

## Pelvic Ring Injuries



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### Scenario



5 pm  
Saturday afternoon  
Call goes out for a MCC on US Route 65  
26 y.o male rider lying on highway  
50 feet from his motorcycle

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### Scenario

32 year old male wearing helmet and protective gear.  
Conscious  
Confused  
Slightly Tachypneic  
Tachycardiac  
BP: 90/50  
Palpable radial pulse  
No blood at the scene  
Complains of low back and 'hip' pain



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### Next Steps

Large bore IV placed  
Transport to the nearest level one trauma center  
BP responds transiently to 1L Crystalloid  
117/70, then down to 80/60 with HR: 110  
What Next?

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### Which Way?



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### Next Steps

- Administer Crystalloid  
→ Patient does not respond
- Initiate MTP  
→ Transient response
- ATLS protocol  
No xrays  
→ Patient sent to CT scanner

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### Rapid Response in CT Scanner

- Blood pressures drop further, patient becomes tachycardic to 150s and is un responsive.

### AP pelvis

AP pelvis xray would have demonstrated this injury



### Pelvic Ring Disruption

- Marker for severe injury
- Overall mortality 6-10%
- Life threatening



### Magnitude of Forces

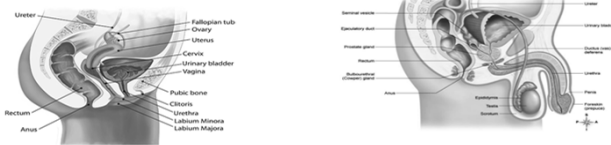
- ACL injury 500-1000N



- LC-I pelvic fracture 6000-9000N

### Pelvis Anatomy

- Pelvis protects many important structures
- Visceral anatomy at risk for injury



### Pelvic Ring Disruption

- Significant force sustained
- Hemorrhage
  - Primary cause of early death
  - Many large blood vessels within the pelvis
- VENOUS
- ARTERIAL
- OSSEOUS



## Initial Management of Pelvic Ring Injury

- Airway maintenance with cervical spine protection
- Breathing and ventilation
- Circulation with hemorrhage control
- Disability: Neurologic status
- Exposure/environment control: undress patient but prevent hypothermia

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## Patient Assessment

1. Neurovascular assessment of BLE
2. Skin inspection- evaluate for open wounds
3. Inspect flank and perineum for contusions/ecchymosis
4. Evaluate for urogenital injuries  
Scrotal edema, blood at urethral meatus or vaginal canal
5. Rectal exam to rule out open communication of rectal mucosa with fracture

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## Back to our Scenario: Which Way?



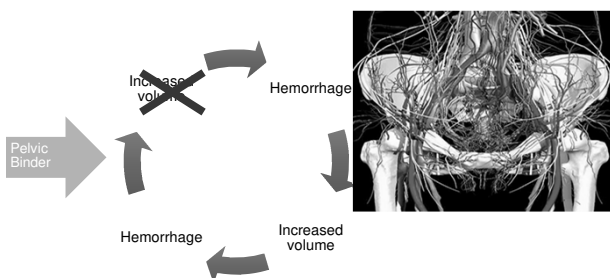
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## Initial Management of Pelvic Ring Injury

- IV access
- Fluid Resuscitation
- Application of pelvic binder
- Xray AP Pelvis

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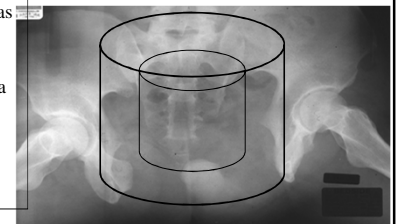
## Pelvic Binder



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## Pelvic Ring Injuries

Hemorrhage fills the true pelvis as there is no longer a constraint which allows **tamponade**.  
The volume best represented by a hemi-elliptical sphere



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### Pelvic Binder



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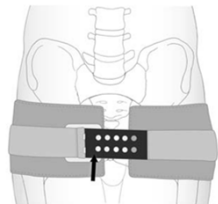
### Circumferential Sheet



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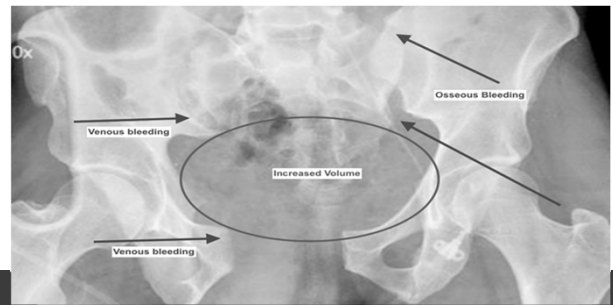
### Binder: Appropriate Placement

- Centered over the Greater Trochanters
- Internally rotate legs at the knees



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### “Open Book”



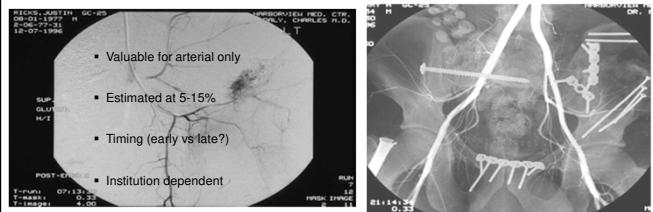
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### After Pelvic Binder



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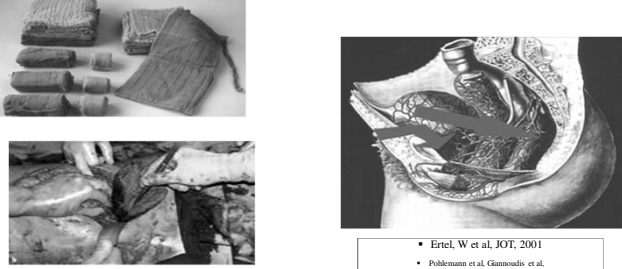
### Role of Angiography???



- Valuable for arterial only
- Estimated at 5-15%
- Timing (early vs late?)
- Institution dependent

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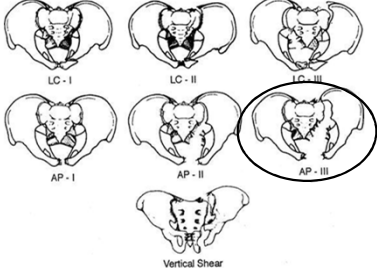
### Pelvic Packing



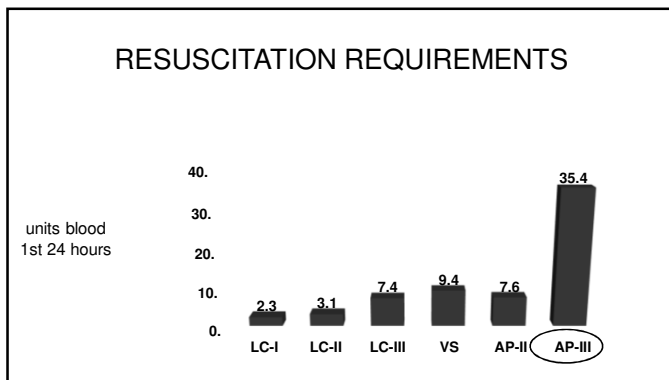
- Eriel, W et al, JOT, 2001
- Pohlmann et al, Gannoudis et al.

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### Type of Injury




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### Summary: Acute Management

- ATLS
- Radiographs
- Resuscitation
  - Do something (sheet, binder, ex fix, c-clamp)
- Combine knowledge of the fracture, the patients condition, and the physical exam to decide on the next step

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