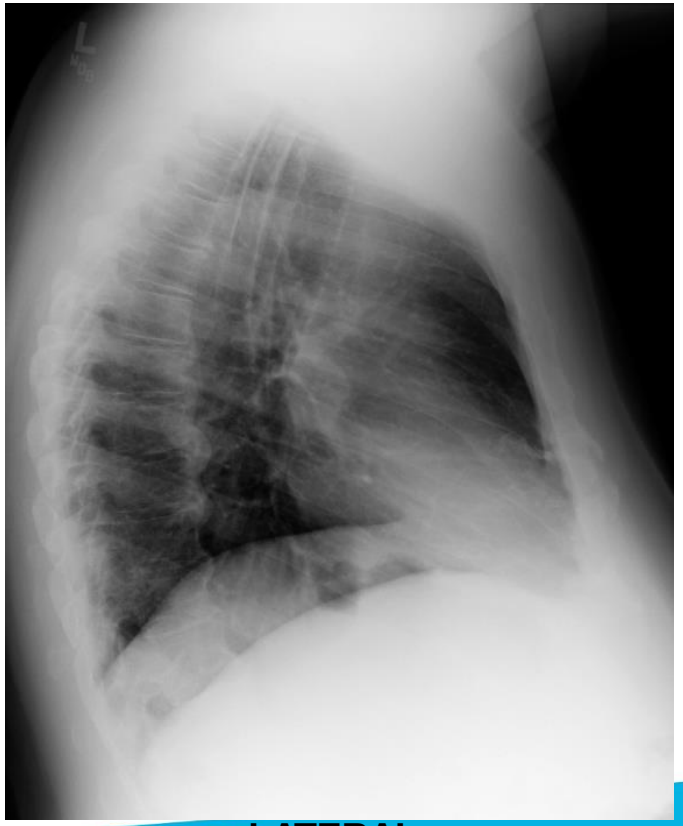
CHEST

* PA
* LATERAL

*72” SID, deep inspiration and hold
* Views must be performed **UPRIGHT** unless extenuating circumstances limits the patient’s ability to cooperate.



PA



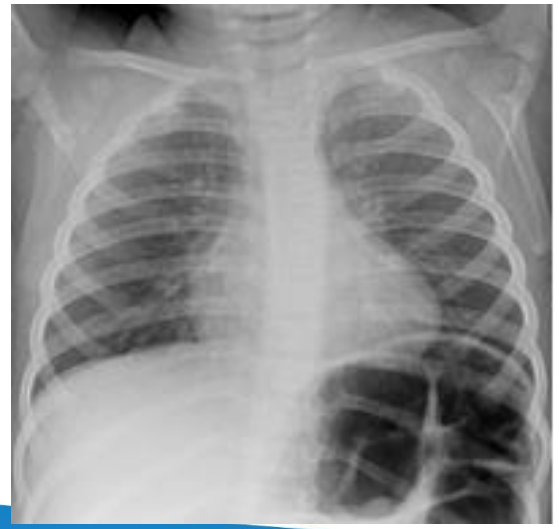
LATERAL

CHEST–pregnant patients

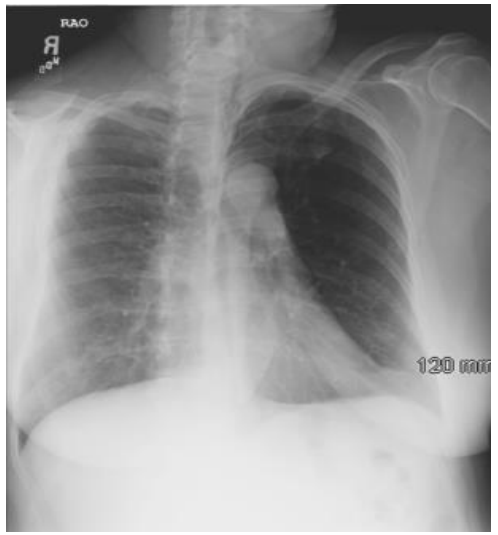
PA view then show radiologist to determine if the lateral view is necessary.

CHEST – Special Views

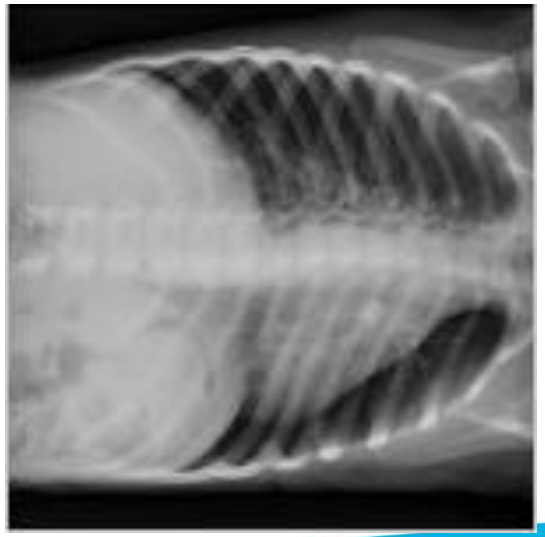
* LORDOTIC AND REVERSE LORDOTIC
  (Caudad & Cephalad angle) views as requested.
* FOR OBLIQUES WHEN REQUESTED - do shallow(10-15º) RAO & LAO Obliques
  The degree of obliquity may depend on the clinical situation.
  Ask the Radiologist when uncertain.
* Right Lateral Decubitus, right side down, as requested
* Left Lateral Decubitus, left side down, as requested



AP- LORDOTIC



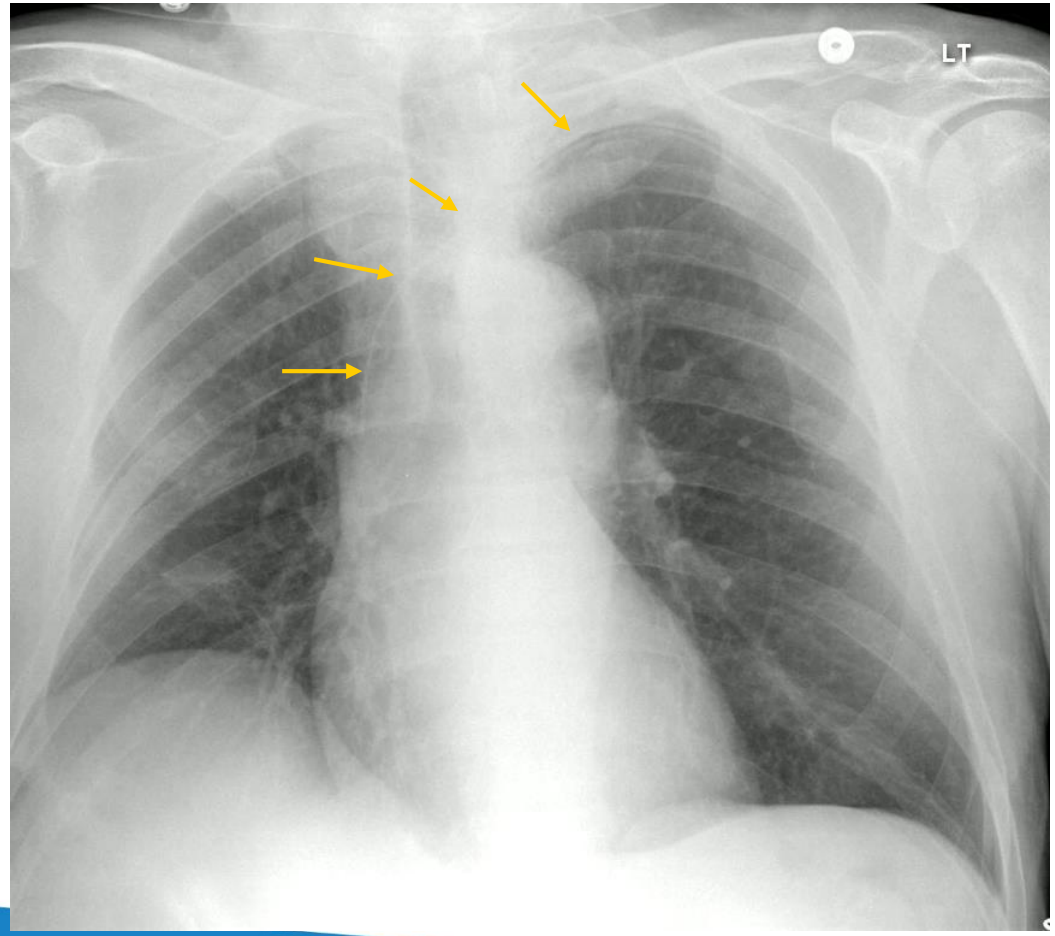
OBL- RAO



Left Lateral Decubitus

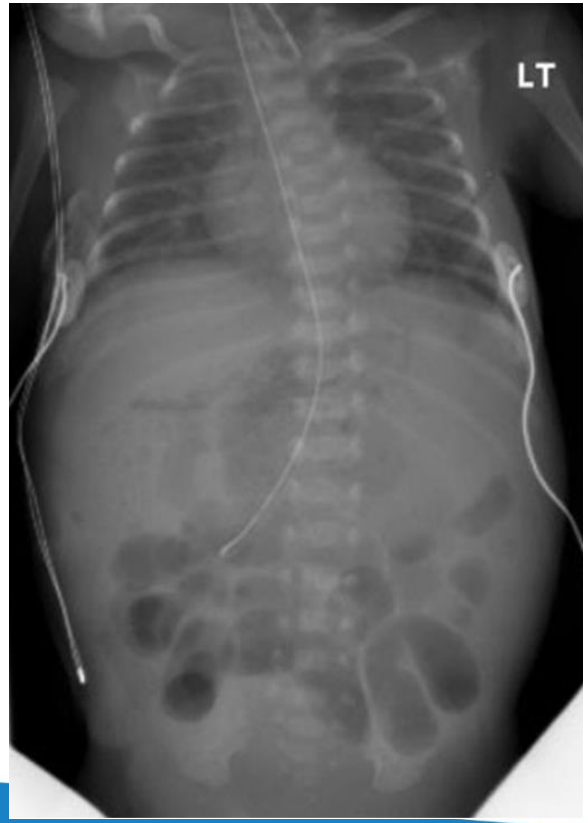
CHEST–PICC Lines

* PA rotated 10-15 degrees LAO

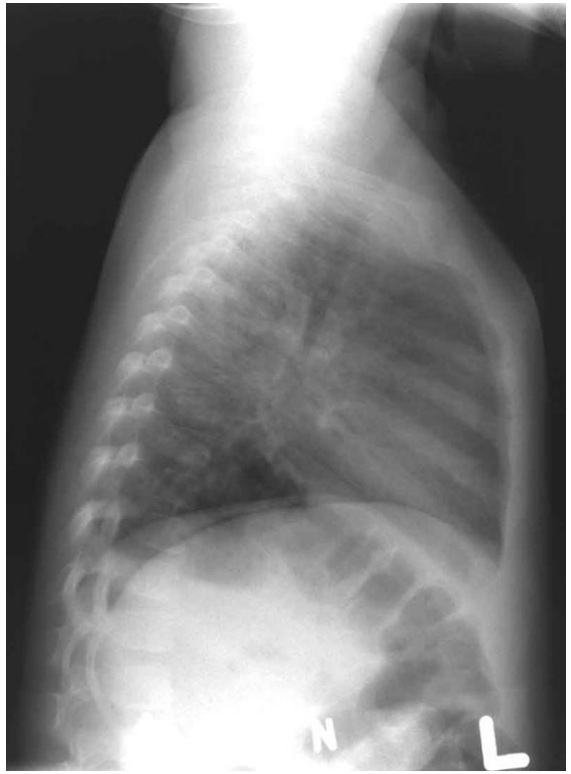


CHEST

*NEWBORNS WHO HAVE UMBILICAL CATHETERS - when performing the chest examinations should have a frontal & lateral view to include the entire chest & abdomen.
*If the chest has been specifically requested, chest technique may be used.



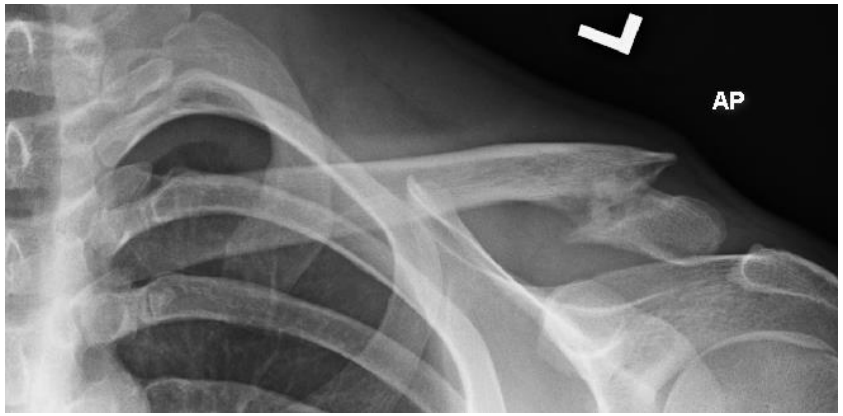
AP



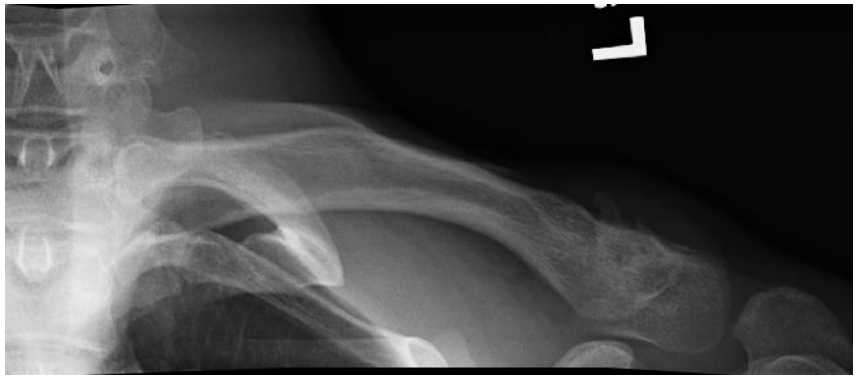
LATERAL

CLAVICLE

*AP Clavicle with ARM IN EXTERNAL ROTATION
*AP Axillary Clavicle with 20-25° cephalic angle or with the patient in lordotic position



AP



AP- AXIAL

COCCYX

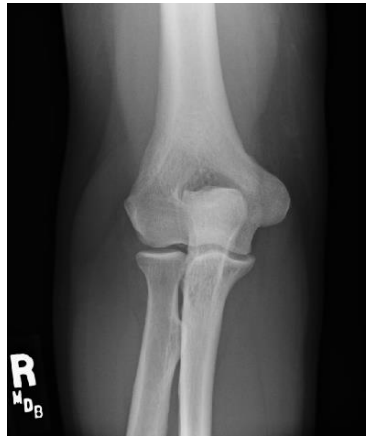
See Sacrococcygeal Spine

ELBOW – PEDIATRIC (10 years and under)

* AP with humerus & forearm in the same plane.
    * If forearm cannot be extended due to severe pain or the elbow is casted, do an AP distal humerus, and do an AP proximal forearm

* LATERAL (forearm flexed 90°) with humerus & forearm in the same plane. High Detail Film Technique. Central ray directed at the joint for true lateral.

* AP OBLIQUE (EXT ROTATION) so that radial head is not overlapping the ulna



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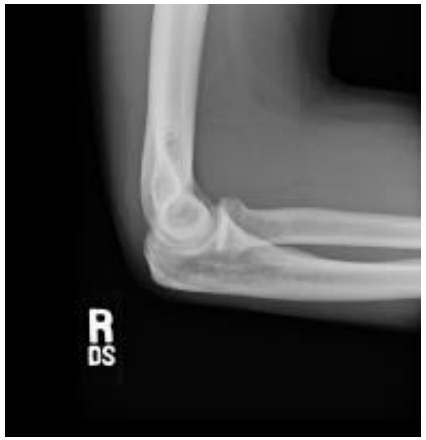
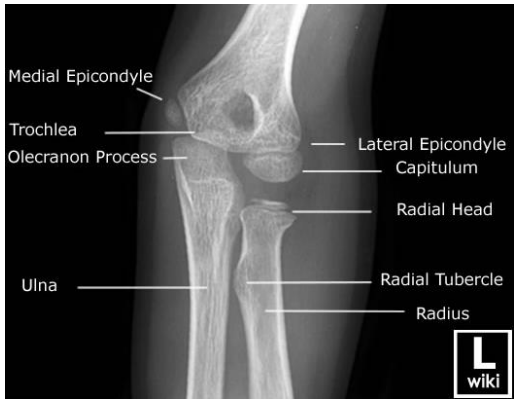


LATERAL

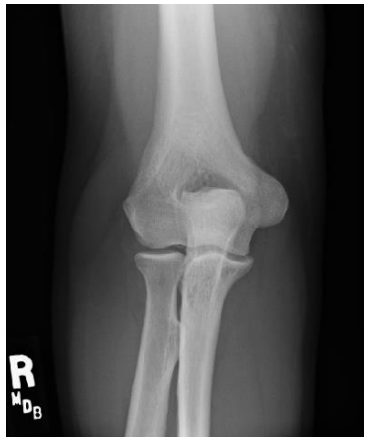


EXTERNAL OBL

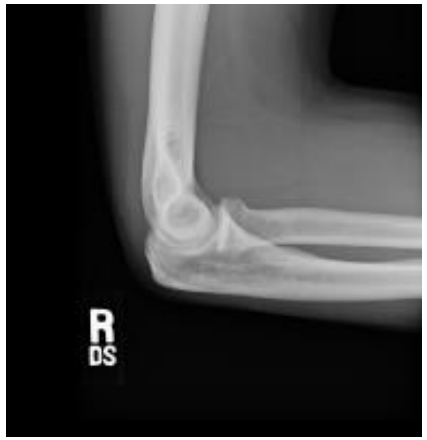
ELBOW – Routine or Non-Impact views

*IF ORDERED AS A 2 VIEW ONLY
*AP with humerus & forearm in the same plane
* LATERAL (forearm flexed 90°) with humerus & forearm in the same plane. Central ray directed at the joint for true lateral.

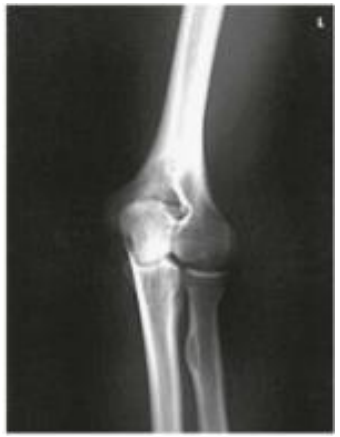
* IF NUMBER OF VIEWS ARE NOT SPECIFIED OR IF 3 VIEWS ARE REQUESTED
* AP with humerus & forearm in the same plane
* LATERAL (forearm flexed 90°) with humerus & forearm in the same plane. Central ray directed at the joint for true lateral
* External Oblique view, rotating hand laterally (externally) to place the elbow at a 45º angle.



AP



LATERAL

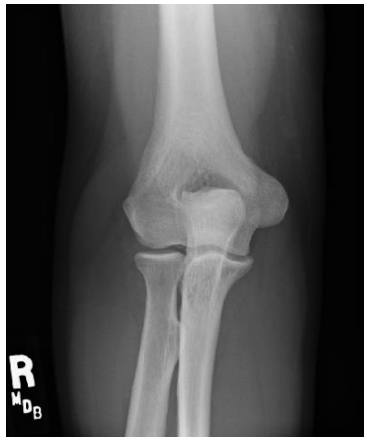


External Oblique

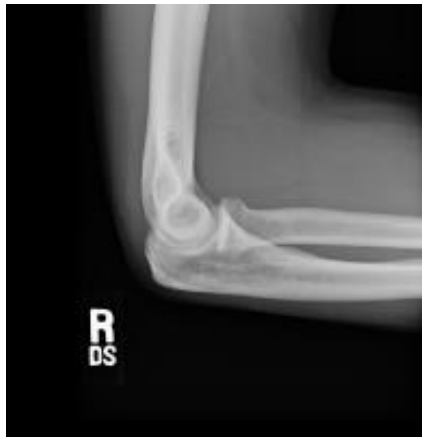
ELBOW - Impact studies

*AP with humerus & forearm in the same plane.
If forearm cannot be extended due to severe pain or the elbow is casted, do an AP distal humerus, and do an AP proximal forearm

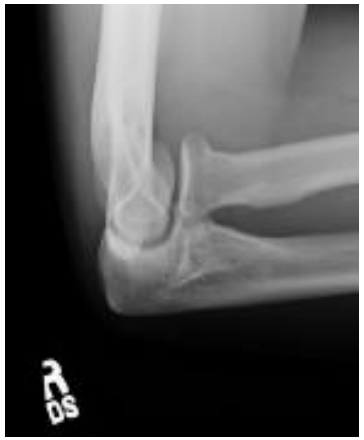
* LATERAL (forearm flexed 90°) with humerus & forearm in the same plane. Central ray directed at the joint for true lateral.
* RADIAL HEAD view (axial lateromedial projection, sometimes referred to as the Coyle Method – elbow flexed 90° w/ hand flat on table; 45° tube angle toward the shoulder, CR enters lateromedially, centered at mid-elbow joint)
* OBLIQUE VIEWS if directed by Radiologist



AP



LATERAL



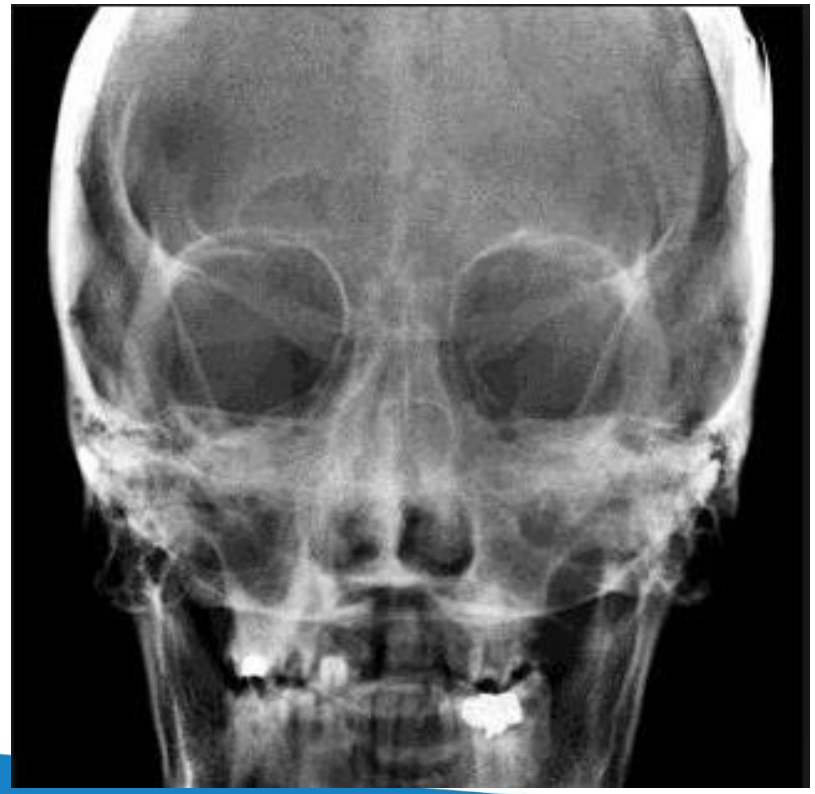
RADIAL HEAD

EYE for FOREIGN BODY (MRI SCREENING)

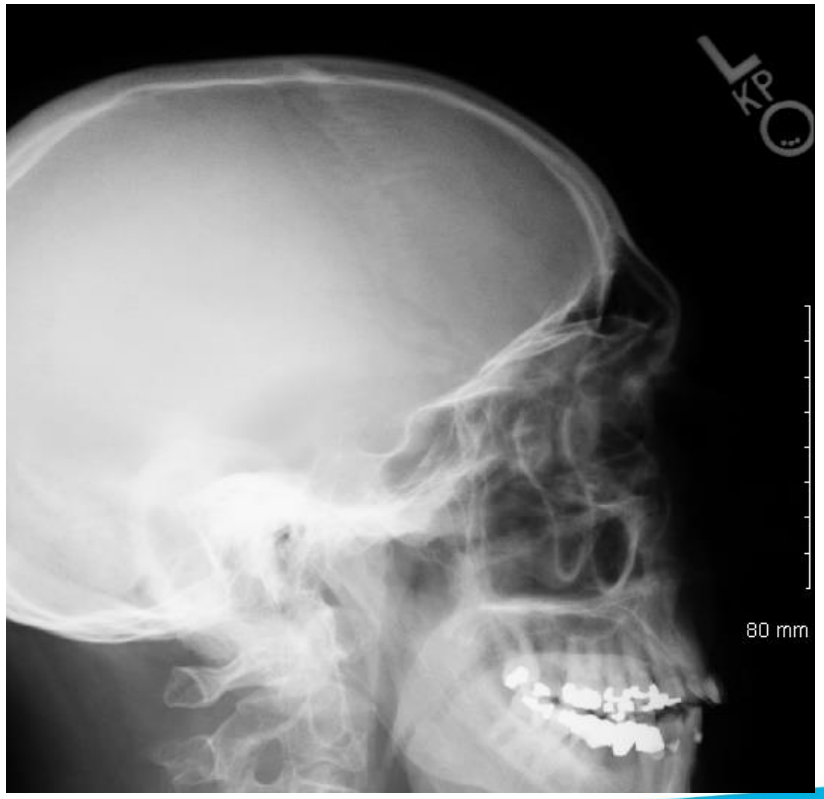
*PA, Caldwell view 25º – 30º caudal – you may collimate this view but must include entire eye sockets and surrounding structures

*Lateral Skull

*Guidelines for EFFB examinations – perform on patients who have had a history of "orbit trauma by a potential ferromagnetic foreign body *for which they sought medical attention"*



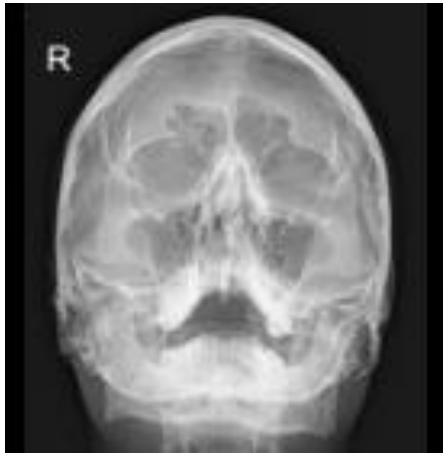
PA, Caldwell



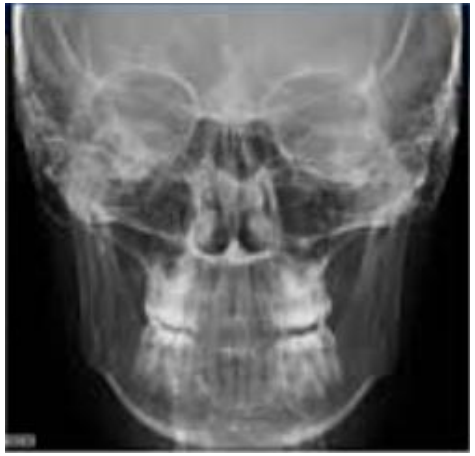
LATERAL

FACIAL BONES

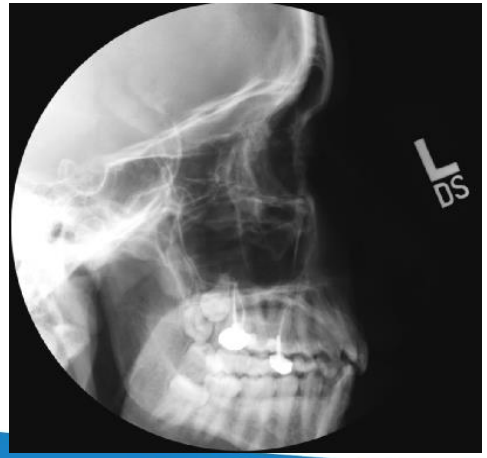
* WATER'S VIEW - Upright, if possible, HYPEREXTEND NECK, OML 37˚ to IR
* CALDWELL – CR 15˚ Caudal
* LATERAL of the injured side, done cross-table
* SMV (ZYGOMA VIEW) – Hyperextend neck, CR perpendicular to IOML



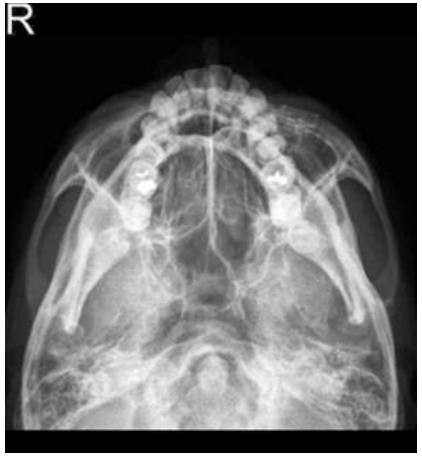
WATER'S



CALDWELL



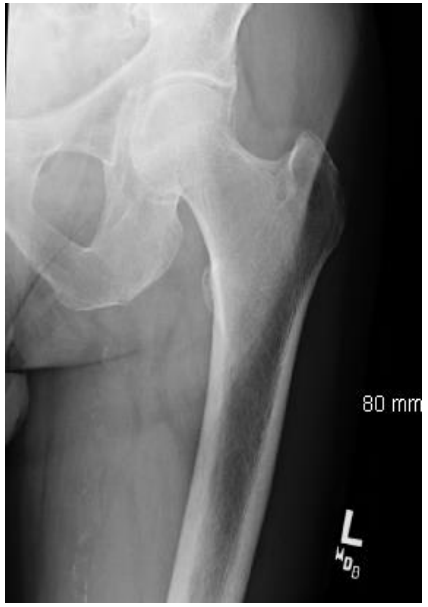
LATERAL



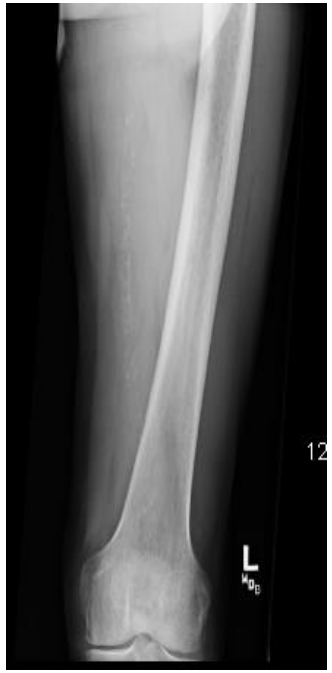
SMV

FEMUR - see also extremity-lower

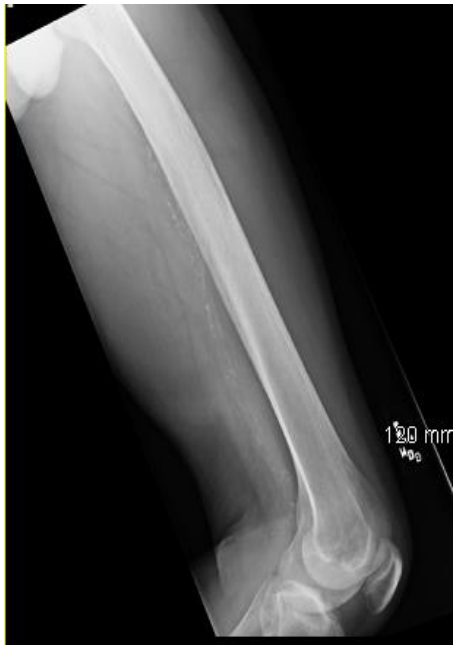
*AP & LATERAL to include both joints
*If possible, try to get hip and knee on same film.
*Include the knee on AP & LATERAL then follow with the AP & LATERAL of the hip on that side if necessary.



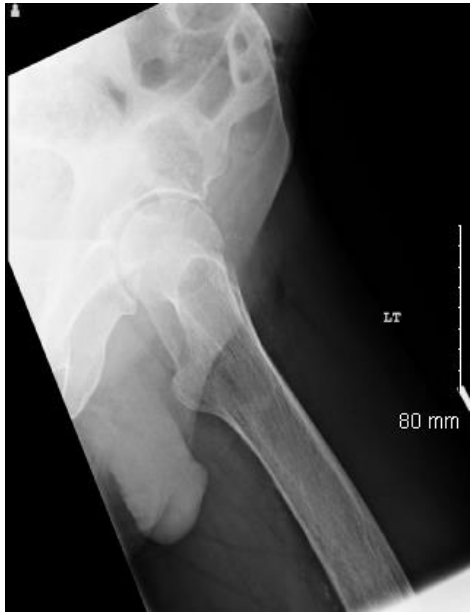
AP



AP



LATERAL

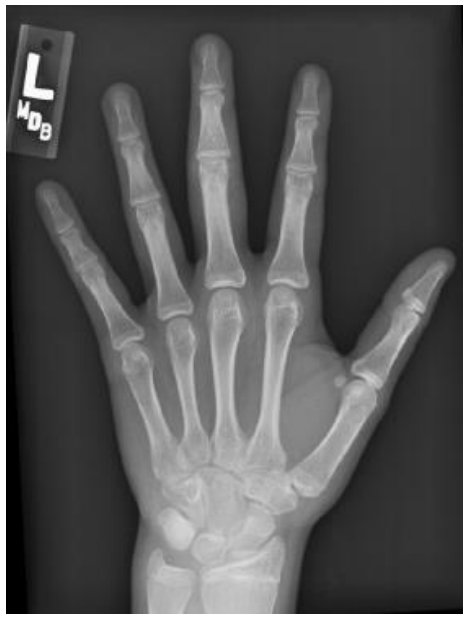


LATERAL

FINGERS

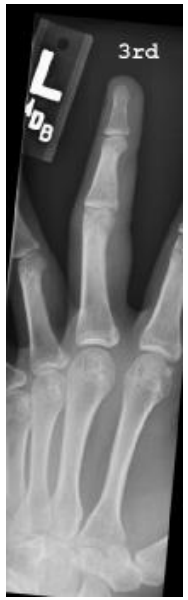
*PA of entire hand
*OBLIQUE & LATERAL collimated to the affected finger(s)

*OK to include multiple fingers on a single view as requested
*For re-check of fracture, may do AP and LATERAL of involved finger, as long as the fracture is included.
*Include from finger tip to carpometacarpal joint
PACS Presentation - Digits facing up – toward the top of the monitor

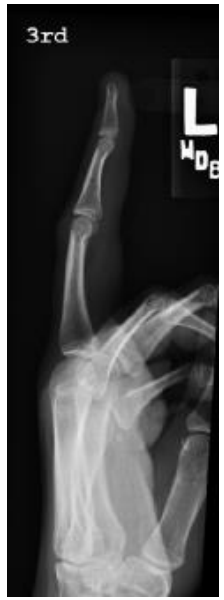


PA

+

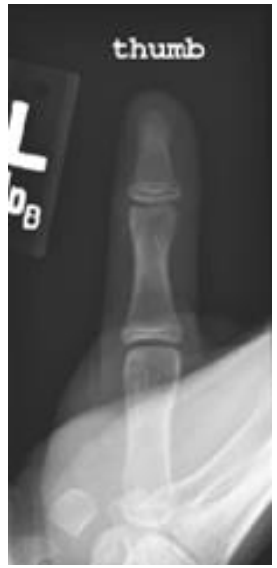


OBL

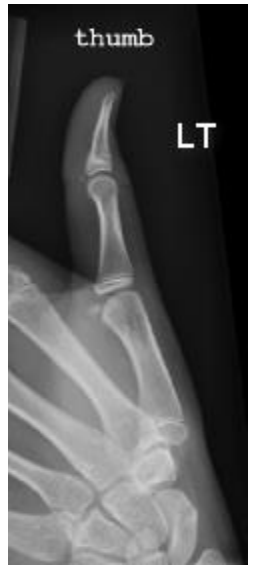


LATERAL

OR



AP



LATERAL

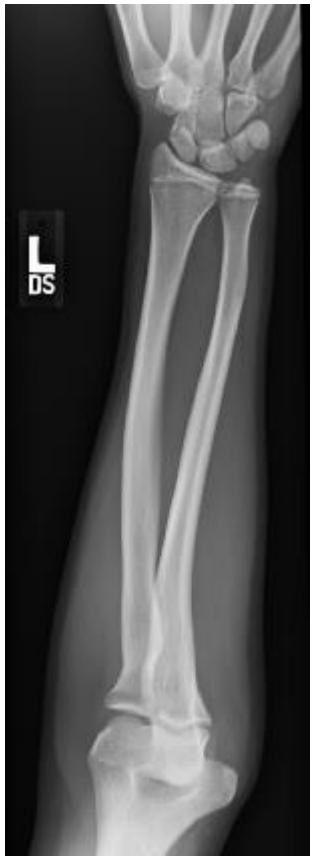
2nd-5th Digits

Thumb

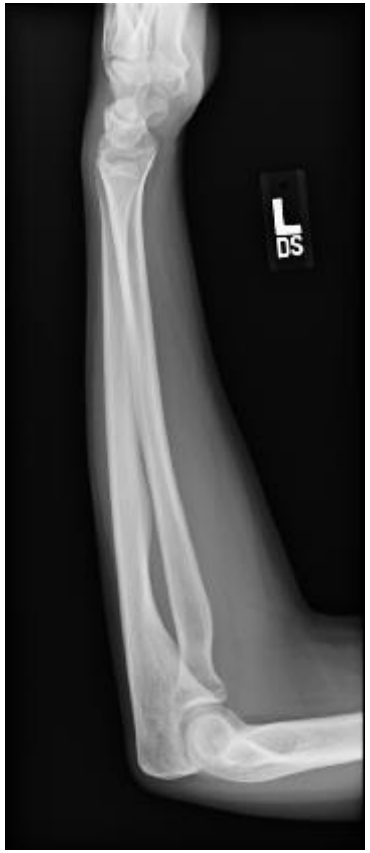
FOREARM

*AP to include both joints
*LATERAL to include both joints, use the same position as for elbow

PACS PRESENTATION: hand towards top of screen



AP



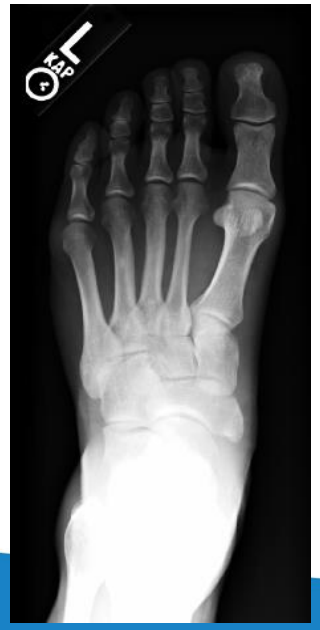
LATERAL

FOOT – for toe injury see toe

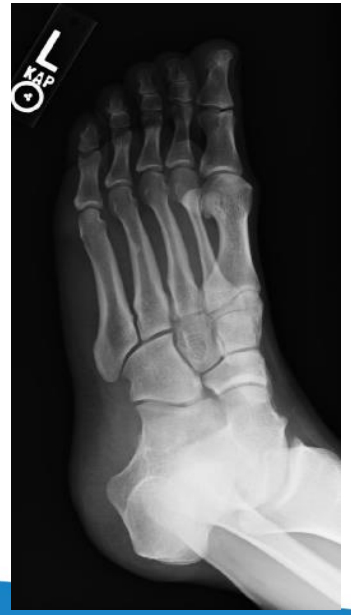
*AP with 10-15° angle toward heel, centering to base of 3rd metatarsal.
*30-35° Internal Oblique
*LATERAL, dorsiflex foot to 90˚ angle with leg
*For weight bearing views, do an AP, Oblique and LATERAL Views

PACS Presentation: AP/OBL- toes facing top of screen
LATERAL- plantar surface of foot down, as if standing

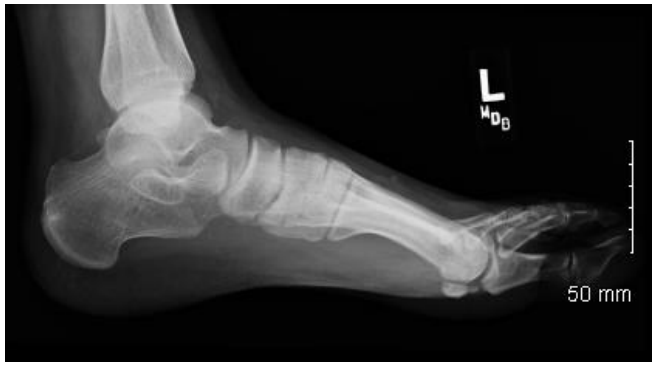
In all of the following scenarios, images must be taken with the patient bearing weight:
- Referral is from a DPM or orthopedic physician
- Referral states “Flat Feet” as reason for exam



AP



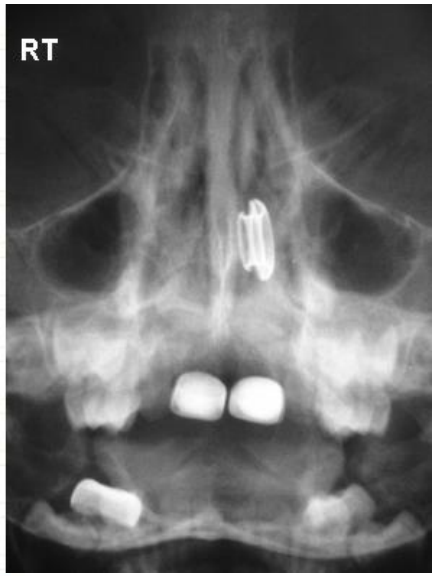
OBLIQUE

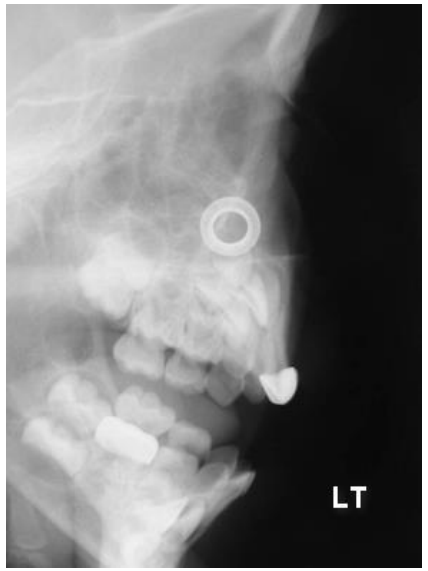


LATERAL

FOREIGN BODY

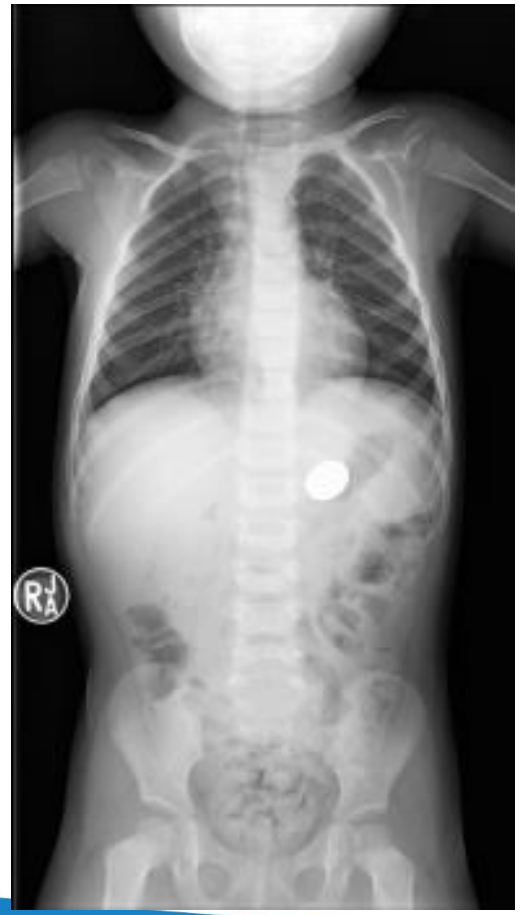
*On adults AP or PA & true lateral of the part involved. As per part.
*If entry wound - on wound entrance, place a small (2mm max diam) lead marker on the site of interest and then do views. Identify the marker on the film.
*View with Central Ray Tangent to entry wound and a view 90° from that view.
*On Long bones, include at least one joint (for purposes of orientation).
*If foreign body is expected, do two views with an entry wound marker in place properly marked as such & one view tangent to entry wound marker.





TRUNK for FOREIGN BODY

*On children - include entire trunk from nose to anus on one film if possible.
*Do AP survey on initial search for swallowed or aspirated foreign body.
*If question of aspiration, do inspiration and expiration PA chest films.

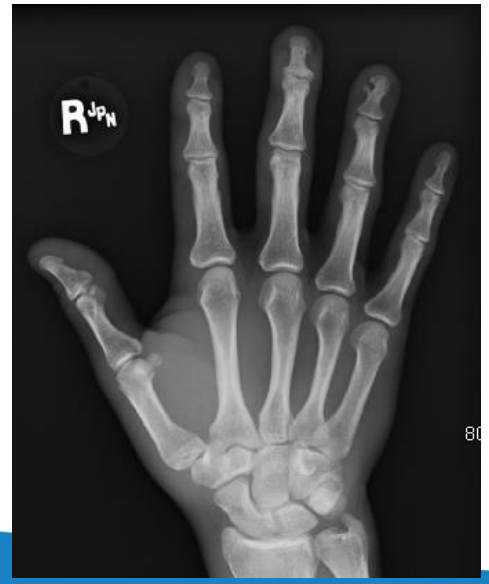


HAND - see also extremity-upper & wrist

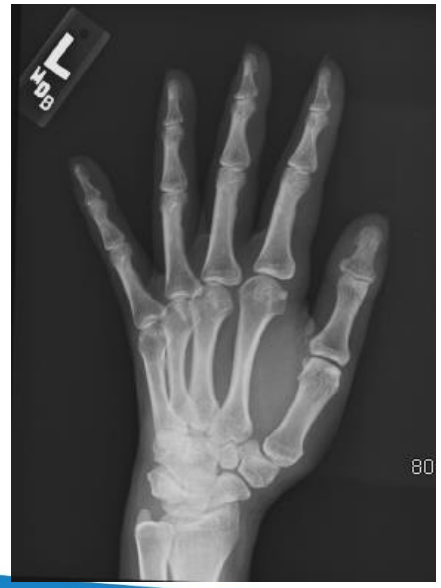
*PA, OBLIQUE and FINGER SPREAD LATERAL
*For trauma rechecks, etc. do only PA and LATERAL centering on the site of injury.

*SEE FINGER for recheck fracture views of the fingers.
***If Finger only is ordered, do PA of hand, plus oblique & lateral view of involved finger(s).**
***In case of injury to the thumb, be sure that AP & lateral views of the thumb are included.**

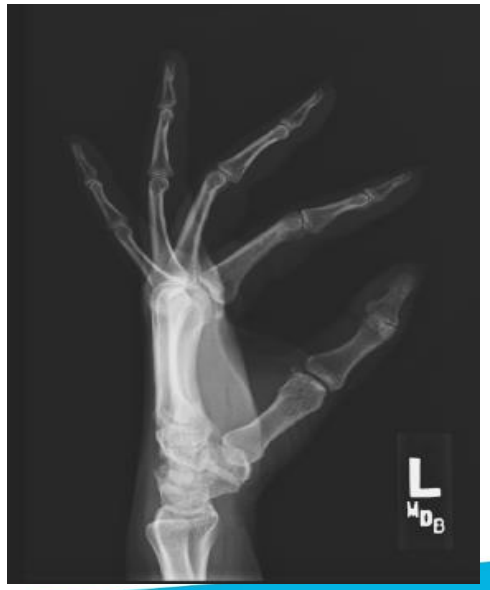
PACS Presentation - Digits facing up – toward the top of the monitor



PA



OBL



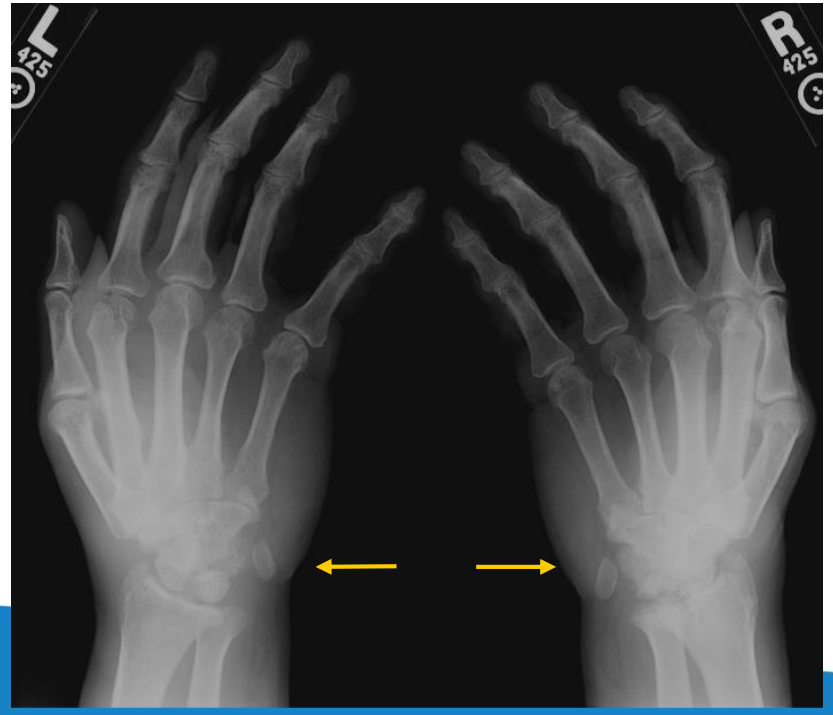
LATERAL

HAND & WRIST - arthritis for the hand

*PA, BALL CATCHERS and LATERAL views of both hands from specialists only.
*PA and Lateral views for 2 view requests from specialist only.
*From non-specialists, do bilateral PA, Oblique and Lateral views.
*Each set of views on one film for comparison when possible.
*If “Wrist Only” is ordered, do 3 views wrist (see “Wrist”)

PACS Presentation - Digits facing up – toward the top of the monitor

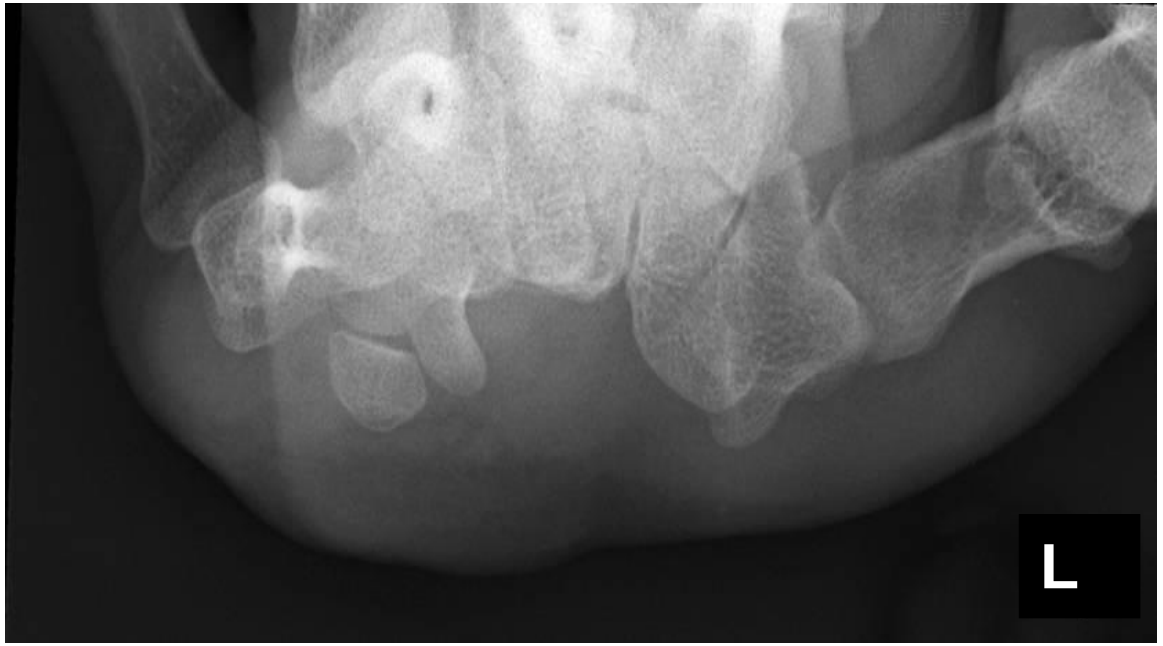
Ball Catchers



Ball Catchers
pisiform must be seen clearly with this view

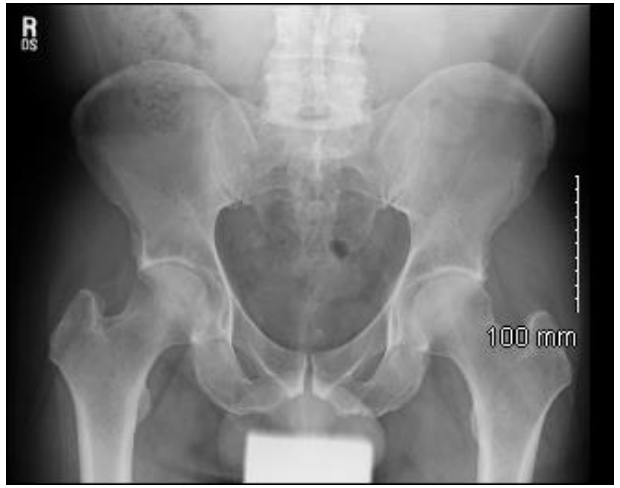
HAND & WRIST – tunnel view

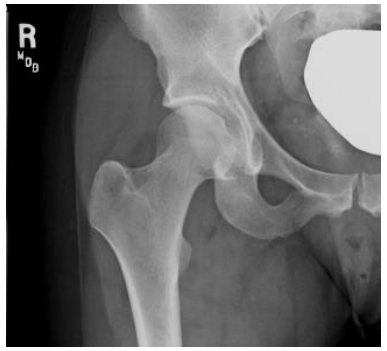
*TUNNEL VIEW (Carpal tunnel view) as ordered. This view is a tangential frontal view of the carpals with the hand held in maximum extension (as by bandage held in the patient's mouth). Comparison views are routinely done.

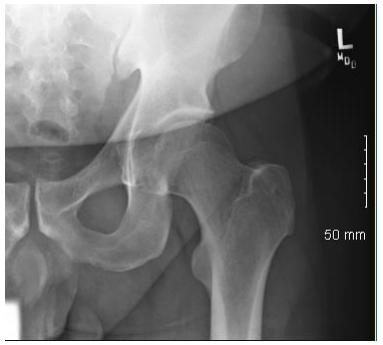


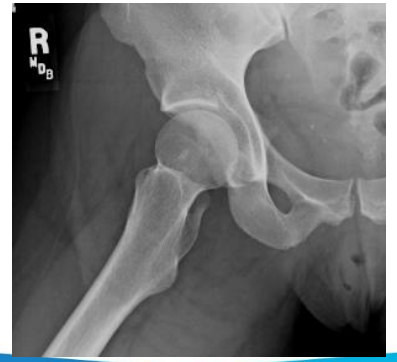
HIPS – Unilateral or Bilateral (as requested)

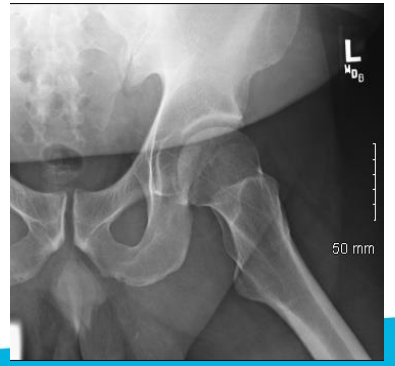
* AP Hip – Internal rotation 15-25˚ of affected hip
* Lateral or Frog Leg hip of affected hip
* Injury – cross table lateral
* Pelvis **ONLY** upon request
* The entire internal fixation device must be included on rechecks
*Gonadal shielding on one view on females; males can generally be shielded on both views









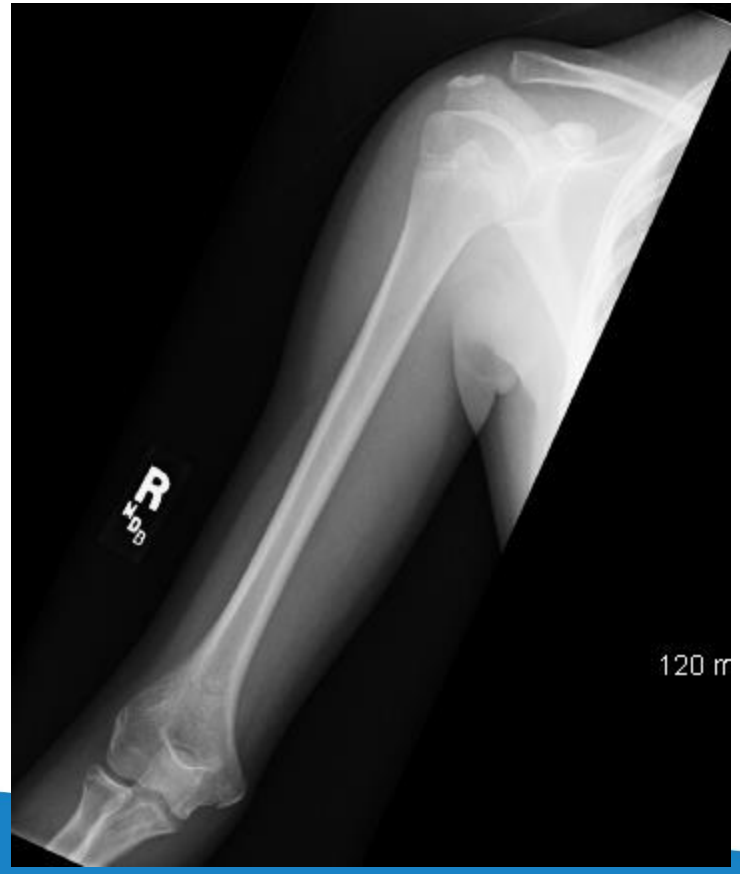


HUMERUS - see also extremity-upper

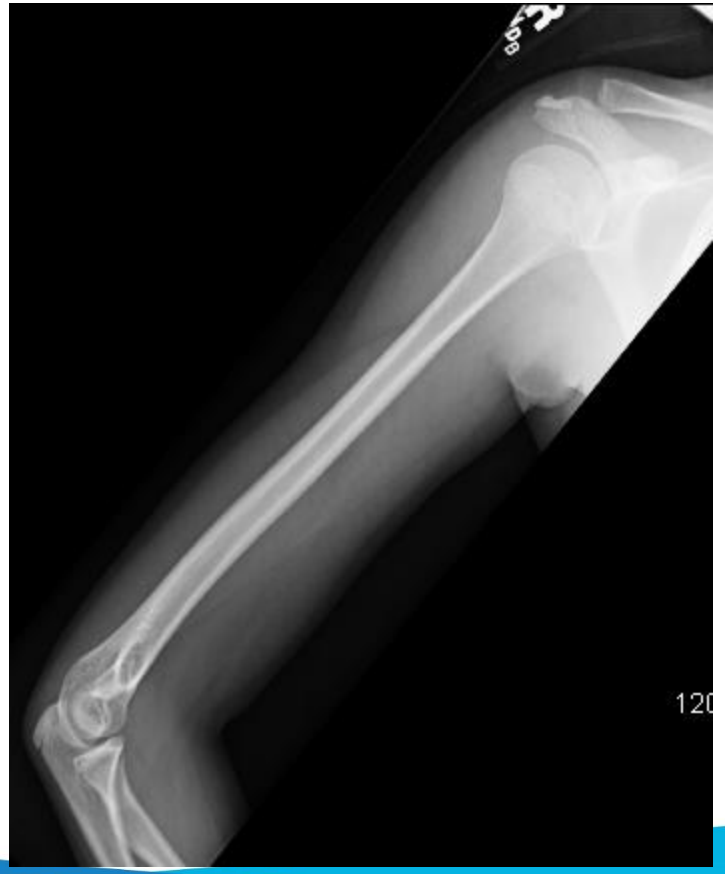
* AP with shoulder external rotation, include the elbow and shoulder
* LATERAL with internal rotation, hand on abdomen, include the elbow and shoulder

* For trauma, obtain a true lateral with the patient upright film under the arm, or if necessary, a transthoracic lateral (particularly for shoulder)

AP

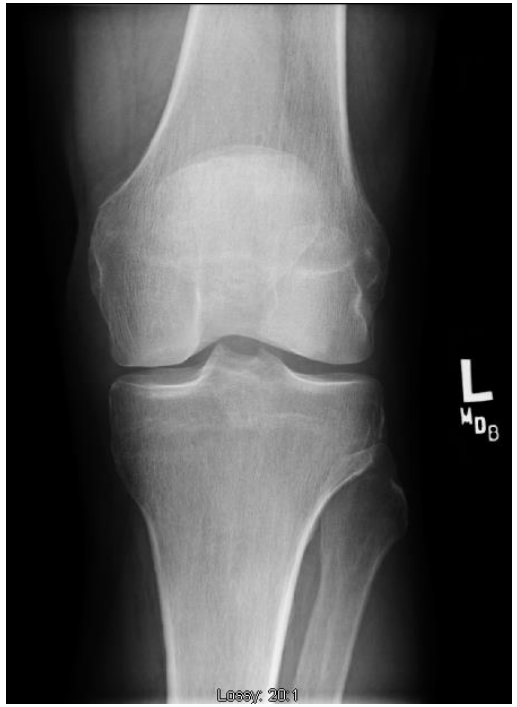


LATERAL

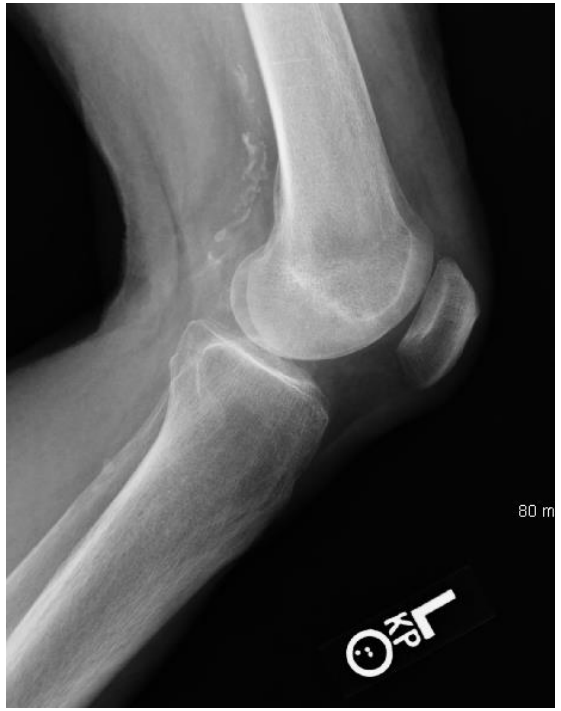


Knee – 2V study

* AP with CR 3-5˚ cephalad
* LATERAL with 10-15° flexion, CR 5-7˚ cephalad



AP

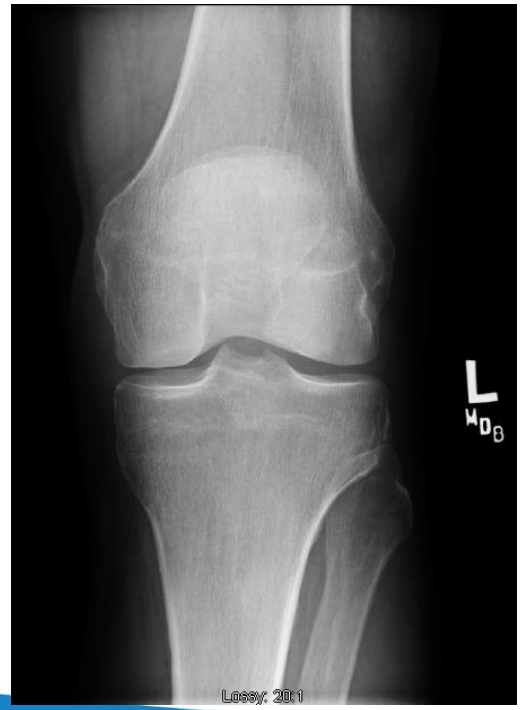


Lateral

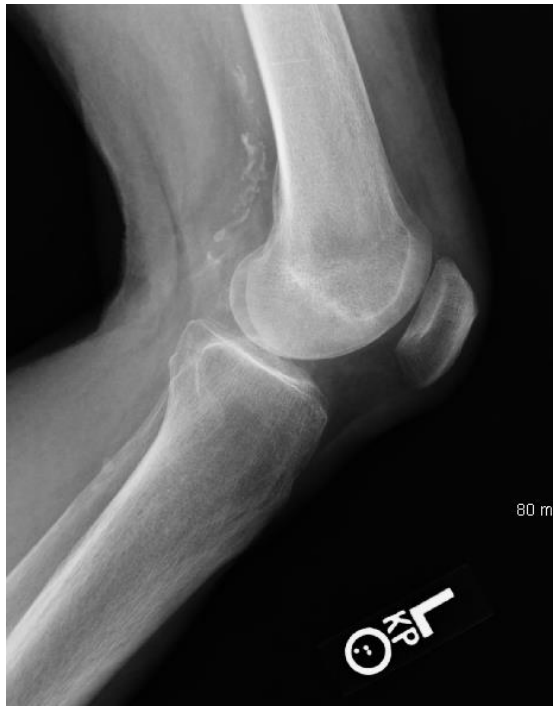
KNEE – 3V no-impact

* AP with CR 3-5˚ cephalad
* LATERAL with 10-15° flexion, CR 5-7˚ cephalad
* TUNNEL View for loose bodies (joint mice)

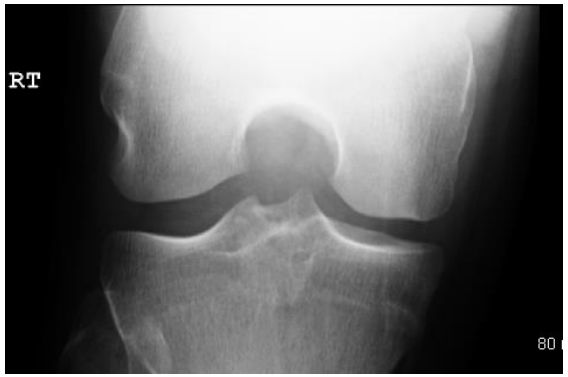
*AP Knees Weight Bearing, bilateral, 14x17 cross-wise, Bucky, as ordered



AP



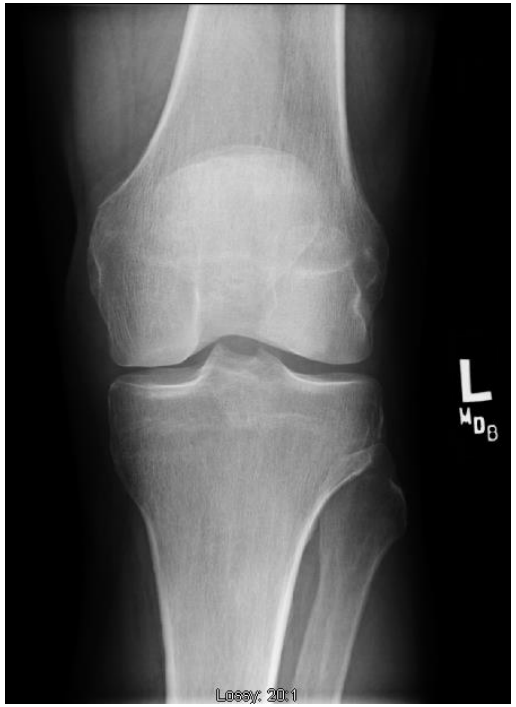
LATERAL



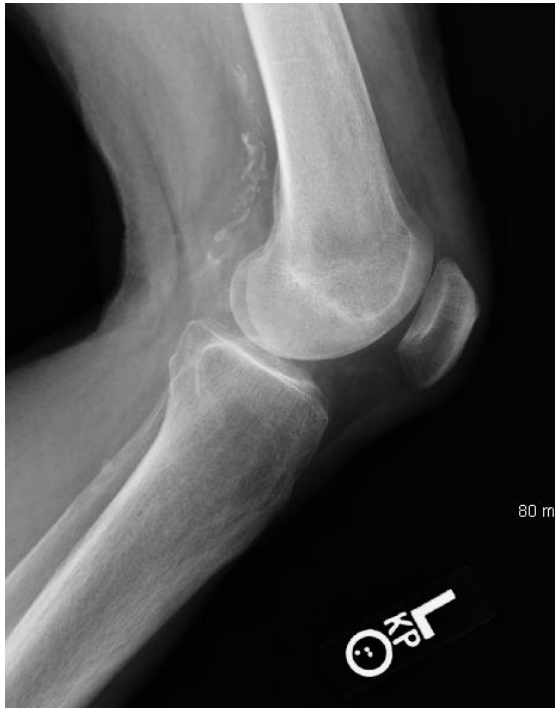
TUNNEL

KNEE – 3V Impact study

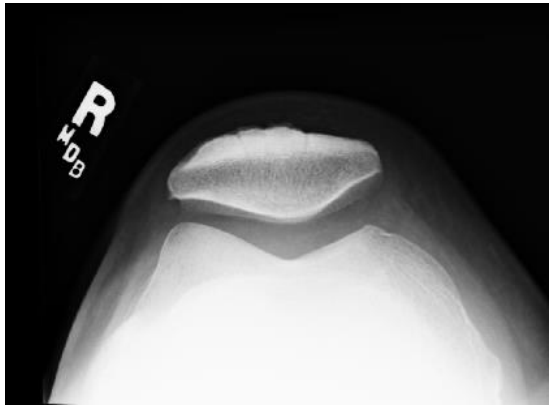
* AP, LATERAL and SUNRISE (Axial) views
* For acute injury, cross-table lateral extremity film



AP



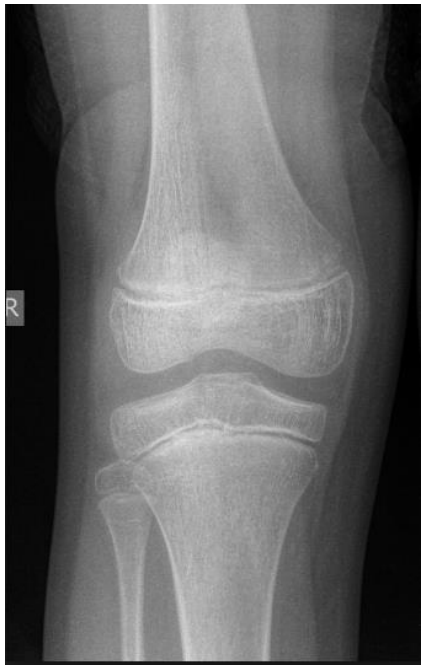
LATERAL



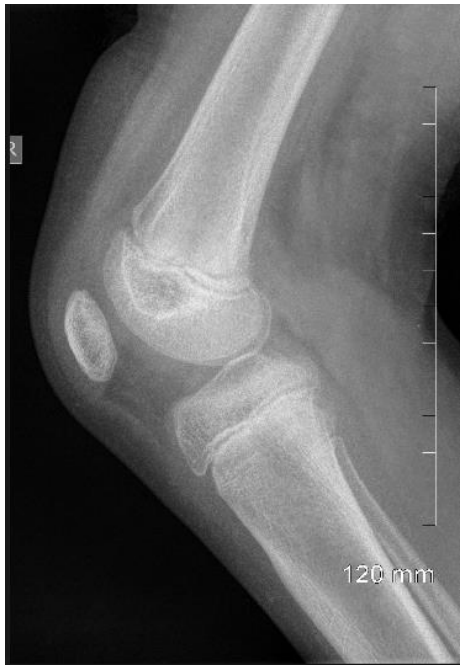
SUNRISE

KNEE – 2V Pediatric study

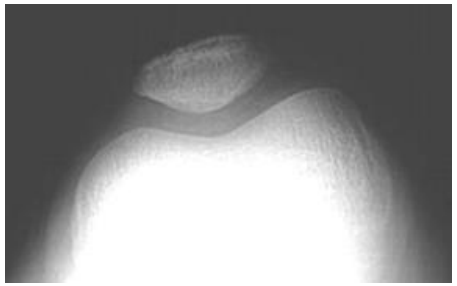
* AP, LATERAL
* SUNRISE (Axial) view upon request



AP



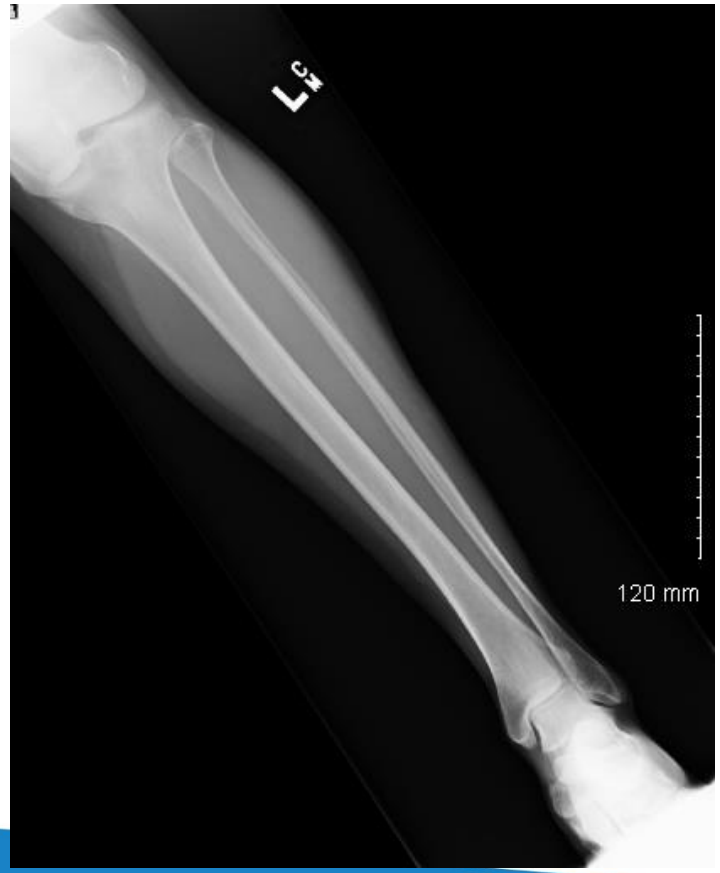
LATERAL



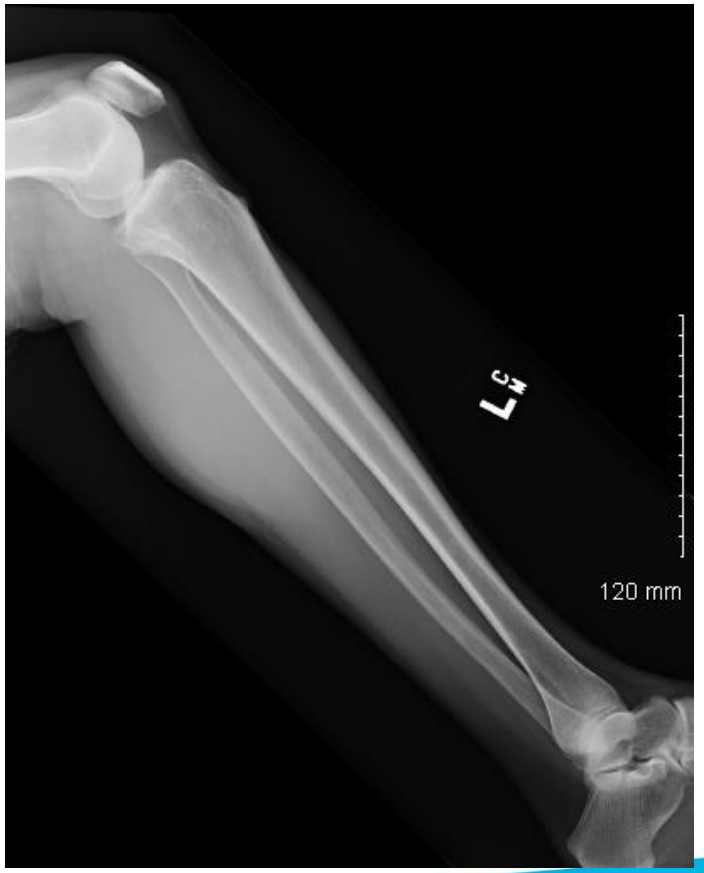
SUNRISE

LEG (TIB/FIB)

* AP,
* LATERAL to include both joints if possible, at least both ends of the bone



AP



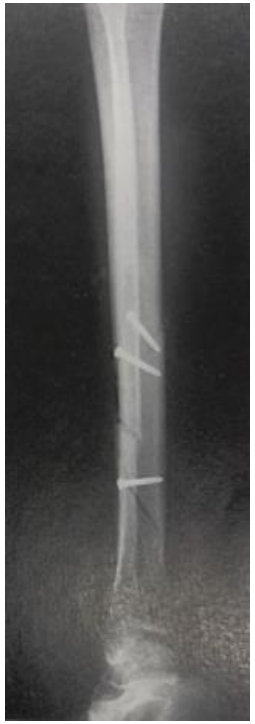
LATERAL

LEG (TIB/FIB) for Toddler's Fracture - ONLY UPON REQUEST

- AP, to include both joints if possible, at least both ends of the bone
- LATERAL to include both joints if possible, at least both ends of the bone
- Lateral Oblique, lateral rotation of 45˚, to include both joints if possible

AP

LATERAL



EXTERNAL OBLIQUE

Leg Length study

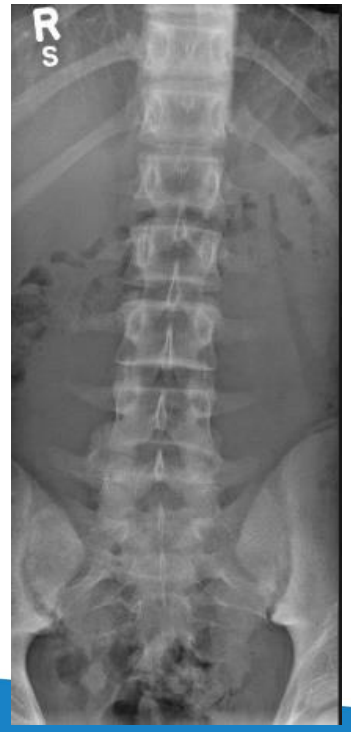
***Study to be completed at either Sunrise , Lilly or Union imaging centers**

- Check with referring office see if study is required to be completed as a weight bearing exam
  - If required to be a weight bearing study, refer patients to either Sunrise, Lilly or Union office
  - If not, request new referral for CT Scanogram

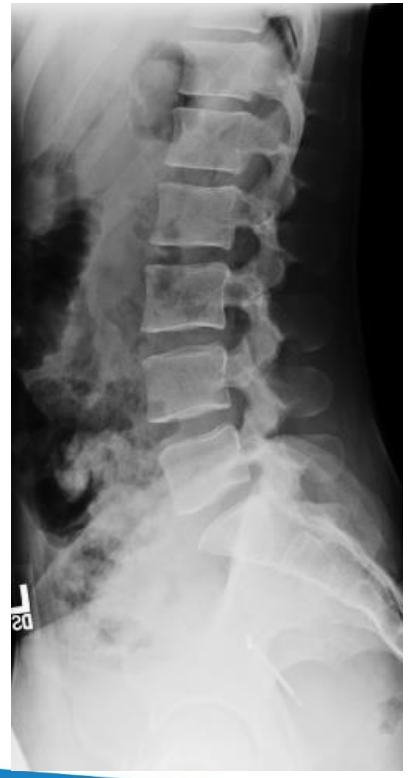
LUMBOSACRAL SPINE

* AP (14 x 17) Collimate to the spine
* NOTE – do not collimate for chiropractic requests, include femoral heads on images
* LATERAL to include T-11
* LATERAL CONE spot of L-5 & the sacrum
* Position from bottom of S-I joints up

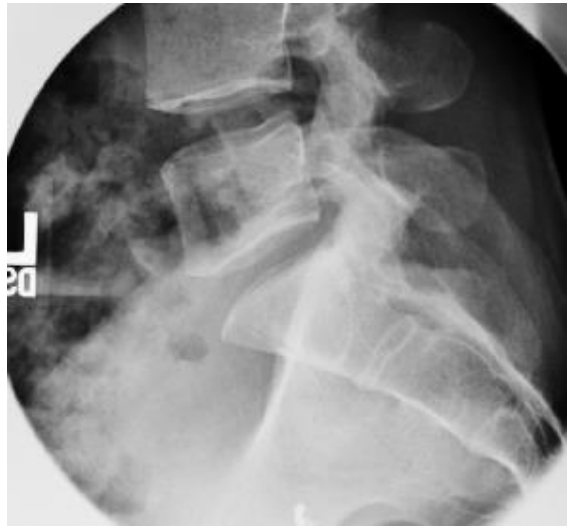
Additional/Optional views as requested on next slide



AP



LATERAL

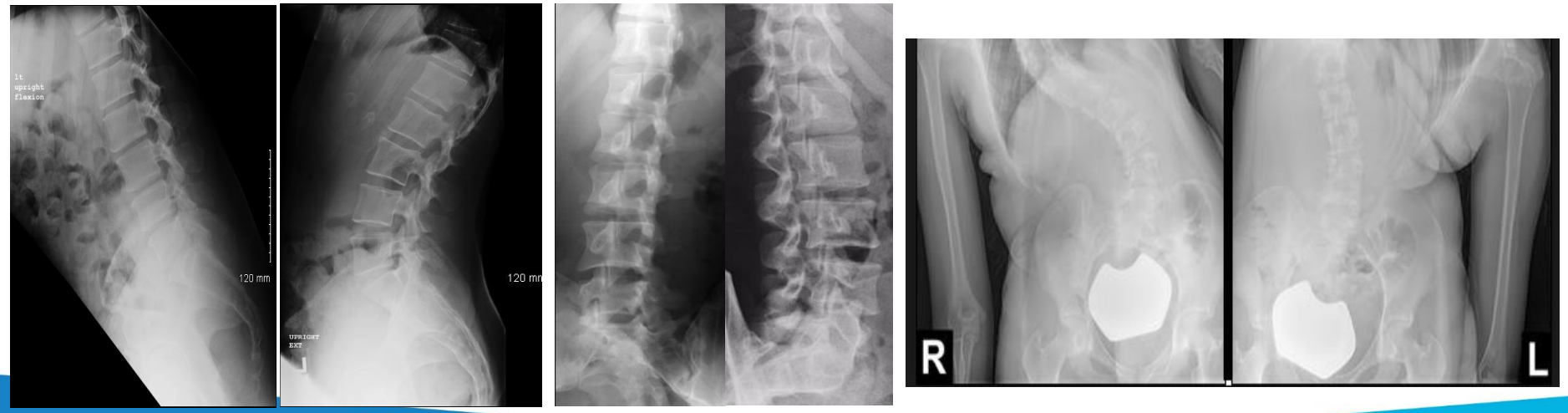


L5/S1 LATERAL

LUMBOSACRAL SPINE – additional views as requested

* Either AP or LATERAL dynamic views may be ordered separately, or both may be ordered; at any rate, this is a view that will be performed as ordered
* LATERAL views in flexion & extension including the entire sacrum
    * All films done erect Bucky 14 X 17 lengthwise, do not over bend or allow rotation of the pelvis
* Obliques at 30-45°obliquity to include the sacroiliac joints,
* AP views with right & left lateral bending

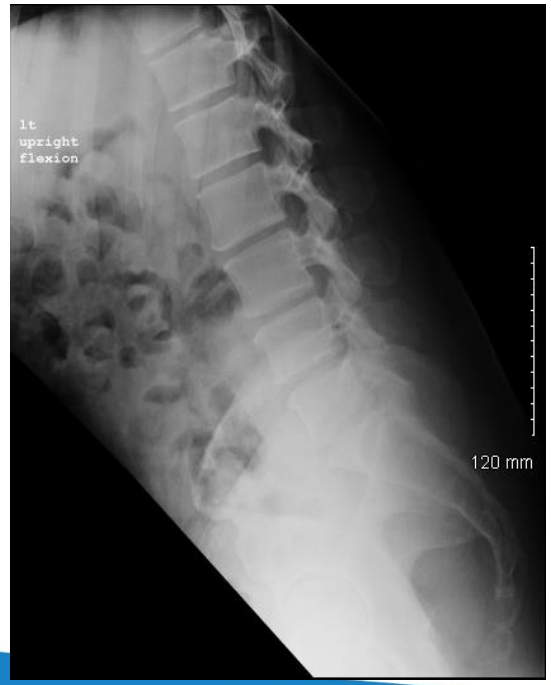
Lateral views **Oblique views** **Dynamic views**



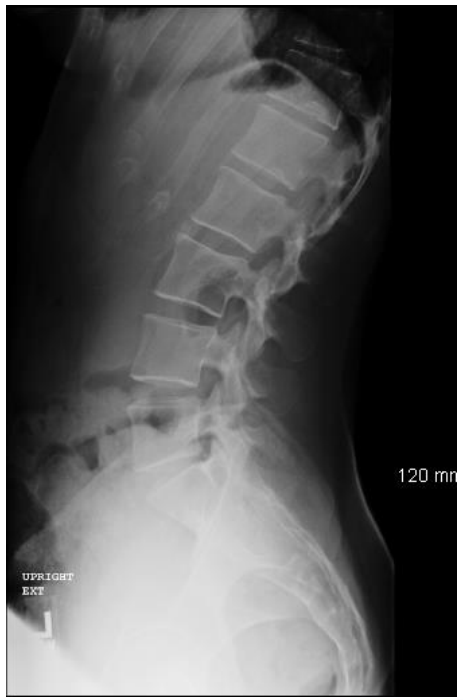
FLEXION **EXTENSION** **LAO/RPO** **RAO/LPO** **Side-to-Side bending**

LUMBOSACRAL SPINE – dynamic views

* AP views with right & left lateral bending
* LATERAL views in flexion & extension including the entire sacrum
* All films done erect Bucky 14 X 17 lengthwise, do not over bend or allow rotation of the pelvis
* When complete dynamics are ordered, the AP & LATERAL lumbosacral spine may be omitted at the Radiologist's discretion.
* Either AP or LATERAL dynamic views may be ordered separately, or both may be
* ordered; at any rate, this is a view that will be performed as ordered



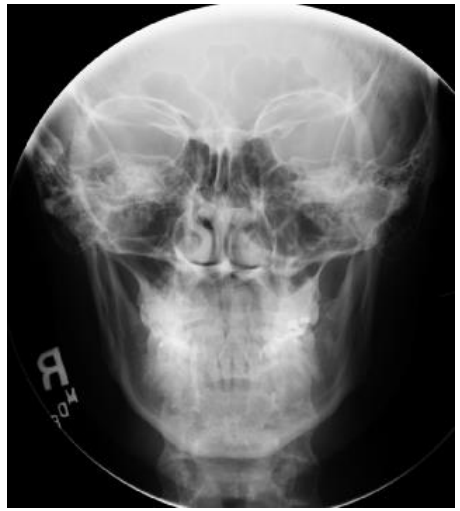
LATERAL FLEXION



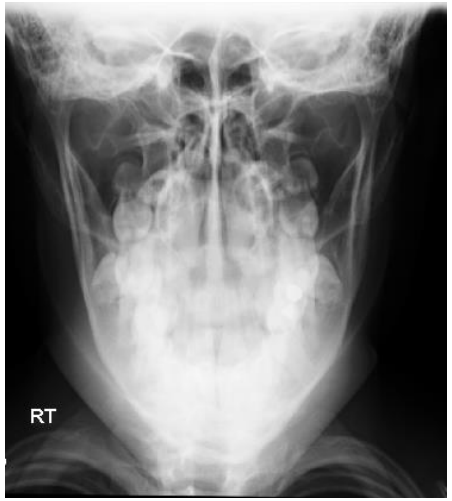
LATERAL EXTENSION

MANDIBLE

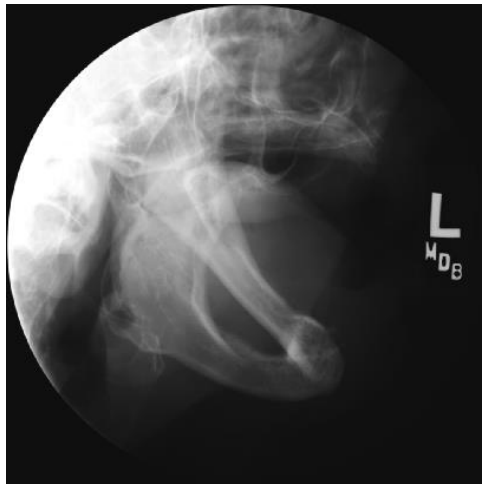
* PA, OML perpendicular to IR
*TOWNE'S with the mouth open (9 X 9) centering on the mandible (8 X 10 lengthwise)
* Bilateral oblique-lateral with the mouth open
* For an anterior injury, obtain occlusal view if possible, or Cephalocaudad Tangential of Symphysis
* For vertical ramus fractures, attempt and AP projection of the ramus through the orbit with the tube angled 10°caudad and 20°laterally, as ordered
* Temporomandibular joint views at the Radiologist's request



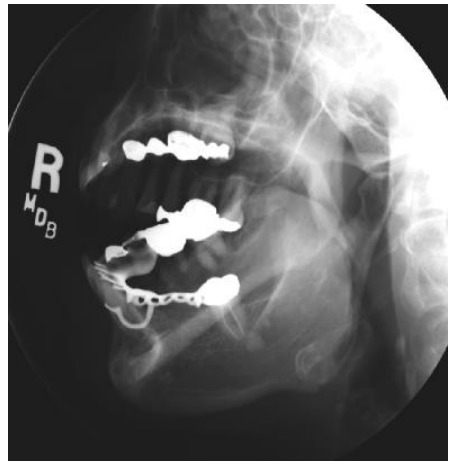
PA



TOWNE'S



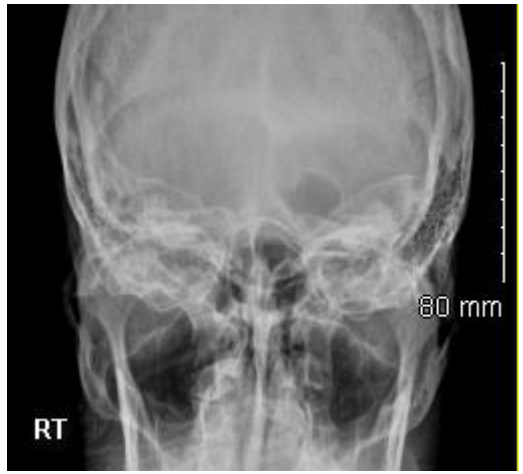
AXIOLATERAL OBLIQUE



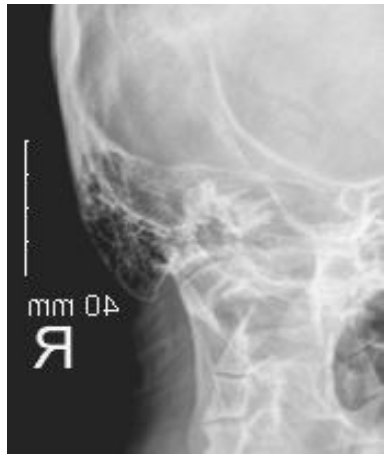
AXIOLATERAL OBLIQUE

MASTOIDS

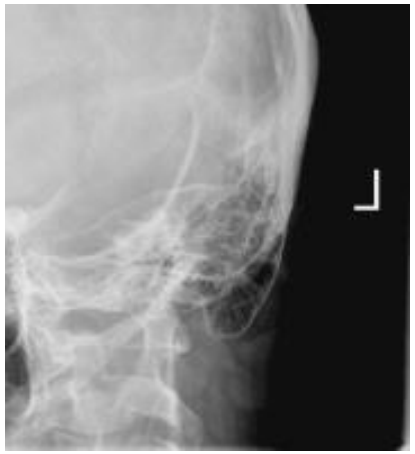
* TOWNE'S - 40°
* STENVER'S (or Arcelin) view of both sides
* LAW'S of both sides (tube 15° caudal)
* USE EXTENSION CONE



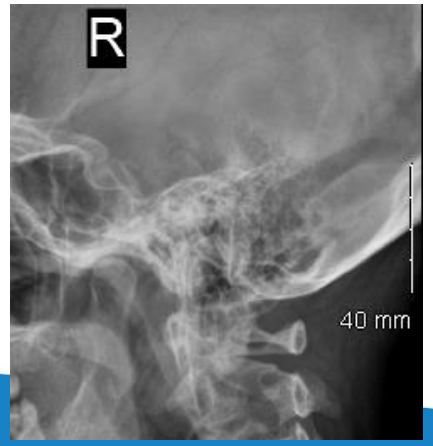
TOWNE



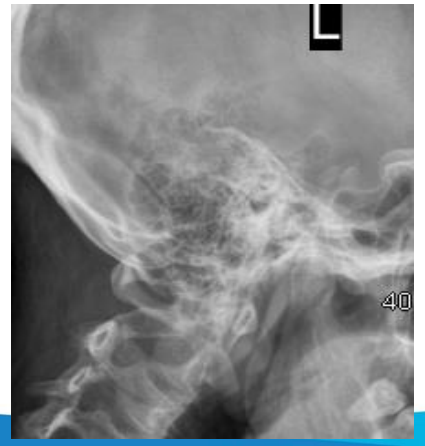
STENVER'S



STENVER'S



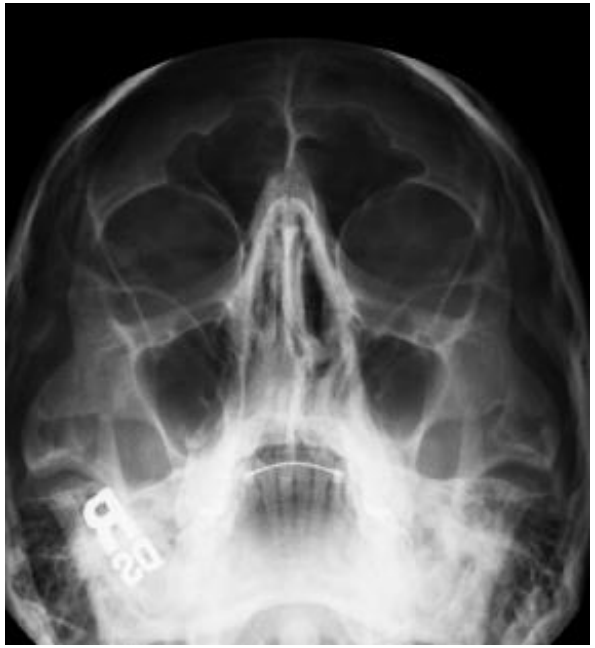
LAW'S



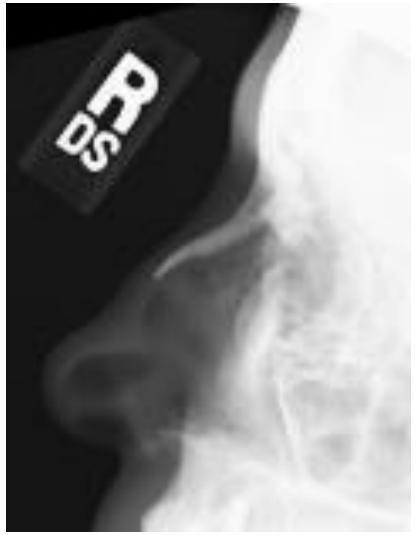
LAW'S

NASAL BONES

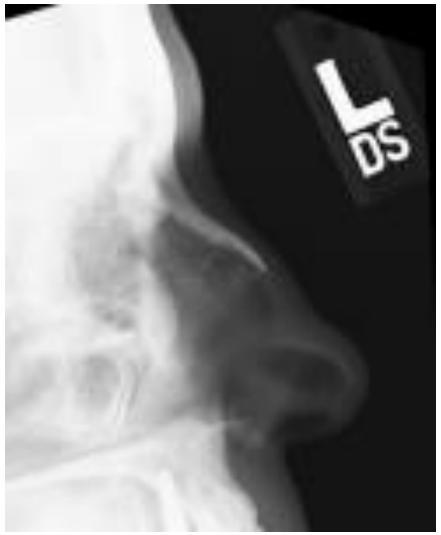
* WATER'S (Tangential to the bridge of the nose with the mouth closed)
* Both laterals



WATER'S



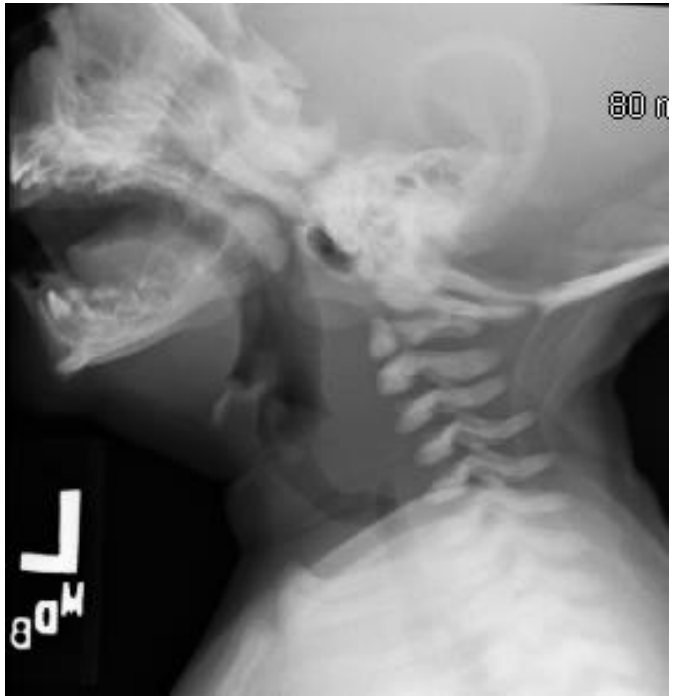
LATERAL



LATERAL

NASOPHARYNX

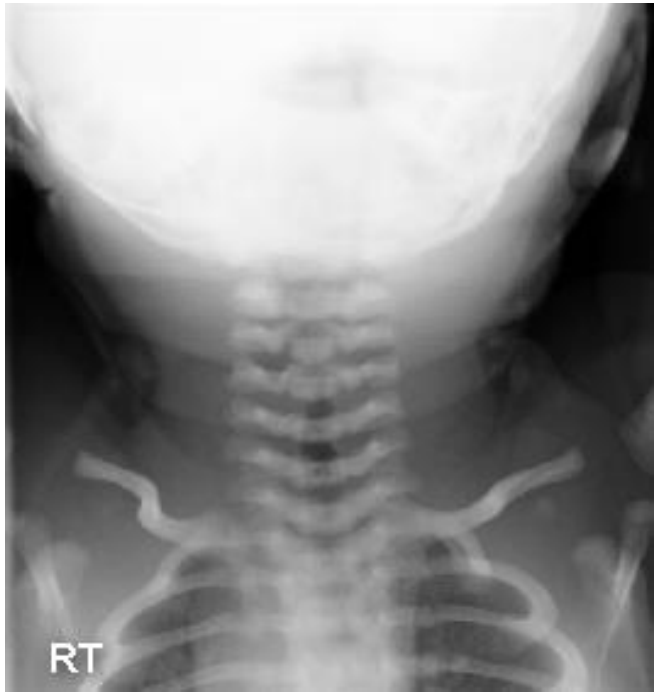
* LATERAL of the nasopharynx with the patient breathing in through the nose during exposure
(Be sure they breathe in through nose and mouth with mouth open and chin extended)



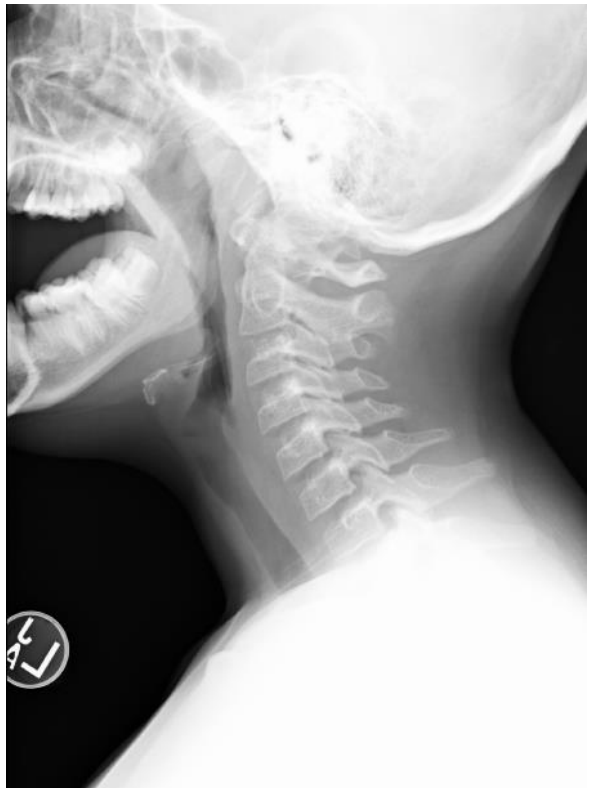
LATERAL

NECK – for foreign body

* AP (soft tissue technique)
* LATERAL (soft tissue technique, neck extended)



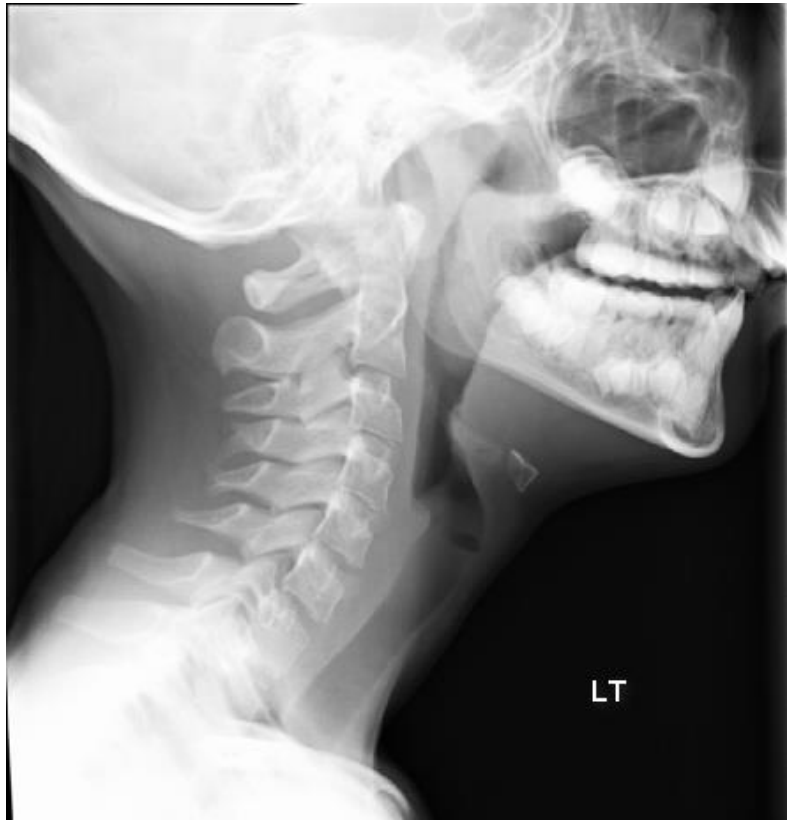
AP



LATERAL

NECK– for epiglottitis or croup

* LATERAL in quiet breathing
* AP (phonating if possible)

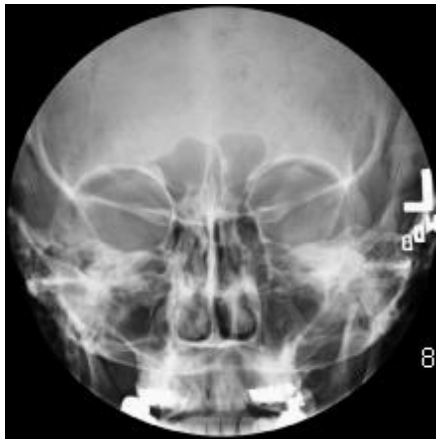


LATERAL

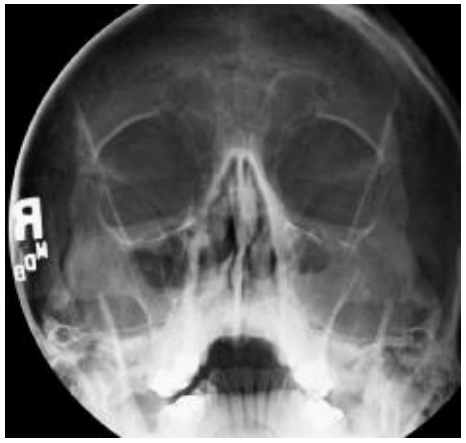
ORBITS

* Caldwell with CR angled 15˚ caudal
* PA Water's with the nose touching the table/upright bucky, upright if possible
* LATERAL of the involved side
* Bilateral Rhese views to visualized the opposite side (Label Anatomic Side & Side Down)

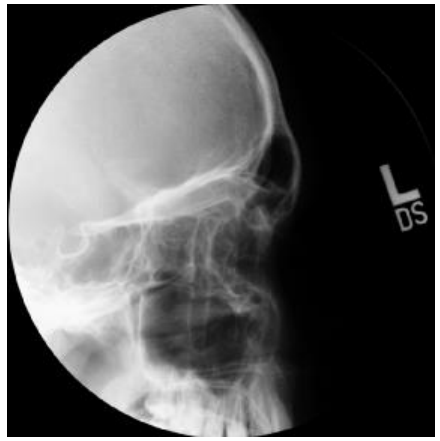
Upright Caldwell



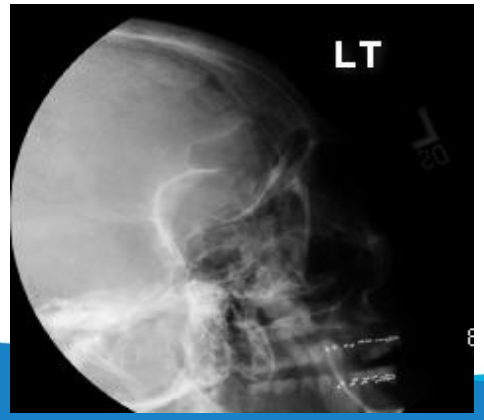
Upright Water's



Upright Lateral

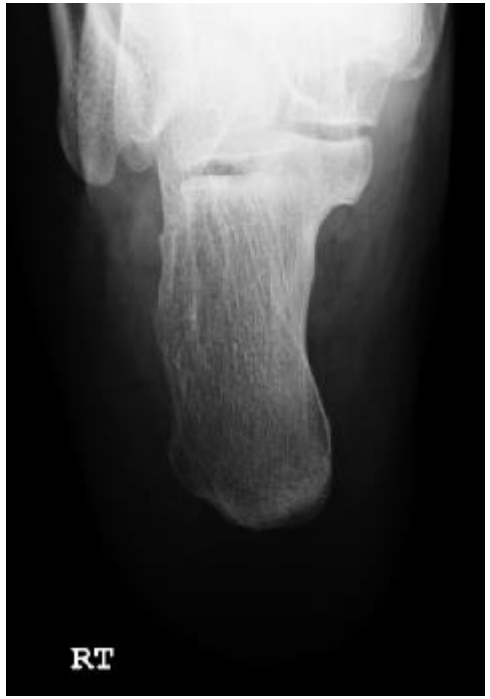


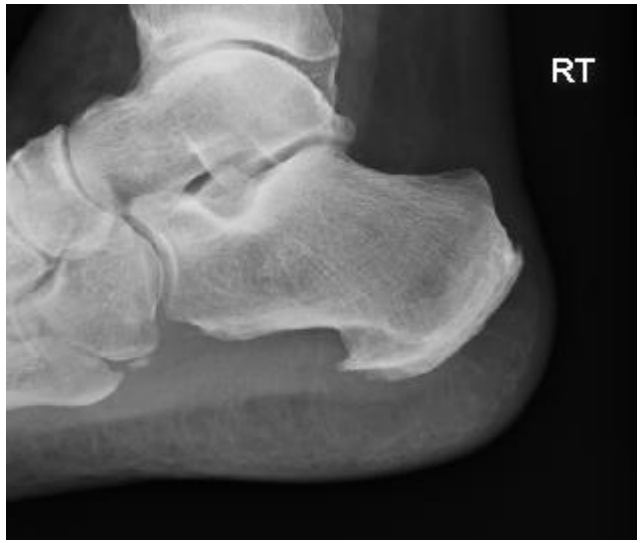
Bilateral Rhese



OS CALCIS (HEEL or CALCANEUS)

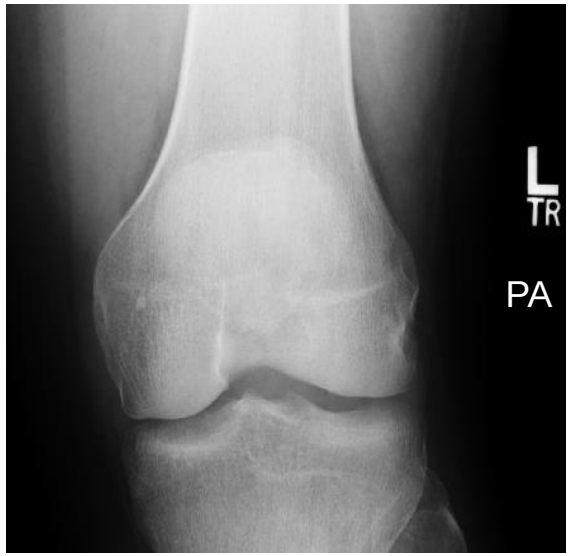
* LATERAL
* TANGENTIAL AP with the foot dorsi-flexed & the tube angled 35 - 40°.
* Comparison views if requested by Radiologist

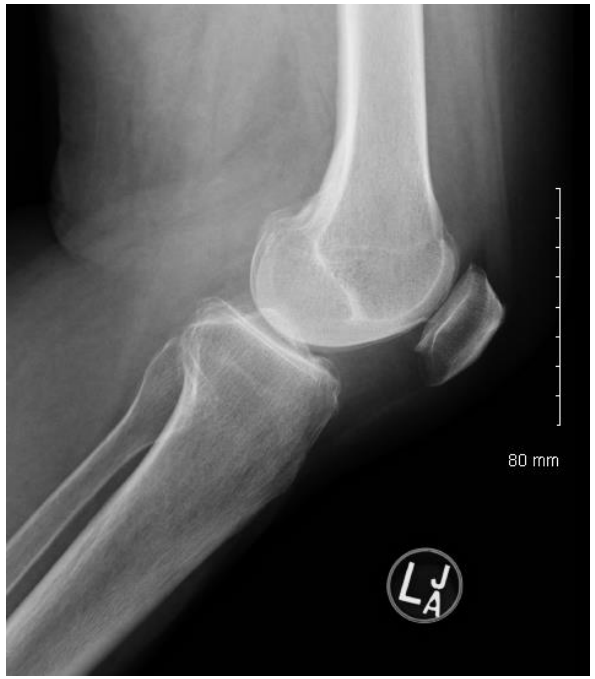


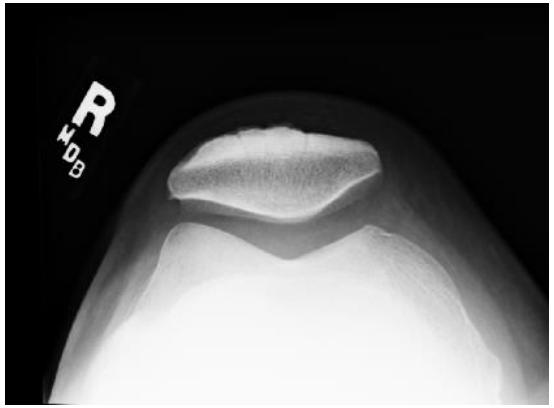


PATELLA – see also knee

* PA knee
* LATERAL knee with 10-15° flexion, CR 5-7˚ cephalad
* AXIAL (Sunrise) view



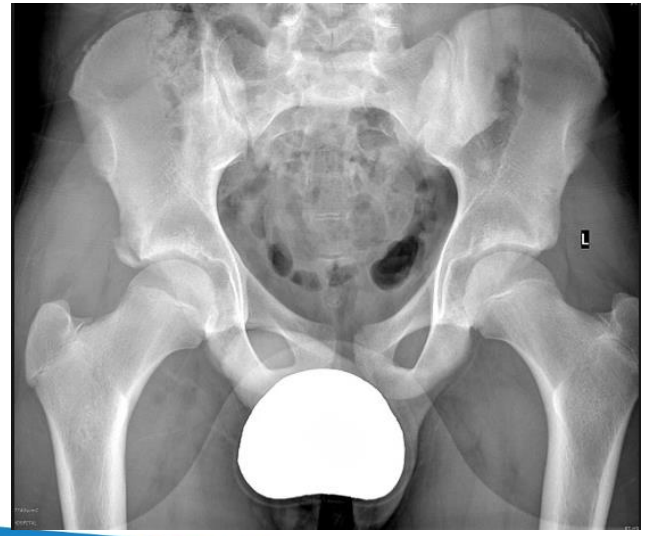


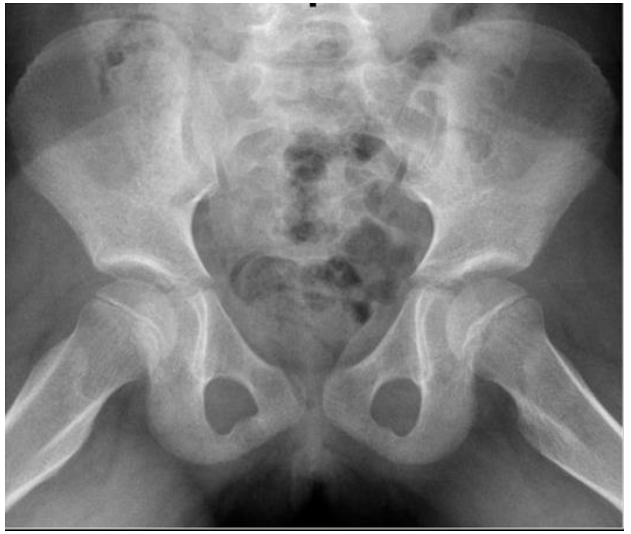


PEDIATRIC - Pelvis or Pelvis for HIPS

* AP - Bilateral image of the pelvis & hips
* AP FROG-LEG - Bilateral image of the pelvis & hips
* Both views on 14 X 17 crosswise, Bucky
•If unilateral hip is requested, do AP Pelvis and AP Frog-leg for comparison

* The entire internal fixation device must be included on rechecks
* Gonadal shielding on one view on females; males can generally be shielded on both views

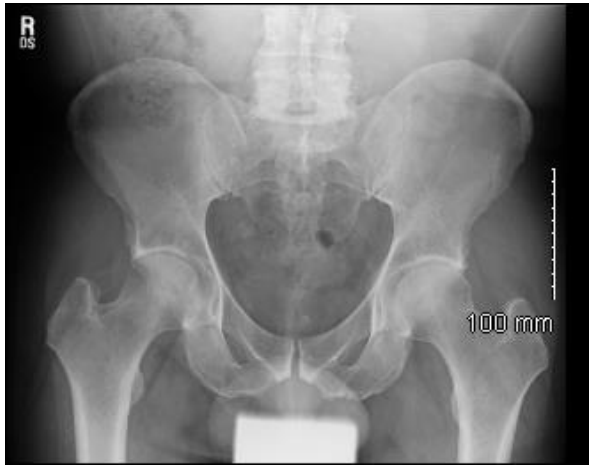




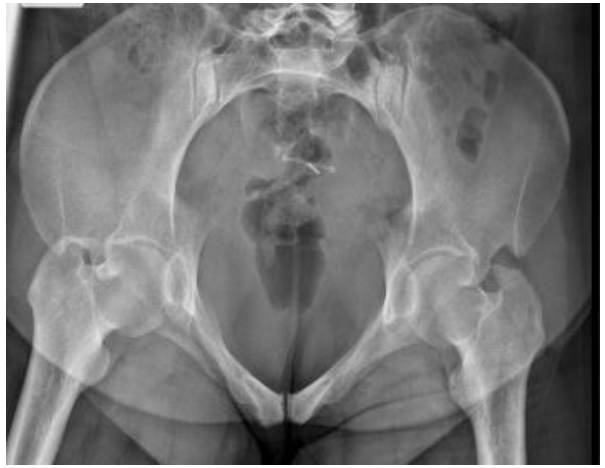
PELVIS for HIPS

* AP of the pelvis to include hips
* In injury cases, Inlet and Outlet views **upon request**
    - Inlet view – legs internally rotated 15-25˚, CR 25-40˚caudal to pelvic inlet
    - Outlet view – legs internally rotated 15-25˚, CR 20-35˚ cephalad for males, 30-45˚for females
* All views on 14 X 17 crosswise, Bucky

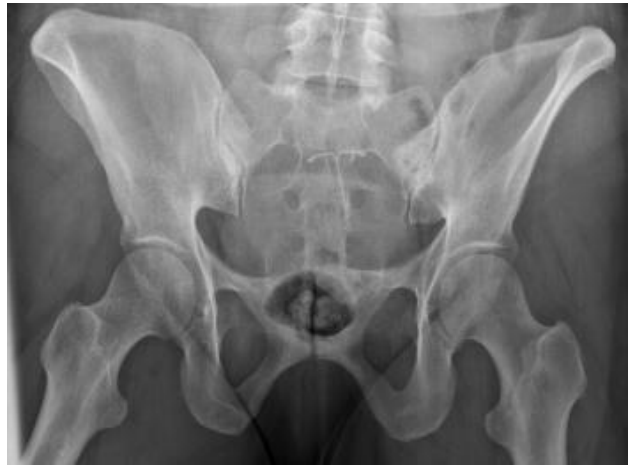
AP Pelvis



Inlet View

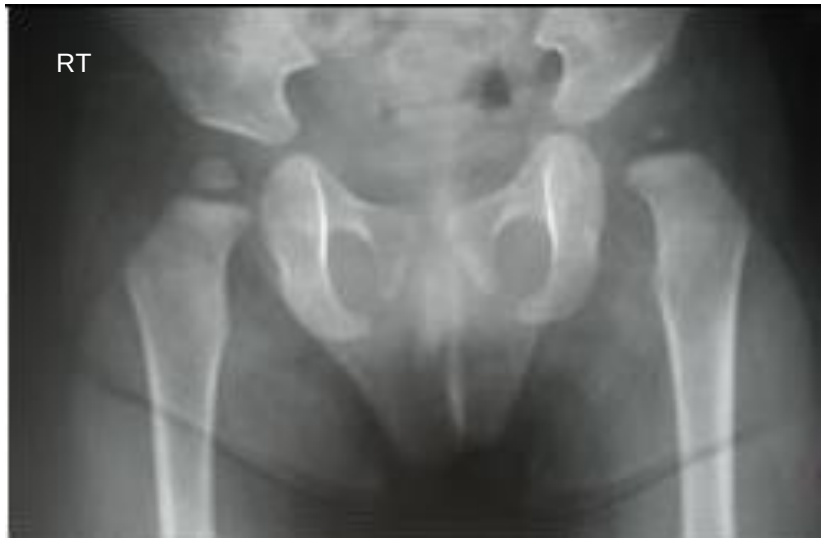


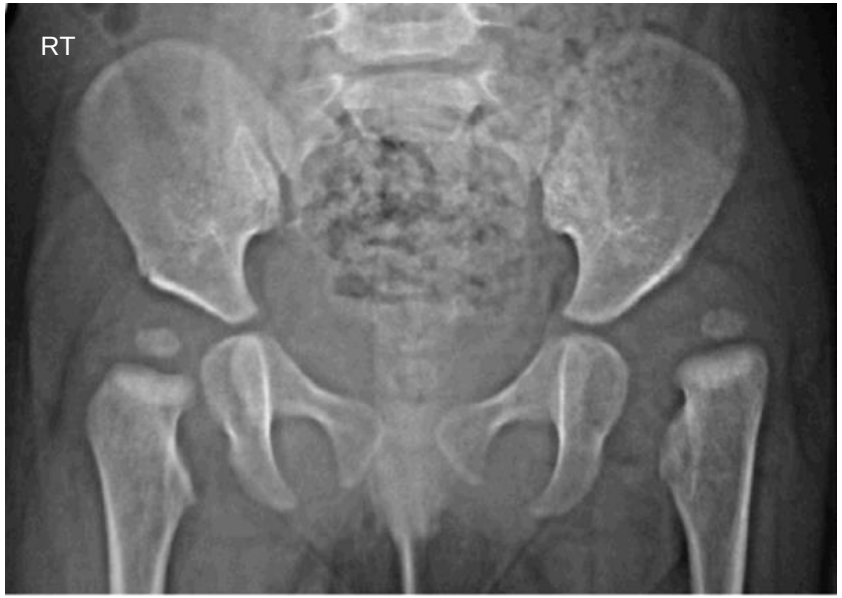
Outlet View



PELVIS FOR CONGENITAL HIP - under 2 years old

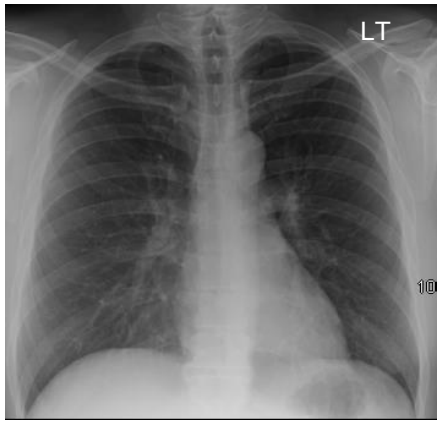
* AP and Von Rosen view (Von Rosen view - with legs fully extended & internally rotated abduct as much as possible from the medial plane
* Make sure to label Von Rosen view as such



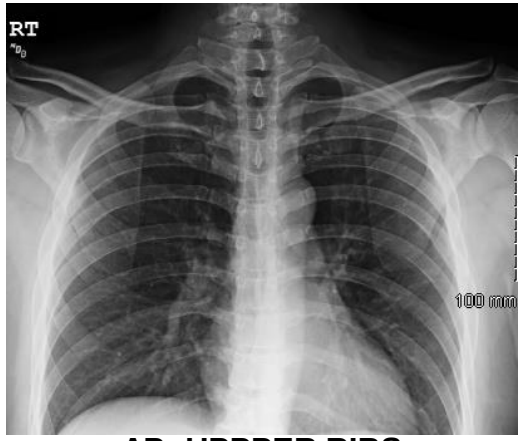


RIBS

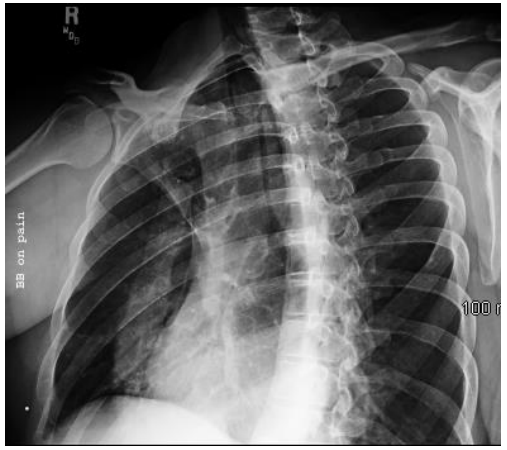
* PA Chest - no PA Chest if order specifically states “NO CHEST” or CPT 71100 and 71110
* If ordered with Chest 2vws, please completed Chest as a separate exam
* AP for ribs above the diaphragm on inspiration
*AP for ribs below the diaphragm using abdominal technique on expiration
•OK to collimate in on affected side for unilateral ribs
* OBLIQUE VIEWS either posterior or anterior view, affected side closest to the buckey
* BB on area of interest
    * By viewing all four views one should see all of the ribs



PA CHEST

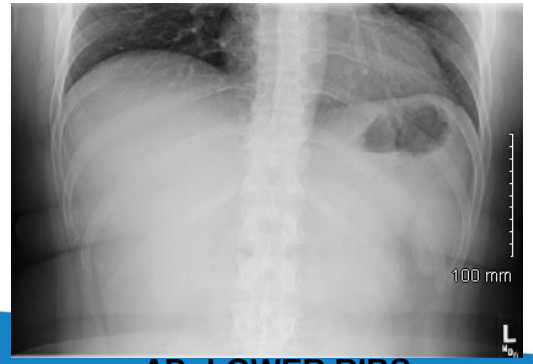


AP- UPPPER RIBS

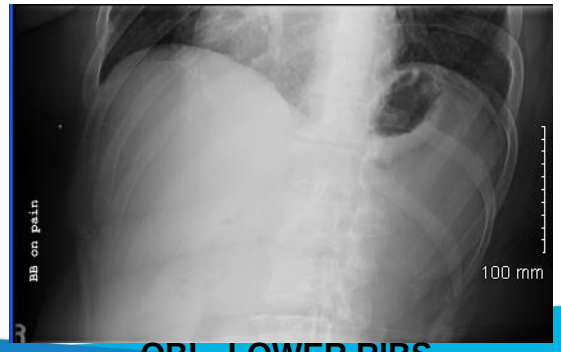


OBL- UPPPER RIBS

Expose on INSPIRATION



AP- LOWER RIBS

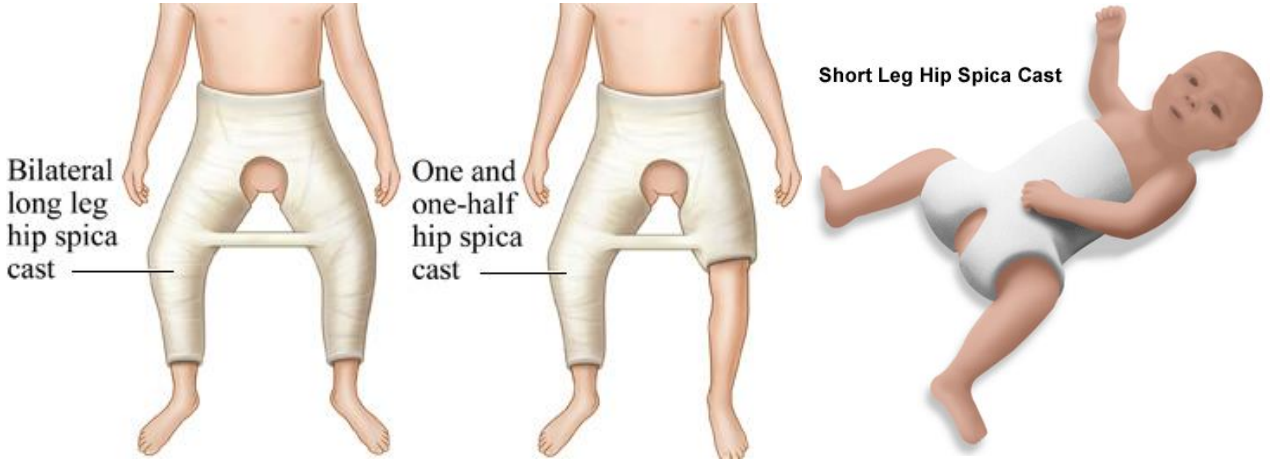


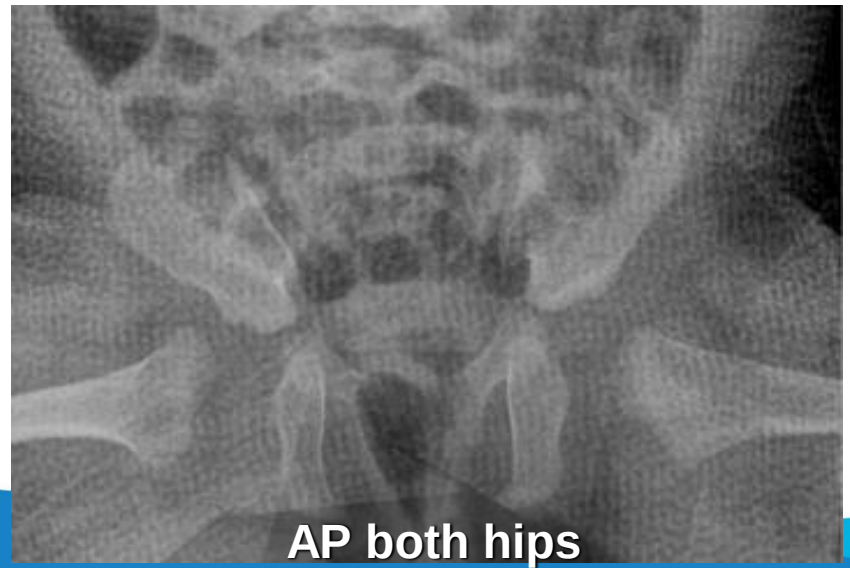
OBL- LOWER RIBS

Expose on EXPIRATION

SPICA CAST

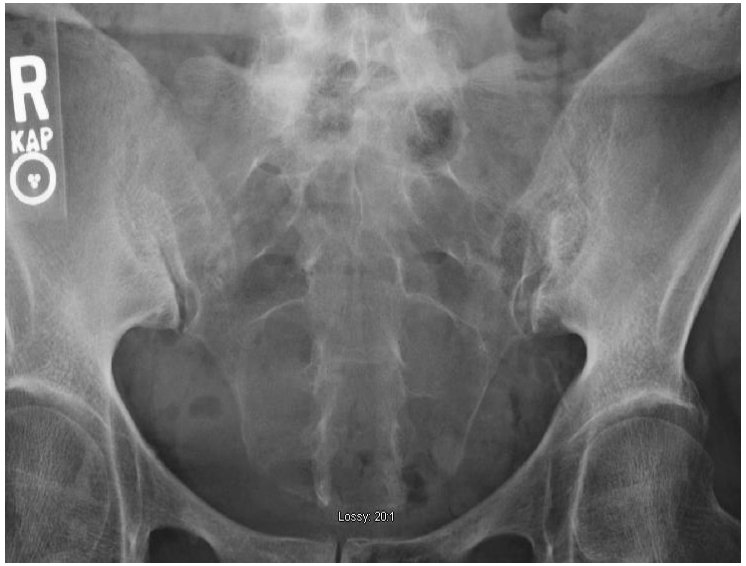
* AP of both hips
* AP with 35° cephalic angulation instead of the lateral

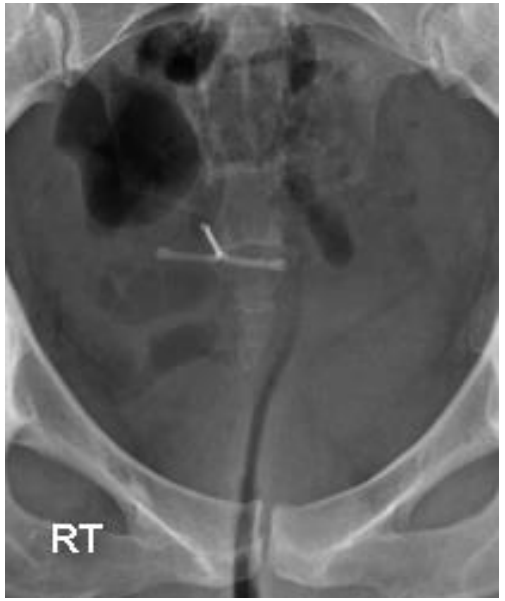


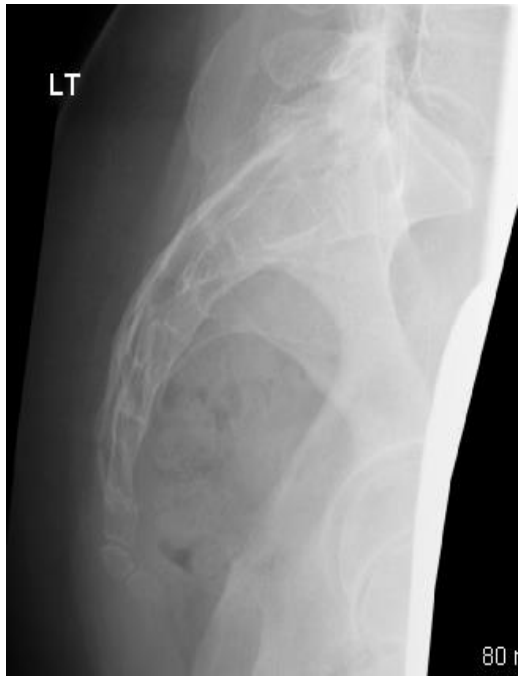

AP both hips

SACROCOCCYGEAL SPINE - sacrum and coccyx

* AP of sacrum & coccyx with a 15° cephalad angle
* AP of sacrum & coccyx with a 10° caudad angle
* Lateral of the sacrum & coccyx

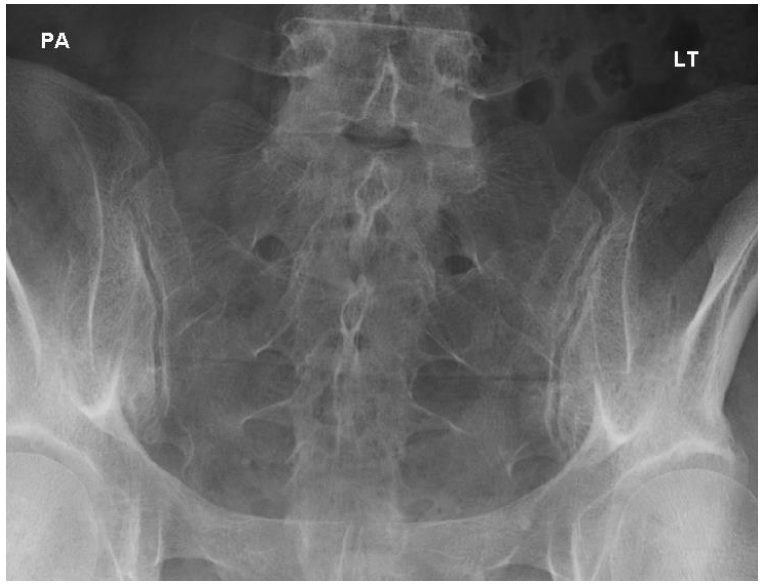


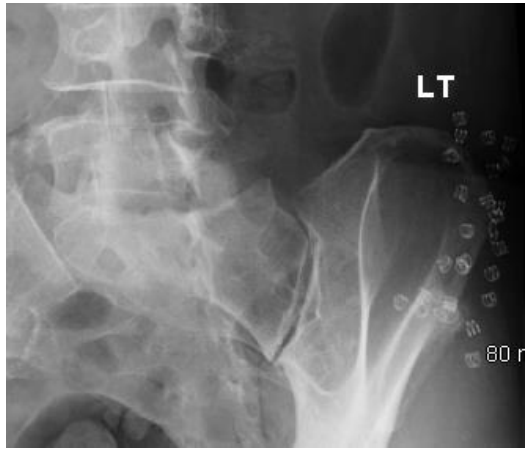




SACROILIAC JOINTS (3V)

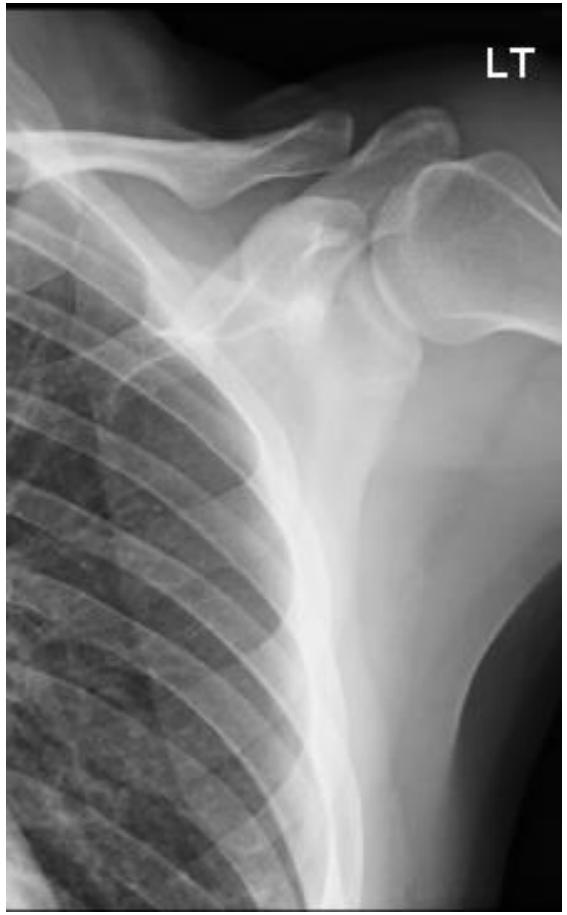
* AP with 30-35˚ cephalad angle central ray passing through sacroiliac joints
* Bilateral oblique views, rotate patient 25-35˚ from the table

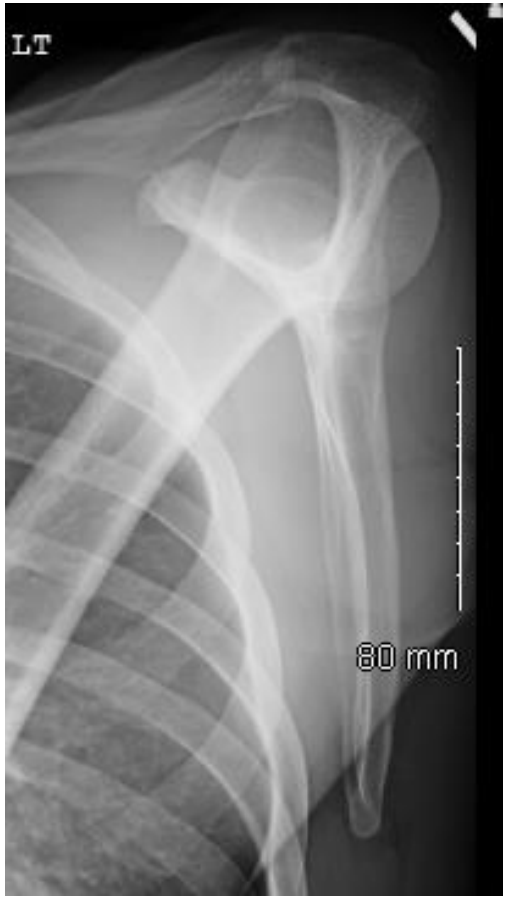




SCAPULA

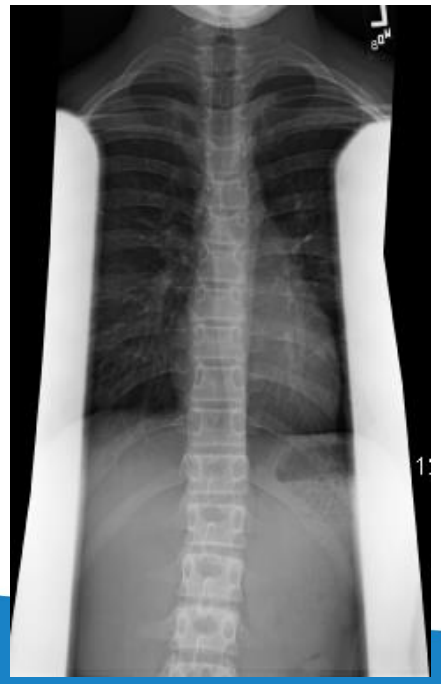
* AP with the arm out and up
* LATERAL (Tangential) with the scapula rotated laterally by moving the affected arm across the chest

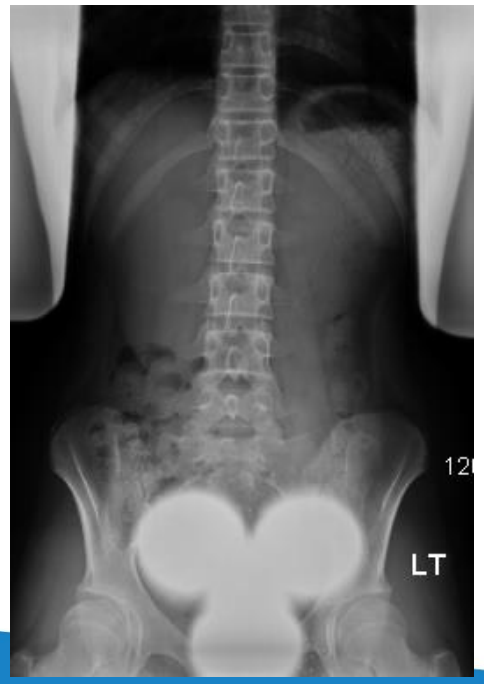




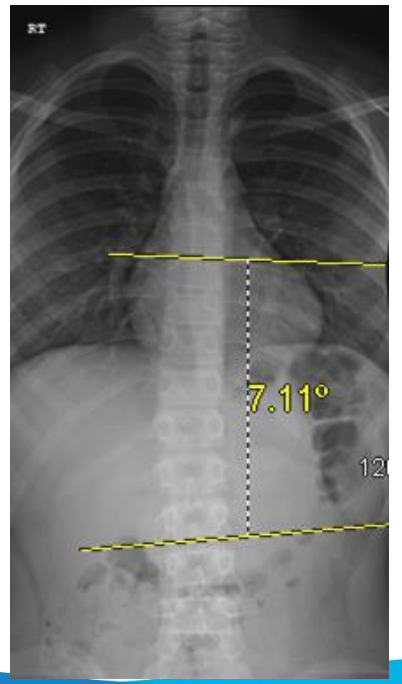
SCOLIOSIS SURVEY

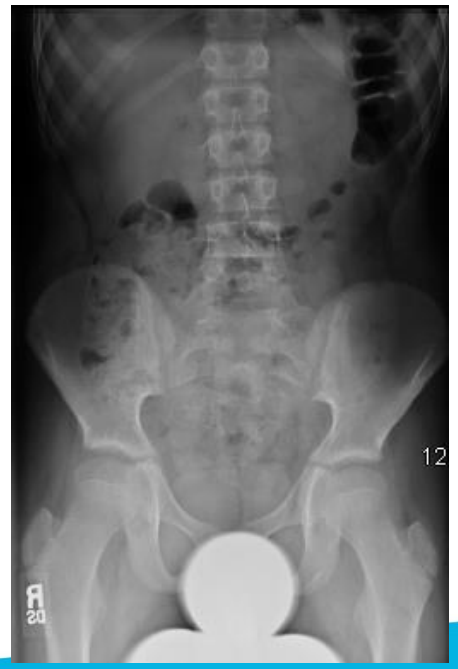
* **PA Erect of the entire spine**, ***including hips***
* 14 X 17 film lengthwise - a 14 X 36 film should be used if available in your department
* In-patients large enough to require 2 pieces of film, be sure image is **overlapped 3 to 4 inches** when possible & that the tube is not moved up or down between exposures
* Lower film should include from the greater trochanters up; the upper film from cervico-cranial junction down, or cervico-thoracic junction down, so there is sufficient overlap
* **Lateral Views** of entire spine necessary on patients w/ no prior scoliosis exams
* 72 inch distance preferred
* All patients to be shielded - Breast shields for females (if available) & gonadal shields for male & female





FEMALE

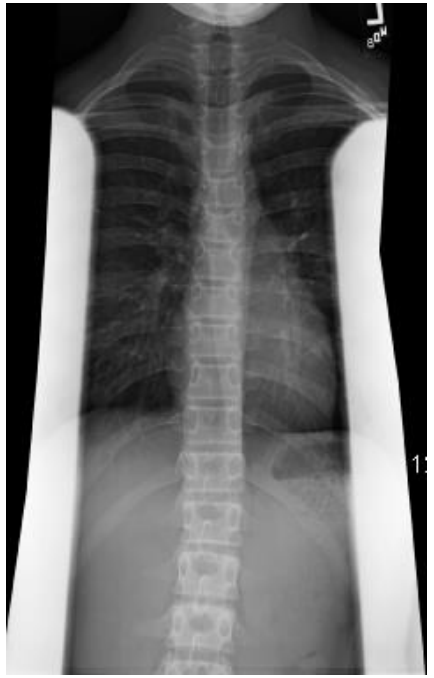


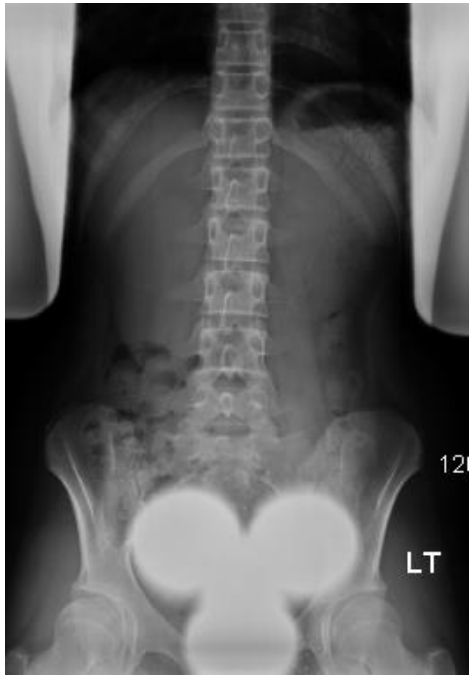


MALE

FOLLOW-UP SCOLIOSIS SURVEY

* Lateral collimation to the mid clavicular level (check previous films to avoid cutoff of curvature)
* Collimate bottom to exclude gonads.

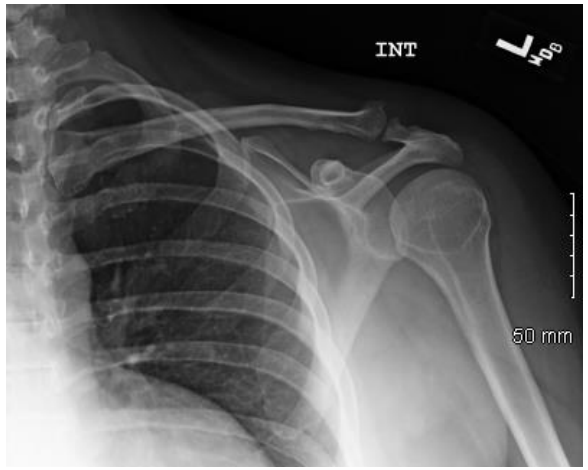


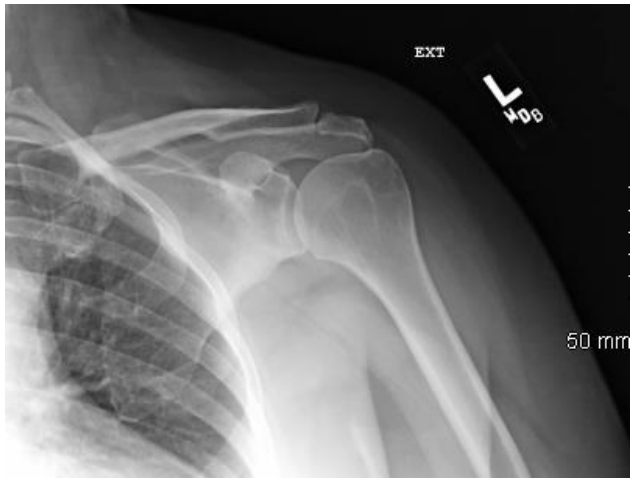


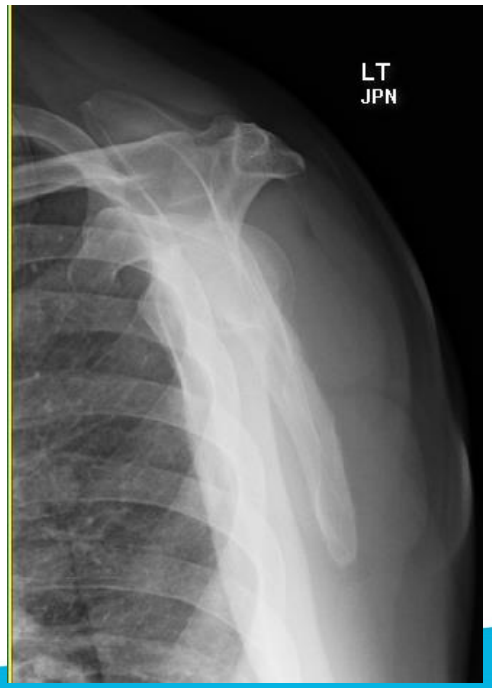
SHOULDER (3 views)

* AP Internal & External Rotation films with the scapula flat against the film so the glenoid is tangent to the central ray; if not possible, do neutral
* “Y” view (tangential)
* Views of the shoulder to include the proximal humerus, clavicle, scapula and sternoclavicular joint

(AC Separation- see ACROMIOCLAVICULAR JOINTS)

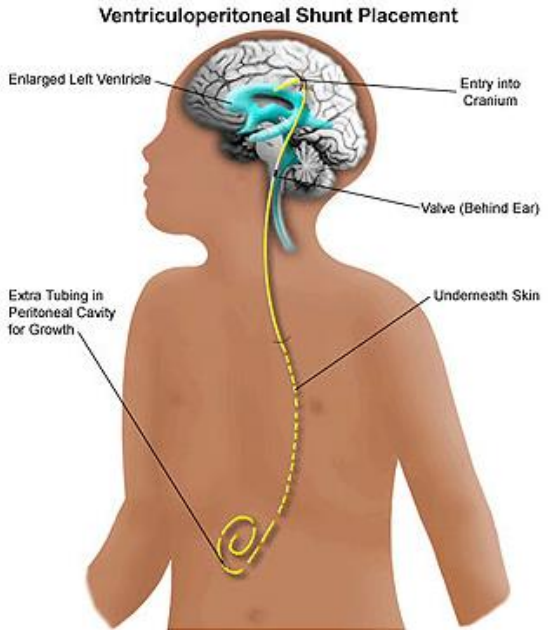


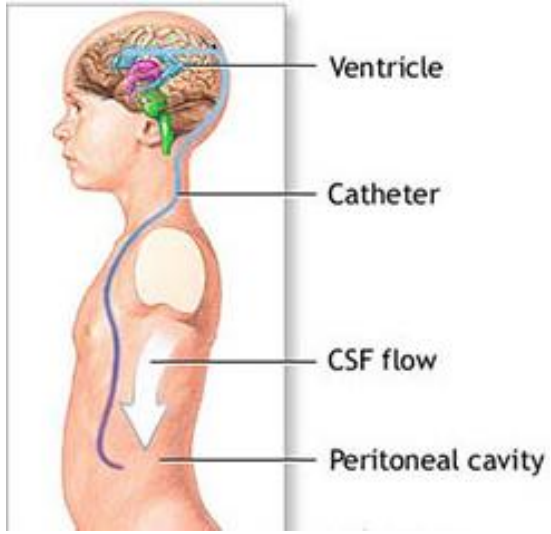




SHUNT Series

* AP – Skull, C-Spine, Chest and abdomen to include the symphysis pubis
* Lateral – Skull and C-Spine
* AP Views must include the entire shunt from the head to the pelvis
* Views should be combined when possible such as in an infant where the entire shunt can be included in 1 AP view & 1 Lateral view



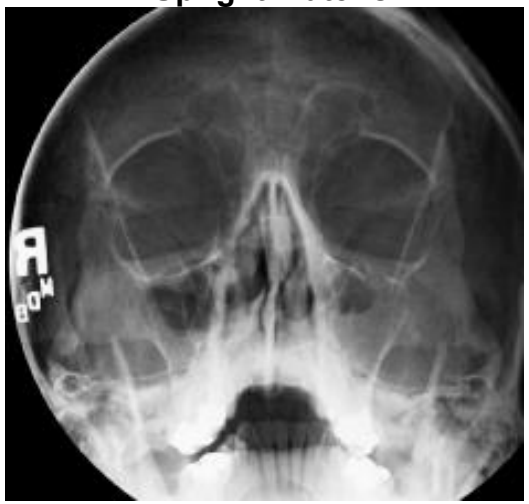


SINUSES - PARANASAL SINUSES

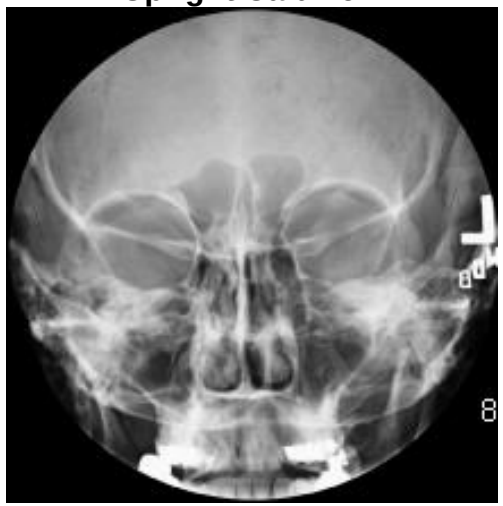
* Erect Water's with open mouth
* Erect Lateral
* Erect Caldwell

Children Under 2 years – Not recommended (consult PEDIATRIC Radiologist)
Children 2 – 13 years – Upright Water's View only unless otherwise requested
Children 13 years and older – standard views unless otherwise requested

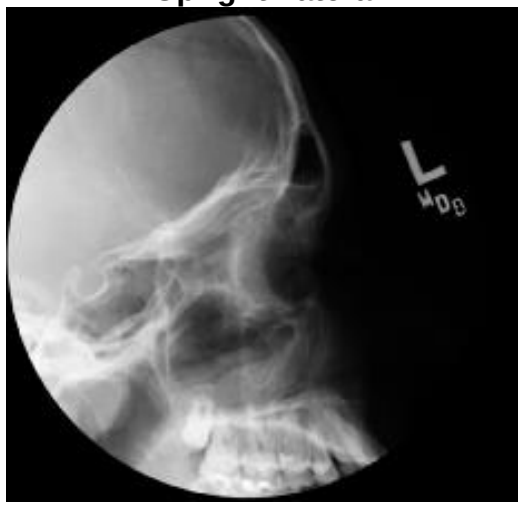
Upright Water's



Upright Caldwell

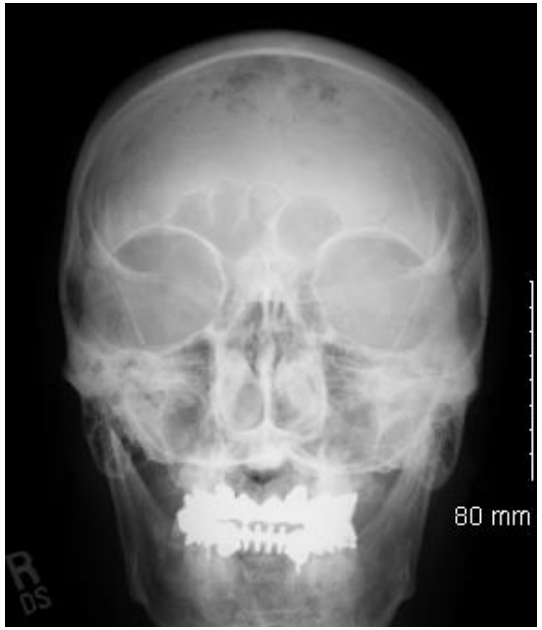


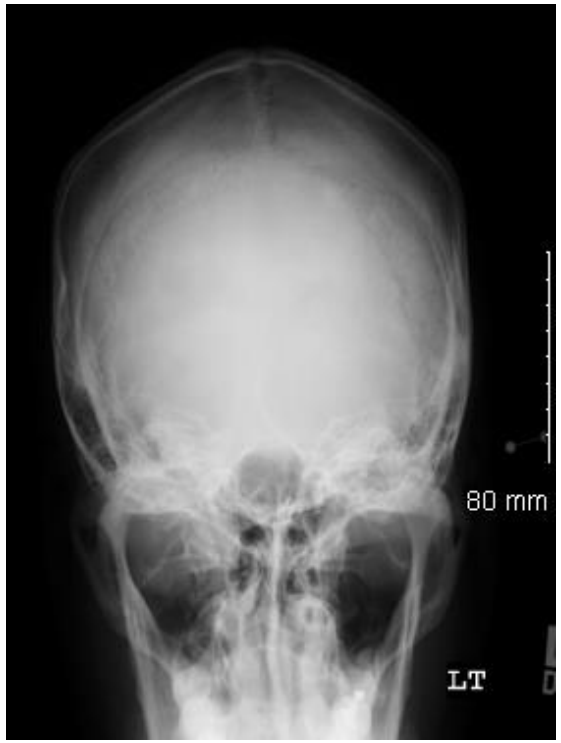
Upright Lateral

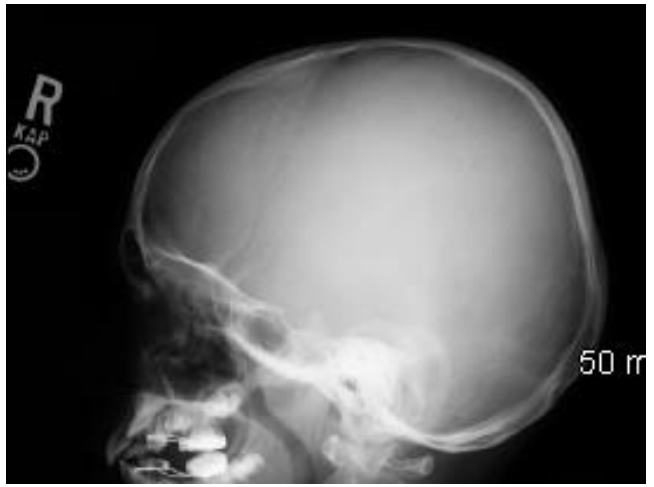


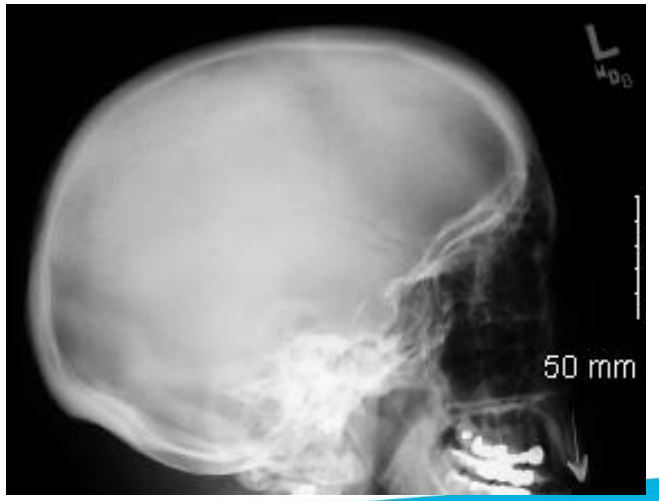
SKULL – routine, non-injury

* AP (or PA depending on patient's condition)
* Lateral of affected side
* Towne's View – CR Caudal angle 30˚ to OML





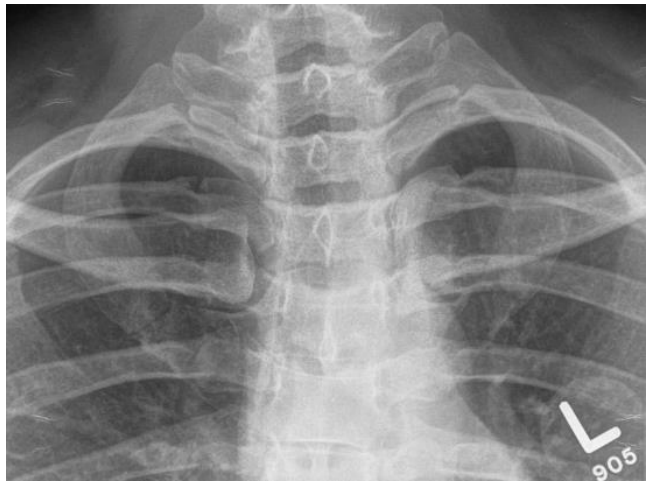


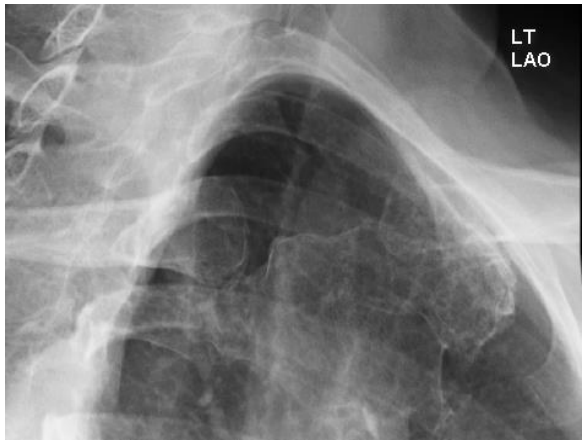


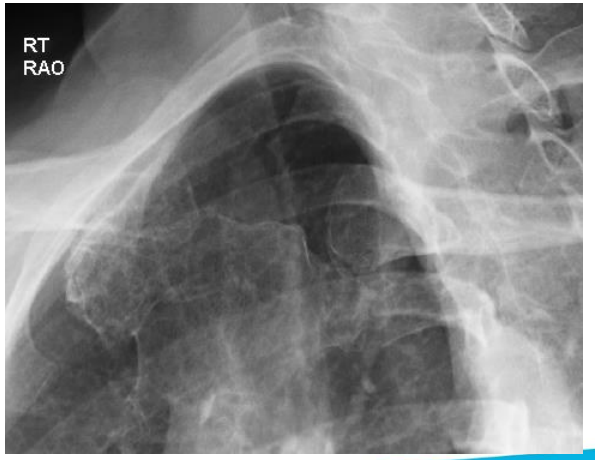
STERNOCLAVICULAR JOINTS

* PA View to include both joints
* Shallow RAO & LAO obliques. Oblique the patient just enough for both of the joints to clear the spine. Both joints on each film.

PA View



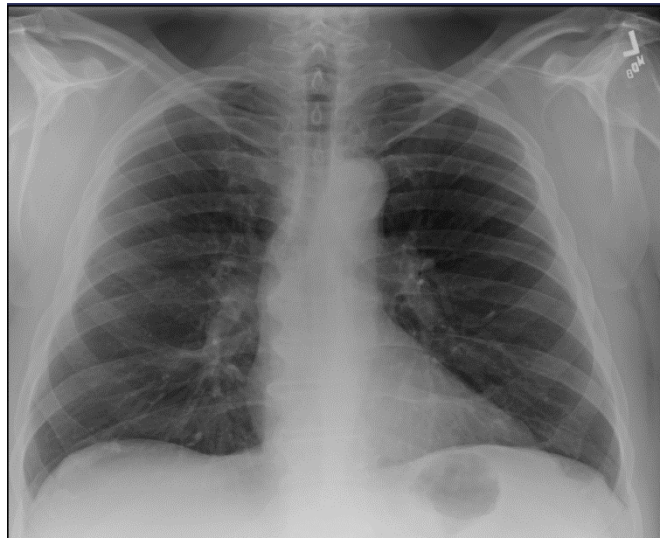




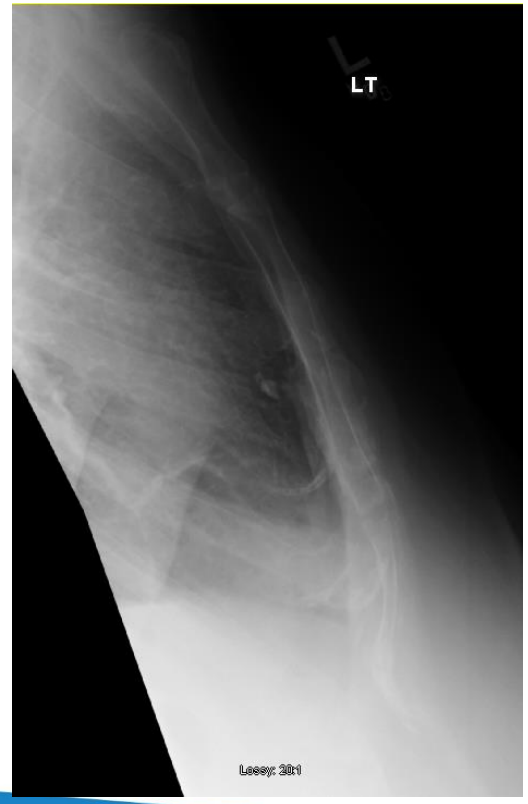
STERNUM

* PA Chest
* Lateral – Bucky
* RAO to throw the sternum into the heart shadow
* Optional view - LAO using a long exposure, short distance, quite breathing & Bucky

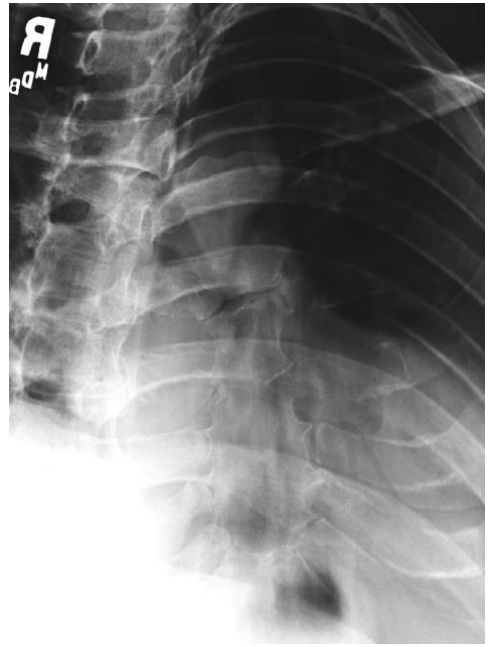
PA Chest



Lateral



RAO

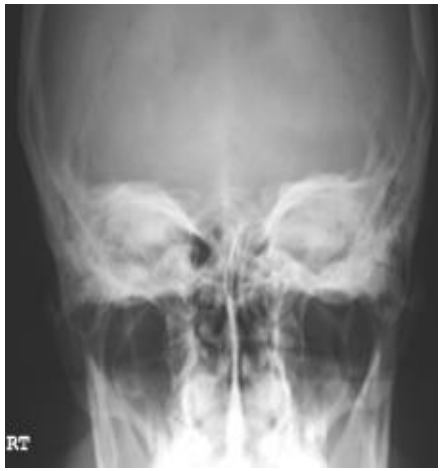


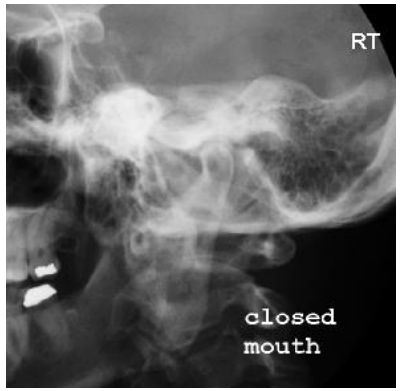
TEMPOROMANDIBULAR JOINTS

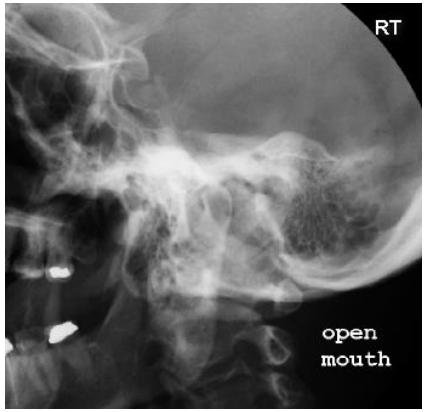
* Towne's view, centered for the mandibular condyle
* Lateral oblique views of each side with mouth open and closed

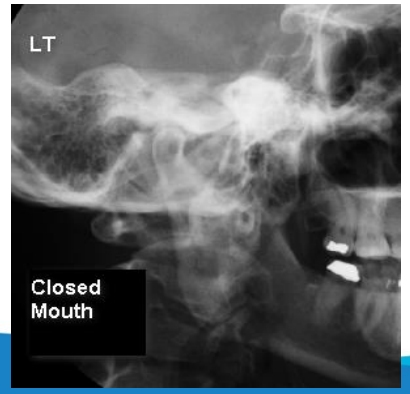
TOMOGRAPHY – optional examination

* If available, do bilateral lateral tomograms with mouth in open, neutral and clenched position





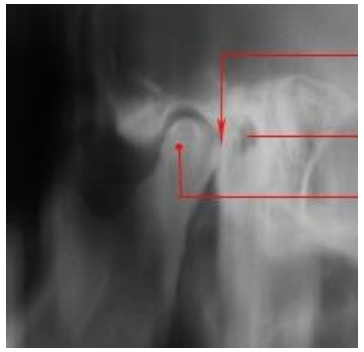


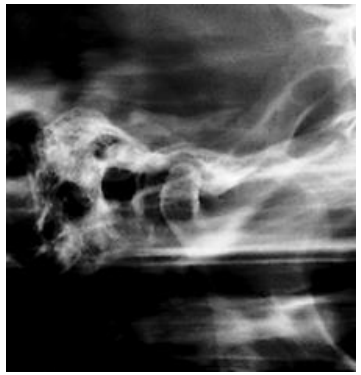


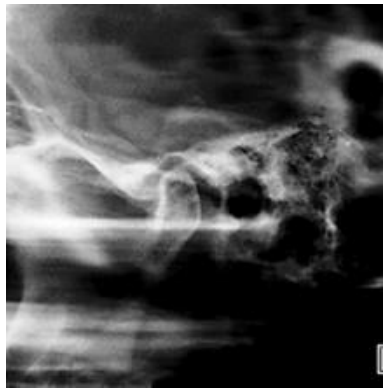
TMJ W/ TOMO(cont'd)

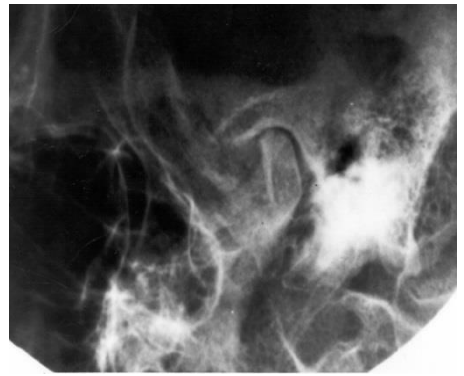
* Open & closed mouth views of each side with the head in a Law's position (15° & 15°)
* Submental vertical view
* All views done with extension cone

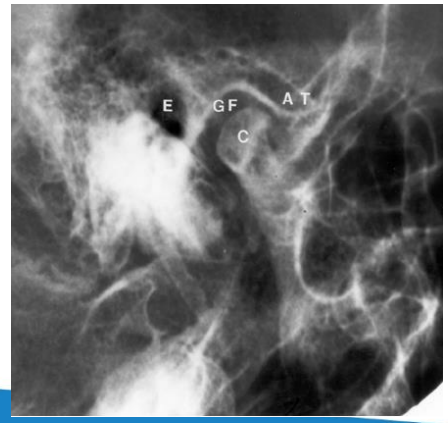
SEE MANDIBLE for optional view of the subcondylar portion of the mandible

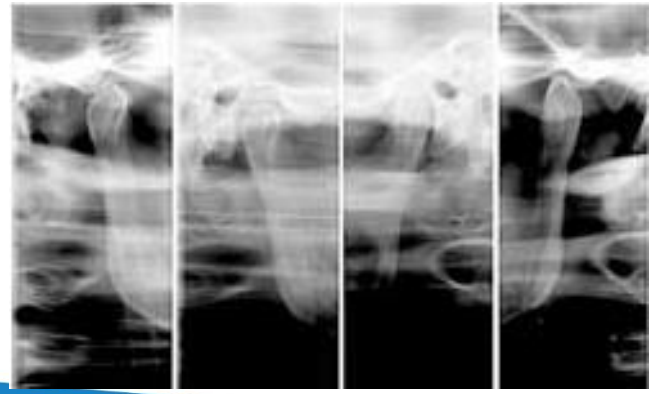


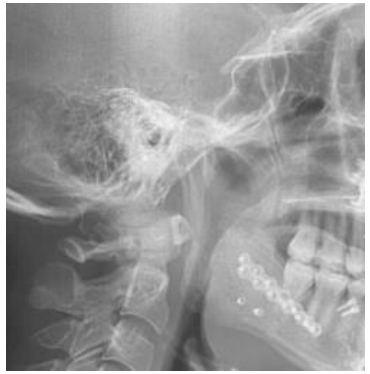






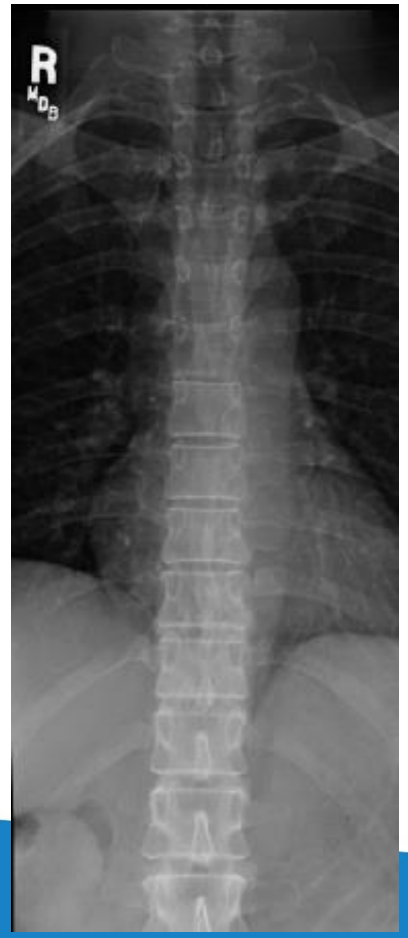


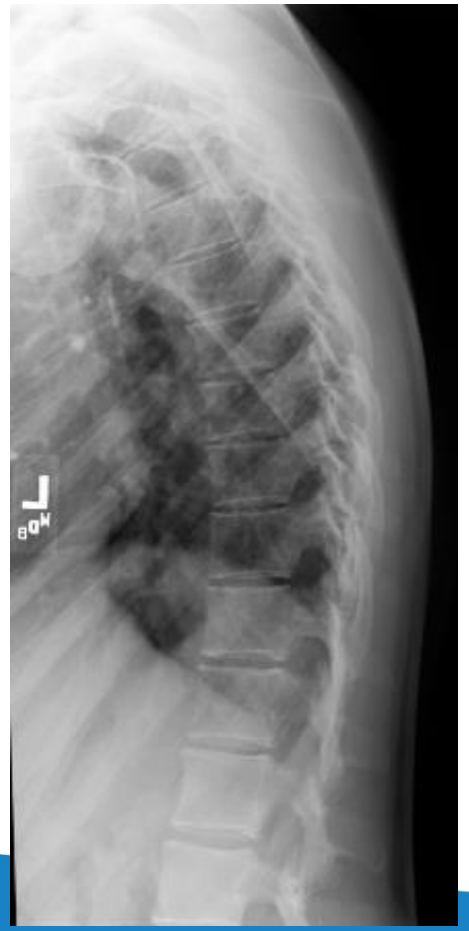


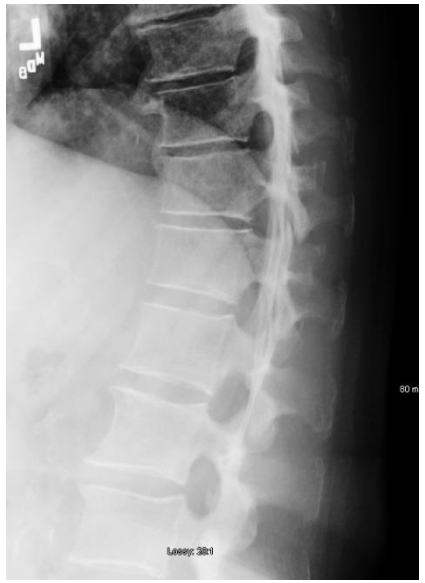


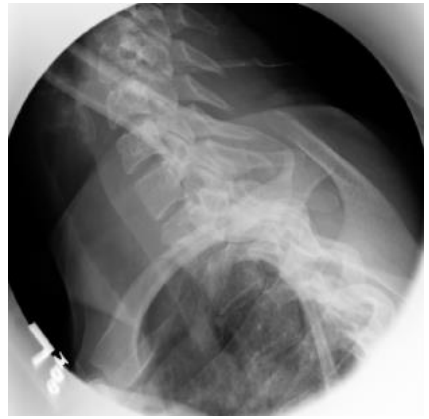
THORACIC SPINE

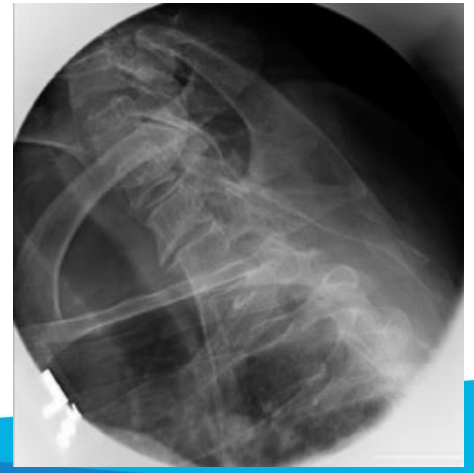
* Lateral, Bucky, 40” distance. Breathing lateral view is desirable, if possible
* AP Thoracic, Bucky
* Fletcher or Swimmer’s view, patient lateral with the down arm up and the up arm down for the thoracic inlet
* Thoracolumbar lateral, 10x12, Bucky centered to include T-9, on expiration







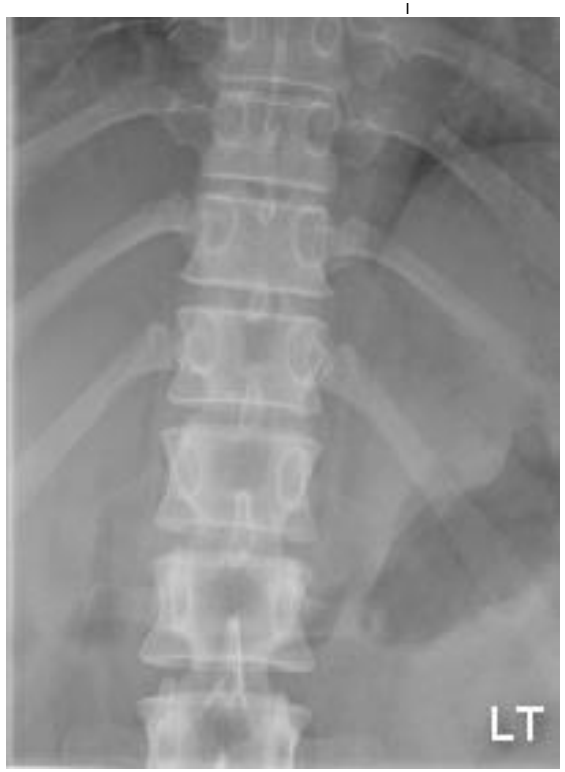


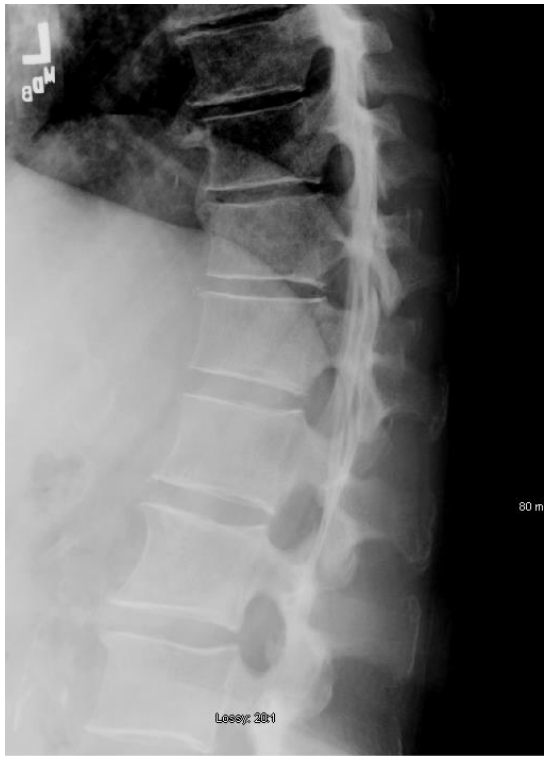


THORACO-LUMBAR SPINE

For examination specifically ordered as such with symptoms limited to Lower Thoracic-Upper Lumbar Thoracic-Lumbar Junction area

- AP and Lateral - 2 views - centered to the point of pain
  - T8 through L3-L4

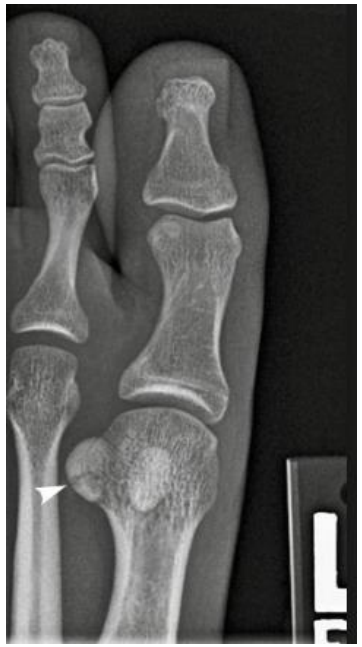


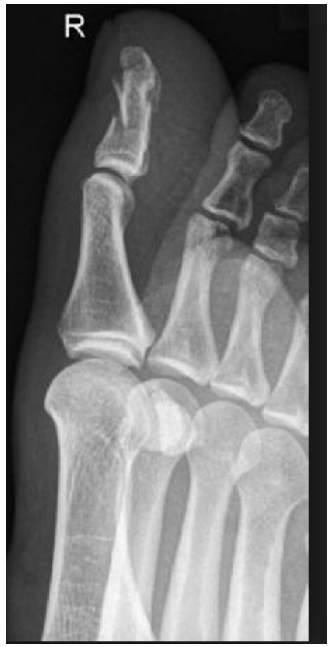


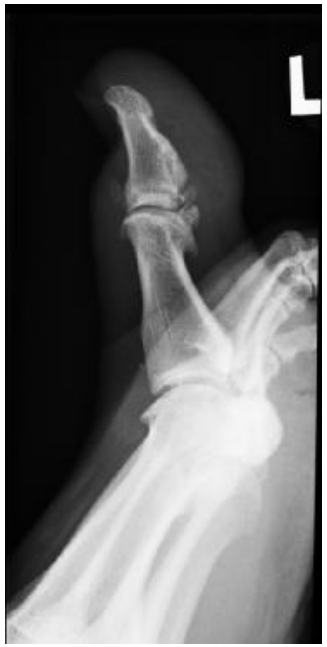
TOE

* AP and Oblique of affected toe(s)
* Lateral of affected toe.
* When imaging the lateral affected toe- try to separate as much as possible

PACS Presentation - Digits facing up – toward the top of the monitor





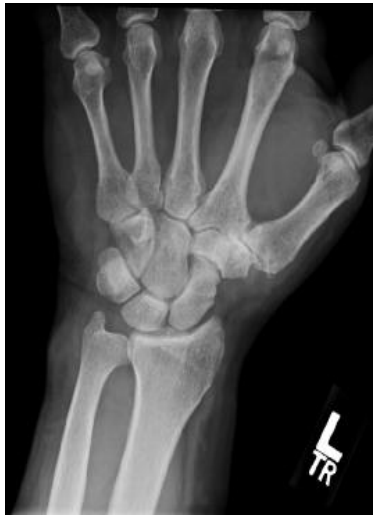


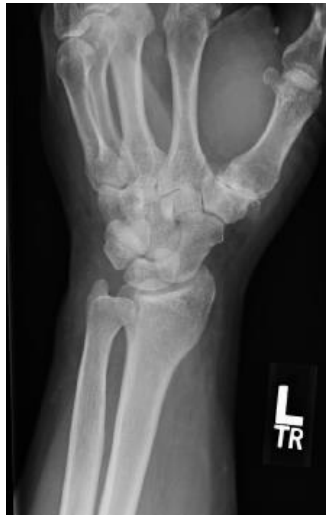
WRIST 3 views

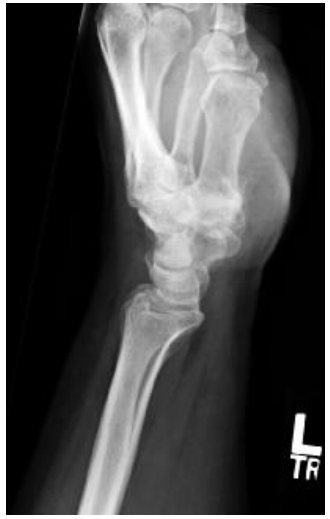
* PA, LATERAL, and OBLIQUE

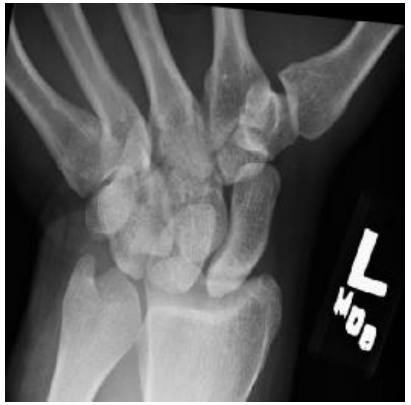
Injury Studies

* PA, LATERAL, OBLIQUE and SCAPHOID view(s)
* For re-checks of trauma, do PA and lateral only, centering to the site of injury
* If injury is to scaphoid, include SCAPHOID view(s)
* SCAPHOID view only on pediatric patients 12 years of age and old, and only if complaint of snuffbox pain.









PACS Presentation - Digits facing up toward the top of the monitor