


# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

**Topics**

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW



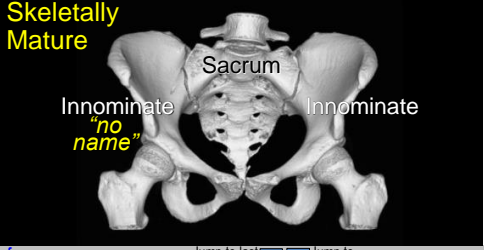
[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 1 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Bony Pelvis = 3 Bones**

**Skeletally Mature**



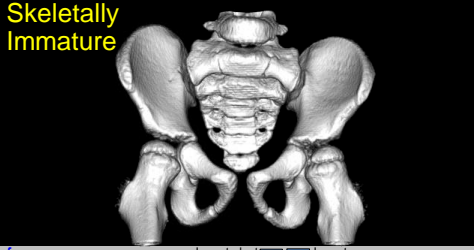
[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 2 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Innominate Bone = 3 Bones**

**Skeletally Immature**



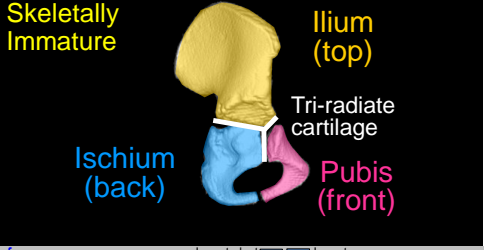
[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 3 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Innominate Bone = 3 Bones**

**Skeletally Immature**



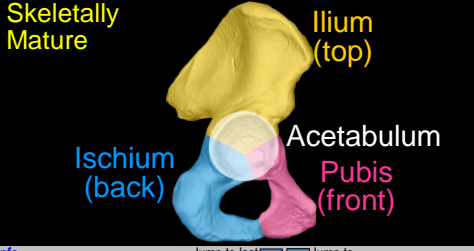
[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 4 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Innominate Bone = 3 Bones**

**Skeletally Mature**



[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 5 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

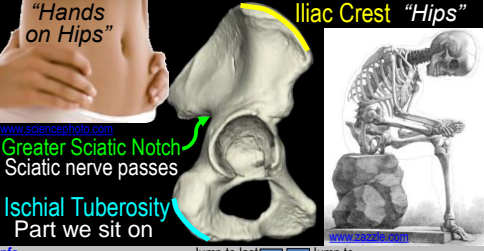
**Bony Pelvis: Landmarks**

**"Hands on Hips"**

**Iliac Crest "Hips"**

**Greater Sciatic Notch**  
Sciatic nerve passes

**Ischial Tuberosity**  
Part we sit on



[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 6 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

### Bony Pelvis: Attachments

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Abdominal Muscles:**  
 > Int/Ext Obliques  
 > Transversus

**Spine Muscles:**  
 > Quadratus Lumborum

**Hamstrings:**  
 > Semimembranosus  
 > Semitendinosus  
 > Biceps femoris

**Ischial Tuberosity Hamstring Origin**

**Iliac Crest**

**Anterior Superior Iliac Spine**

**Sartorius origin**

**Rectus femoris origin**

**Anterior Inferior Iliac Spine**

[www.schreibman.info](http://www.schreibman.info)  
 © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 7 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Bony Pelvis: Attachments

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Iliac Crest**

**ASIS Sartorius origin**

**AIIS Rectus femoris origin**

**Ischial Tuberosity Hamstring Origin**

[www.schreibman.info](http://www.schreibman.info)  
 © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 8 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Apophysis Avulsions

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Apophysis ≈ Epiphysis**

> Unfused end of the skeletally immature bone

**Muscle attachment to apophysis is stronger than the apophysis attachment to the rest of the bone**

**Iliac Crest Apophyses**

**Avulsion**

**Anterior Superior Iliac Spine Sartorius origin**

[www.schreibman.info](http://www.schreibman.info)  
 © 2011 Ken L. Schreibman, PhD/MD

K,C 16yoM

Jump to last slide viewed | Jump to next slide | Slide 9 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Apophysis Avulsions... Grow

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Avulsion**

**Anterior Inferior Iliac Spine**

**Rectus femoris origin**

**6 months later**

[www.schreibman.info](http://www.schreibman.info)  
 © 2011 Ken L. Schreibman, PhD/MD

R,S 17yoF

Jump to last slide viewed | Jump to next slide | Slide 10 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Apophysis Avulsions... Grow

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Old avulsions of... Ischial Tuberosities ... can resemble tumor!**

[www.schreibman.info](http://www.schreibman.info)  
 © 2011 Ken L. Schreibman, PhD/MD

M,L 85yoM

Jump to last slide viewed | Jump to next slide | Slide 11 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Pelvis Radiographs

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Lying on x-ray table**

> Not weight-bearing

> Unlike knees&feet which should be done standing

**Cassette slides into "Bucky Grid"**

> Minimize x-ray scatter

> Dr Gustav Bucky (9/3/1880-2/19/1963)

> 1913: Moving grid (Berlin)

**Marty age 15**

[www.schreibman.info](http://www.schreibman.info)  
 © 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 12 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

## What to Order When (WOW)

**Always start with radiographs**

- Trauma to bony pelvis (car collision)
  - 1) AP Pelvis
- Chronic hip pain (arthritis)
  - 1) AP Pelvis
  - 2) Additional hip view (frog leg lateral)
- Acute hip fracture (femoral neck fracture)
  - 1) AP Pelvis
  - 2) Additional hip view (cross-table lateral)
- Sacroiliac joint pain
  - 1) Single SI view (modified Ferguson view)

[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD  
 Jump to last slide viewed | Jump to next slide | Slide 13 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## AP Pelvis

**Anatomy**

- Radiographs
- CT Protocols
- Pelvic Ring Fx
  - AP Force
  - Lateral
  - Vertical
- Acetabular Fx
  - Walls
  - Columns
  - Letournel
  - Judet View
- WOW

[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD  
 B, A 16yoF | Jump to last slide viewed | Jump to next slide | Slide 14 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Frog Leg Lateral

**Anatomy**

- Radiographs
- CT Protocols
- Pelvic Ring Fx
  - AP Force
  - Lateral
  - Vertical
- Acetabular Fx
  - Walls
  - Columns
  - Letournel
  - Judet View
- WOW

[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD  
 B, A 16yoF | Jump to last slide viewed | Jump to next slide | Slide 15 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Working up Hip Pain

**Should order:**

- 1) AP pelvis (*both hips*)
- 2) Frog leg view of painful hip (or both hips)
  - ✓UW: "PELVIS w 1 HIP" = 2 charges = **\$283**
  - ✓UW: "PELVIS w BOTH HIPs" = 1 charge = **\$179**

**ACR Appropriateness Criteria®**

**Should NOT order:**

- AP view of just one hip without an AP pelvis
- ✓Often helpful to compare with asymptomatic side

[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD  
 Jump to last slide viewed | Jump to next slide | Slide 16 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## AP Pelvis shows more than AP Hip

**Anatomy**

- Radiographs
- CT Protocols
- Pelvic Ring Fx
  - AP Force
  - Lateral
  - Vertical
- Acetabular Fx
  - Walls
  - Columns
  - Letournel
  - Judet View
- WOW

**Paget Disease**

- Sclerosis involving entire L hemi-pelvis
- ✓Cortical thickening
- ✓Trabecular thickening

[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD  
 P, G 87yoM | Jump to last slide viewed | Jump to next slide | Slide 17 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## AP Pelvis shows more than AP Hip

**Anatomy**

- Radiographs
- CT Protocols
- Pelvic Ring Fx
  - AP Force
  - Lateral
  - Vertical
- Acetabular Fx
  - Walls
  - Columns
  - Letournel
  - Judet View
- WOW

**88yoM hip pain**

- Width of both hip joints is normal. (Good ROM for 88)
- Are there any other clues to the cause of his hip pain?
- **Severe DDD lower lumbar spine!**
- Lumbar nerve impingement can mimic hip pain**
- Consider getting lumbar radiographs to evaluate hip pain.

[www.schreibman.info](http://www.schreibman.info) © 2011 Ken L. Schreibman, PhD/MD  
 E, J 88yoM | Jump to last slide viewed | Jump to next slide | Slide 18 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

**Do we always need a 2<sup>nd</sup> view?**

**Basic concept in radiology:  
"One view equals no views"**

www.schreibman.info  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 19 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Value of the Frog Leg View**

**Frog leg view typically shows femoral head osteophytes earlier than AP view**

www.schreibman.info  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 20 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Value of the Frog Leg View**

**2 years later....**

www.schreibman.info  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 21 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**WOW: Hip Pain**

**Chronic Pain (arthritis)**

- 1) AP Pelvis (to include BOTH hips)
- 2) Frog leg view of painful hip (or both hips)
  - > Consider L-spine radiographs (AP & Lateral)

**Acute Pain (hip fracture)**

- 1) AP Pelvis (to include BOTH hips)
  - > Don't want a frog leg view
    - ✓ Don't want patient to abduct thigh and risk dislocating the fracture
- 2) Instead: "Cross-Table Lateral View"

www.schreibman.info  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 22 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Cross-Table Lateral Hip**

www.schreibman.info  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 23 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Views of the Hip**

www.schreibman.info  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed | Jump to next slide | Slide 24 of 90



# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

## Femoral Neck Fractures

**These are surgical emergencies**  
**Should be repaired within hours**  
**Otherwise femoral head will die (AVN)**  
**Best outcome if NON-DISPLACED**

- Non-displaced femoral neck fractures:  
 Repaired with "Percutaneous Pinning"

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

## Repairing Femoral Neck Fractures

**Normal side**      **Non-displaced Femoral neck fx**      **Percutaneous Pinning**

**Post Operative**

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

## Repairing Femoral Neck Fractures

**DISPLACED Femoral neck fx**

**Hip Prosthesis**

**Post Operative**

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

## Femoral Neck Fractures

**Need to be repaired**  
**Otherwise femoral head will die (AVN)**  
**Best outcome if NON-DISPLACED**

- Non-displaced femoral neck fractures:  
 Repaired with "Percutaneous Pinning"
- Displaced femoral neck fractures:  
 Repaired with Hip Prosthesis
- Don't want to miss non-displaced fractures...  
*But non-displaced fractures hard to see...  
 Particularly osteoporotic, post-menopausal*

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

## Subtle Femoral Neck Fracture?

**68 yo F, 9 months later**

- Fell on L hip, has new acute pain
- Walks into clinic a few days later...
- Surgeon: Not convinced
- How can we prove it?

**MRI!**

**AP pelvis**      **AP L Hip**

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

## MRI Does Not Miss Fractures!

**Coronal T1 (Fat is bright)**

- Normal fatty yellow marrow
- Neck Fx!
- Black line
- High-Res T2-FatSat (Fluid is bright)
- Marrow Edema

**Coronal STIR (Fluid is bright)**

**AP L Hip**

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD


# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11


### Percutaneous Pinning

Anatomy

- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW



Slides Lag Screws  
over K-wires



Post-op AP L Hip

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD P,M 68yoF Jump to last slide viewed Jump to next slide Slide 31 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### WOW: Hip Pain

Anatomy

- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Acute Pain (hip fracture)**

- 1) AP Pelvis (to include BOTH hips)
  - Don't want frog leg view
    - ✓ Don't want patient to abduct thigh and risk dislocating the fracture
  - 2) Instead: "Cross-Table Lateral View"

**If radiographs are negative and there is still a concern for a hip fracture:**

- Get MRI Bony Pelvis (attn: symptomatic hip)
- ✓ TODAY! (Send patient to ER if necessary)

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 32 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### WOW: Pelvic Joint Pain

Anatomy

- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

**Chronic Pain (arthritis)**

- 1) AP Pelvis (to include BOTH hips)
- 2) Frog leg view of painful hip (or both hips)
  - Consider L-spine radiographs (AP & Lateral)

**Acute Pain (hip fracture)**

- 1) AP Pelvis (to include BOTH hips)
- 2) Cross-Table lateral view of painful hip
  - Consider MRI Bony Pelvis for occult fracture

**Sacroiliac Joint Pain**

- Single SI view (Modified Ferguson view)


www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 33 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Sacroiliac Joints

Anatomy

- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW



To see the SI joints in their entirety, need to either: rotate pelvis, or x-ray beam... or both.

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 34 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### SI Joint View (Modified Ferguson)

Anatomy

- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW



X-RAYS

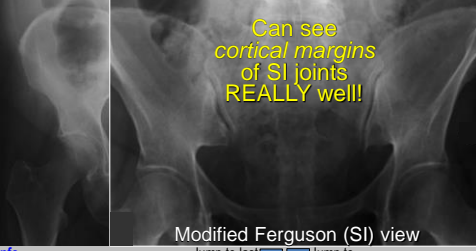
www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 35 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### SI Joint View (Modified Ferguson)

Anatomy

- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW



Can see cortical margins of SI joints REALLY well!

Modified Ferguson (SI) view

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Z,M 66yoF Jump to last slide viewed Jump to next slide Slide 36 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

## WOW: SI Joints

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

### Start with Radiographs

- Modified Ferguson (single view)
  - ✓ We don't recommend bilateral oblique views

To see the SI joints in more detail, need to use cross-sectional imaging

- MRI (pre & post intravenous contrast)
  - ✓ We have a special protocol for SI joints
  - ✓ Good for seeing inflammation/synovitis
- ...or CT (without contrast)
  - ✓ Good for seeing cortex/erosions

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 37 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## CT Protocol: Bony Pelvis

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 38 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## UW Bone CT Protocol Sheets

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 39 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## www.radiology.wisc.edu

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 40 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## www.radiology.wisc.edu

- CT Protocol Sheets
- MRI Protocol Sheets
- WOW

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 41 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## UW 2-Page CT Protocol Sheets

- Anatomy
- Radiographs
- CT Protocols
- Pelvic Ring Fx
- AP Force
- Lateral
- Vertical
- Acetabular Fx
- Walls
- Columns
- Letournel
- Judet View
- WOW

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 42 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

## Bony Pelvis Reformatting

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

**Reformat Techniques**

- Depend upon body part
- Depend upon injury
- For pelvic ring fractures:
  - Reformat in 3 planes (Relative to anatomy)
- For acetabular fractures:
  - Add simulated Judet views
- For sacral fxs, SI joints:
  - Oblique coronal & axial (Relative to sacrum)

1. Single Plane Reformatting

2. Multiple Plane Reformatting

3. Multiple Plane Reformatting

4. Multiple Plane Reformatting

5. Multiple Plane Reformatting

6. Multiple Plane Reformatting

7. Multiple Plane Reformatting

8. Multiple Plane Reformatting

9. Multiple Plane Reformatting

10. Multiple Plane Reformatting

11. Multiple Plane Reformatting

12. Multiple Plane Reformatting

13. Multiple Plane Reformatting

14. Multiple Plane Reformatting

15. Multiple Plane Reformatting

16. Multiple Plane Reformatting

17. Multiple Plane Reformatting

18. Multiple Plane Reformatting

19. Multiple Plane Reformatting

20. Multiple Plane Reformatting

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 43 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Pelvic Ring

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

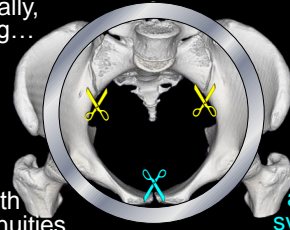
Columns

Letournel

Judet View

WOW

Structurally, solid ring...



...but with discontinuities

at both SI joints

at pubic symphysis

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 44 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Pelvic Fractures = Serious Trauma

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

**Pelvic ring is a strong structure.**

**Pelvic ring fractures means patient has experienced **SERIOUS** trauma.**

- High speed car crash

**Concern for life threatening injuries.**

- Aorta, major artery rupture

**Can hemorrhage large volume of blood internally within the pelvis.**

- All pelvic fractures go to CT to assess soft tissue injury & fracture pattern.

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 45 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## ER: First 2 Trauma Radiographs

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls


Columns

Letournel

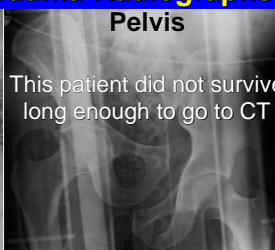
Judet View

WOW

**Chest**



**Pelvis**



This patient did not survive long enough to go to CT

[www.schreibman.info](http://www.schreibman.info) S,J 36yoM Jump to last slide viewed Jump to next slide Slide 46 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Pelvic Ring: Model

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls


Columns

Letournel

Judet View

WOW

When a ring breaks... it breaks in at least 2 places



Posterior

Anterior

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 47 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## AP Compressive Force

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

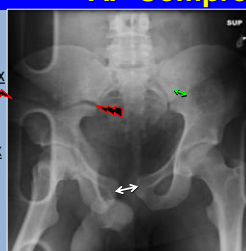
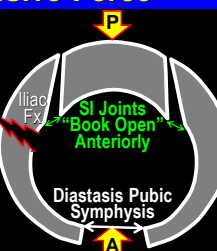
Walls

Columns

Letournel

Judet View

WOW

Iliac Fx

SI Joints "Book Open" Anteriorly

Diastasis Pubic Symphysis

[www.schreibman.info](http://www.schreibman.info) B,B 22yoM Jump to last slide viewed Jump to next slide Slide 48 of 90



# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

**AP Compressive Force**

Anatomy Radiographs CT Protocols Pelvic Ring Fx  
 ● AP Force  
 ○ Lateral Vertical  
 Acetabular Fx Walls Columns Letournel Judet View WOW

Axial CT Posterior

Iliac fracture SI diastasis  
 Soft tissue injury Bladder rupture  
 Pubic Symphysis Diastasis Extravasated Contrast

Iliac Fx SI Joints "Book Open" Anteriorly  
 Diastasis Pubic Symphysis

www.schreibman.info B,B 22yoM Jump to last slide viewed Jump to next slide Slide 49 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**AP Compressive Force**

Anatomy Radiographs CT Protocols Pelvic Ring Fx  
 ● AP Force  
 ○ Lateral Vertical  
 Acetabular Fx Walls Columns Letournel Judet View WOW

3D CT

Iliac fracture Excreted Contrast Urinary Bladder SI diastasis  
 SI Joints "Book Open" Anteriorly  
 Diastasis Pubic Symphysis  
 Extravasated Contrast from Bladder Rupture  
 Pubic diastasis

www.schreibman.info B,B 22yoM Jump to last slide viewed Jump to next slide Slide 50 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**AP Compressive Force**

Anatomy Radiographs CT Protocols Pelvic Ring Fx  
 ● AP Force  
 ○ Lateral Vertical  
 Acetabular Fx Walls Columns Letournel Judet View WOW

Post-Op

Iliac Fx SI Joints "Book Open" Anteriorly  
 Diastasis Pubic Symphysis

www.schreibman.info B,B 22yoM Jump to last slide viewed Jump to next slide Slide 51 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Lateral Compressive Force**

Anatomy Radiographs CT Protocols Pelvic Ring Fx  
 ● AP Force  
 ○ Lateral Vertical  
 Acetabular Fx Walls Columns Letournel Judet View WOW

T-bone collision

SI "Book open" Posteriorly  
 Sacral Impaction Fractures  
 Pubic Compression Fractures

www.schreibman.info B,B 22yoM Jump to last slide viewed Jump to next slide Slide 52 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Lateral Compressive Force**

Anatomy Radiographs CT Protocols Pelvic Ring Fx  
 ● AP Force  
 ○ Lateral Vertical  
 Acetabular Fx Walls Columns Letournel Judet View WOW

These lateral force compression fractures are harder to see on radiographs than the distracted fractures from AP pelvic forces

SI "Book open" Posteriorly  
 Sacral Impaction Fractures  
 Pubic Compression Fractures

www.schreibman.info L,C 54yoF Jump to last slide viewed Jump to next slide Slide 53 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

**Lateral Compressive Force**

Anatomy Radiographs CT Protocols Pelvic Ring Fx  
 ● AP Force  
 ○ Lateral Vertical  
 Acetabular Fx Walls Columns Letournel Judet View WOW

Axial CT Posterior

SI "Book open" Posteriorly  
 Sacral Impaction Fractures  
 Pubic Compression Fractures

Anterior

www.schreibman.info L,C 54yoF Jump to last slide viewed Jump to next slide Slide 54 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

### Lateral Compressive Force

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**Windswept** Lat

Sacral Impaction Fracture  
SI "Books open" Posteriorly  
SI "Books open" Anteriorly

[www.schreibman.info](http://www.schreibman.info) F,S 24yoM Jump to last slide viewed Jump to next slide Slide 55 of 90  
© 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

### Vertical Shear Force

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**VERTICAL**

**SHEAR**

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 56 of 90  
© 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

### Vertical Shear Force

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**VERTICAL**

**SHEAR**

[www.schreibman.info](http://www.schreibman.info) S,J 47yoF Jump to last slide viewed Jump to next slide Slide 57 of 90  
© 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

### Vertical Shear Force

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**VERTICAL**

**SHEAR**

This patient did not survive long enough to go to CT

[www.schreibman.info](http://www.schreibman.info) S,J 36yoM Jump to last slide viewed Jump to next slide Slide 58 of 90  
© 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

### Acetabulum

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**Skeletally Mature**

Ilium (top)  
Ischium (back)  
Acetabulum  
Pubis (front)

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 59 of 90  
© 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

### Acetabulum: Cup

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

Latin *acētābulum, vinegar cup*, from *acētum, vinegar*

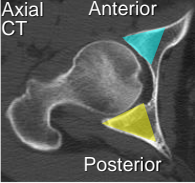
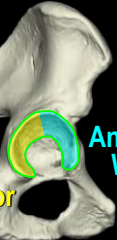
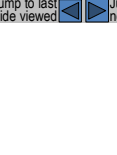
In ancient dining, an acetabulum was a vinegar cup, which, from the fondness of the Greeks and Romans for vinegar, was always placed on the table at meals to dip the food in before eating it. The vessel was wide and open above.

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 60 of 90  
© 2011 Ken L. Schreibman, PhD/MD [intorbust.com](http://intorbust.com) [wikipedia.org](http://wikipedia.org)

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

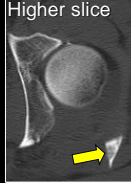
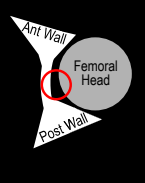
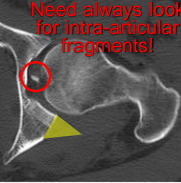
### Acetabulum: Walls

Anatomy Radiographs CT Protocols Pelvic Ring Fx AP Force Lateral Vertical Acetabular Fx ● Walls Columns Letournel Judet View WOW	Axial CT 	Anterior  Anterior Wall  Posterior Wall
--	---	---

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 61 of 90  
 © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11


### Posterior Wall Fracture

Anatomy Radiographs CT Protocols Pelvic Ring Fx AP Force Lateral Vertical Acetabular Fx ● Walls Columns Letournel Judet View WOW	Higher slice 	Ant Wall Femoral Head Post Wall 	Need always look for intra-articular fragments! 
--	---	--	--

[www.schreibman.info](http://www.schreibman.info) F,S 42yoM Jump to last slide viewed Jump to next slide Slide 62 of 90  
 © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11



### Hip Dislocations

Anatomy Radiographs CT Protocols Pelvic Ring Fx AP Force Lateral Vertical Acetabular Fx ● Walls Columns Letournel Judet View WOW	Femoral head dislocates <b>posteriorly</b> much more commonly than anteriorly. > Dislocates Superior as well as Posterior > Need to be relocated in less than 6 hours Posterior wall fractures are much more common than anterior wall.	
--	--	--

[www.schreibman.info](http://www.schreibman.info) S,B 25yoM Jump to last slide viewed Jump to next slide Slide 63 of 90  
 © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

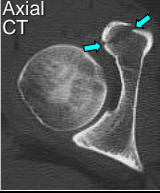
### Hip Dislocations

Anatomy Radiographs CT Protocols Pelvic Ring Fx AP Force Lateral Vertical Acetabular Fx ● Walls Columns Letournel Judet View WOW	Axial CT 	Anterior Posterior Intact Post Wall Fractured Post Wall Impaction preventing reduction Right Sagittal Reformat Left Sagittal Reformat	
--	--	---	--

[www.schreibman.info](http://www.schreibman.info) S,B 25yoM Jump to last slide viewed Jump to next slide Slide 64 of 90  
 © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

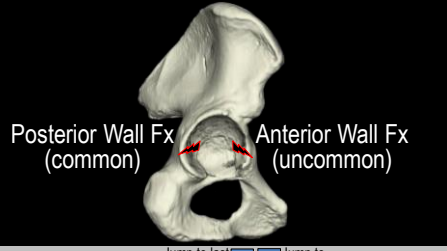
### Anterior Wall Fracture

Anatomy Radiographs CT Protocols Pelvic Ring Fx AP Force Lateral Vertical Acetabular Fx ● Walls Columns Letournel Judet View WOW	Axial CT 	Femoral head dislocates <b>anteriorly</b> much less commonly than posteriorly. Anterior wall fractures are much less common than posterior wall.
--	---	---

[www.schreibman.info](http://www.schreibman.info) H,B 41yoM Jump to last slide viewed Jump to next slide Slide 65 of 90  
 © 2011 Ken L. Schreibman, PhD/MD

Bony Pelvis Trauma WOW conference: 10/8/11

### Acetabulum: Walls

Anatomy Radiographs CT Protocols Pelvic Ring Fx AP Force Lateral Vertical Acetabular Fx ● Walls Columns Letournel Judet View WOW	
--	--

[www.schreibman.info](http://www.schreibman.info) Jump to last slide viewed Jump to next slide Slide 66 of 90  
 © 2011 Ken L. Schreibman, PhD/MD

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

### Acetabulum: Columns

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

Anterior Column  
(Ilium + Pubis)

(Ischium up to the  
Greater Sciatic Notch)

Posterior Column

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 67 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Column Fractures

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

Posterior Column Fx

BOTH Column Fx  
(most common acetabular fx)

Anterior Column Fx

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 68 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Posterior Column Fracture

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

GSN Fx

Femur Fx

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD S,D 60yoM Jump to last slide viewed Jump to next slide Slide 69 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Anterior Column Fracture

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD G,D 66yoM Jump to last slide viewed Jump to next slide Slide 70 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Both Column Fracture

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

Anterior Column Fracture

Posterior Column Fracture

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD T,S 32yoM Jump to last slide viewed Jump to next slide Slide 71 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Letournel Classification

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

Elementary Fractures			Combined Fractures		
Posterior Wall	Posterior Column	Transverse	Both Column	Posterior Wall + Posterior Column	Transverse + Posterior Wall
Anterior Wall	Anterior Column			Anterior with Posterior Heml Transverse	T-Shaped

3 of these > 70% Acetabular Fractures

emedicine.medscape.com

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Figures from HSS J 2006 Sept; 2(2):161-171 Jump to last slide viewed Jump to next slide Slide 72 of 90



# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

## Wall vs Column Fractures

Posterior  
Column Fx

BOTH  
Column Fx

Anterior  
Column Fx

All Column Fractures Involve Obturator Ring

[www.schreibman.info](http://www.schreibman.info)  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed

Jump to next slide

Slide 73 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Judet Views

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**The Journal of Bone and Joint Surgery**

American Volume DECEMBER 1961

VOLUME 46-A, No. 8

**Fractures of the Acetabulum: Classification and Surgical Approaches for Open Reduction**

BY PROFESSOR ROBERT JUDET\*, DR. JEAN JUDET\*, AND DR. E. LETOURNEL†.

It appears that frequency of fractures of the acetabulum is increasing with the number of automobiles on our roads. In the past ten years, several important studies concerning this subject were published, notably those of Cauchoix and Truchet, Knight and Smith, Stewart and Milford, and Waller.

Since 1954, we have paid particular attention to the study of closed treatment of the acetabulum. Because we were so disappointed with the results of closed treatment of these fractures, we decided to try open reduction. Our series includes 173 patients.

[www.schreibman.info](http://www.schreibman.info)  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed

Jump to next slide

Slide 74 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Judet Views

Fig. 1-A: Medial (right) and lateral (left) views of the columns

[www.schreibman.info](http://www.schreibman.info)  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed

Jump to next slide

Slide 75 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Judet Views

[www.schreibman.info](http://www.schreibman.info)  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed

Jump to next slide

Slide 76 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## Radiographic Positioning

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

[www.schreibman.info](http://www.schreibman.info)  
© 2011 Ken L. Schreibman, PhD/MD

Jump to last slide viewed

Jump to next slide

Slide 77 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## What to call these views?

Iliac oblique view, R hip

Iliac oblique view, L hip

AP view

Obturator oblique view, L hip

[www.schreibman.info](http://www.schreibman.info)  
© 2011 Ken L. Schreibman, PhD/MD

5,B 25yoM

Jump to last slide viewed

Jump to next slide

Slide 78 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

## Should we get Judet in ER?

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

☺ **Surgeons like them**

- Want them to compare with future outpatient Judet views

⊗ **Difficult to get in the ER**

- May not want to roll patients with Fxs
- Portables never come out very well

➔ **All these patients go to CT**

- Reformat CT data into simulated Judet
- Directly at the CT scanner

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 79 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## CT Judet Views: Examples

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

CT Judet Views

5, B 25yoM

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 80 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## CT Judet Views: Examples

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

Iliac oblique view, R hip

G,D 66yoM

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 81 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## How to make CT Judet (GE)

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

**Judet Views (For EVERY case with ACETABULUM FRACTURE!)**

To reformat Judet views on GE CT scanner:

- 1) Move reference to femoral head on Oblique viewport
- 2) Adjust Slice Thickness (middle mouse button) ~60mm
- 3) Change "MIP" to "Average" (right mouse button)
- 4) Set Window=1500, Level=300
- 5) Hide Annotations (right mouse button)
- 6) Click "Rotate/Translate" button; set to 45 degrees
- 7) Click ← to "Rotate to Left"
- 8) Save Image (right mouse button)
- 9) Click → TWICE to rotate to center, then to right
- 10) Save this image as well.

Repeat steps 7-10 for other hip. **Send the 4 images.**

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 82 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## How to make CT Judet (GE)

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

**Standard Reformats:**

- Axials (off coronal)
- Coronals (off axial)
- 3mm thick

**CT-Judet Reformats:**

- Work off "oblique" viewport

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 83 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

## How to make CT Judet (GE)

Anatomy

Radiographs

CT Protocols

Pelvic Ring Fx

AP Force

Lateral

Vertical

Acetabular Fx

Walls

Columns

Letournel

Judet View

WOW

- 1) Move reference to femoral head on Oblique viewport
- 2) Adjust Slice Thickness (middle mouse button) ~ 60mm
- 3) Change "MIP" to "Average" (right mouse button)

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Jump to last slide viewed Jump to next slide Slide 84 of 90

# What to Order When: (WOW) Bony Pelvis

Bony Pelvis Trauma WOW conference: 10/8/11

### How to make CT Judet (GE)

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

- 4) Window=1500  
Level=300
- 5) Hide Annotations (right mouse button)

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Slide 85 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### How to make CT Judet (GE)

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

- 6) Click "Rotate/Translate" button
- > Set to 45 degrees
- 7) Click ← to rotate to the left
- 8) Save image (right mouse button)

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Slide 86 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### How to make CT Judet (GE)

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

- 9) Click → TWICE
  - > Once to rotate back to center
  - > Again to rotate to the right
- 10) Save this image as well

Repeat steps 7-10 for the other hip

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Slide 87 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### What to Order When: Pelvis

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**ER: Acute pelvic trauma (MVC)**

- > Radiographs: Chest & pelvis (to start...)
- > CT: Evaluate extent of pelvic fractures
  - ✓ Surgeons like: Reformats (2D, 3D, CT Judet)

**Followup radiographs: Access healing**

- > Acetabular fractures: AP pelvis, Judet views
- > Pelvic ring: AP pelvis, inlet/outlet views

**Coccyx Fractures?**

- ⊗ Radiographs are notoriously insensitive... 🐼
- > Physical exam... MRI if *really* necessary

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Slide 88 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### What to Order When: Hip

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

**Chronic hip pain (arthritis)**

- 1) AP Pelvis (to include BOTH hips)
- 2) Frog leg view of painful hip (or both hips)
  - > Consider L-spine radiographs (AP & Lateral)

**Acute hip pain (femoral neck fracture)**

- 1) AP Pelvis (to include BOTH hips)
- 2) Cross-Table lateral view of painful hip
  - > Consider MRI Bony Pelvis for occult fracture

**Sacroiliac joint pain**

- > Single SI view (Modified Ferguson view)

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Slide 89 of 90

Bony Pelvis Trauma WOW conference: 10/8/11

### Occult Hip Fracture

Anatomy  
Radiographs  
CT Protocols  
Pelvic Ring Fx  
AP Force  
Lateral  
Vertical  
Acetabular Fx  
Walls  
Columns  
Letournel  
Judet View  
WOW

www.schreibman.info © 2011 Ken L. Schreibman, PhD/MD Slide 90 of 90