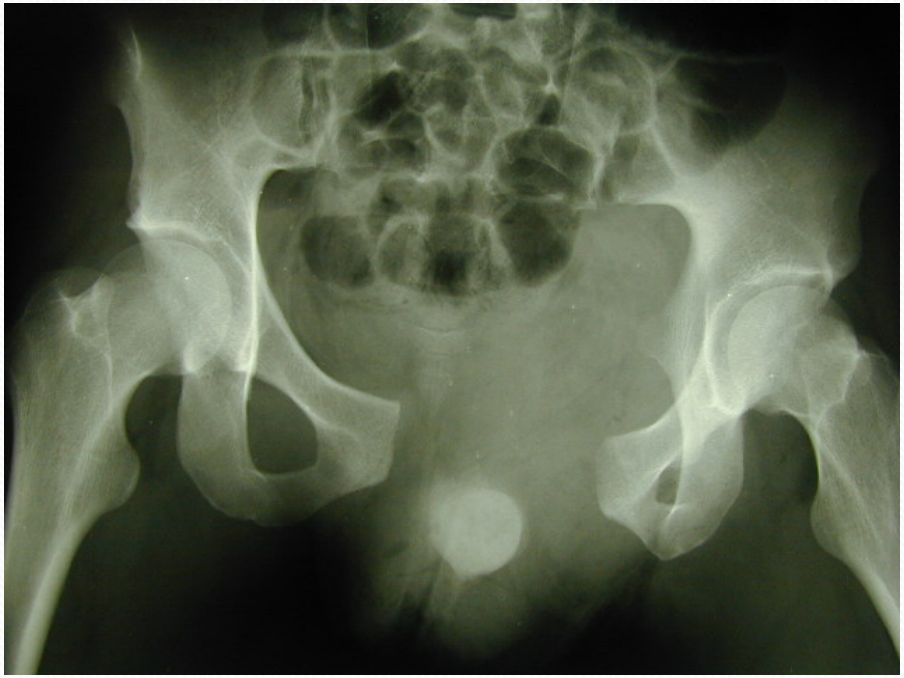
Pelvic Immobilization Devices

Optional, EMT, AEMT, Paramedic

Emergency Stabilization of Pelvic Fractures



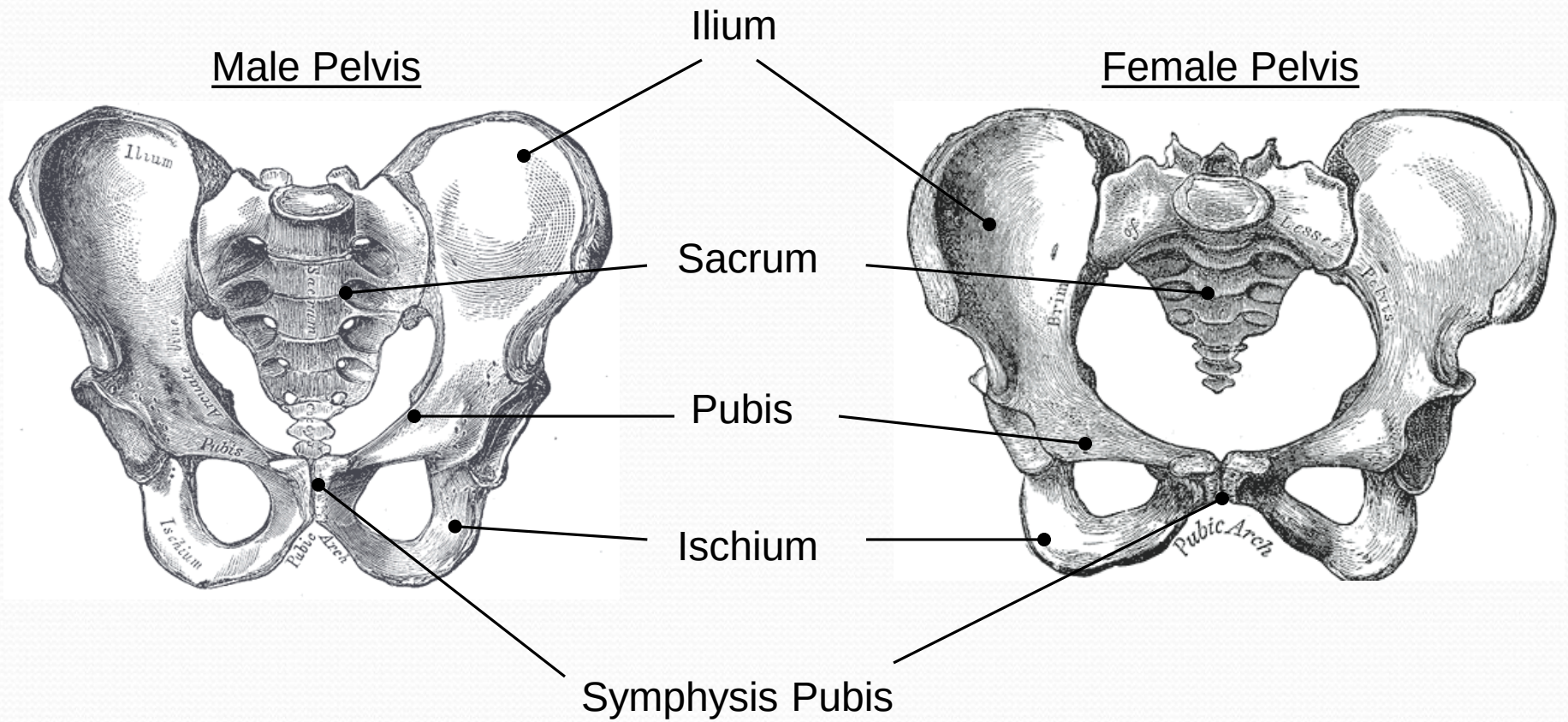
You Will Learn . . .

- The anatomy of the pelvis
  - Function
- About common pelvic fractures
  - MOI, Types
- How serious pelvic fractures are
- How to assess pelvic fracture patients
- The importance of splinting
  - Splinting methods and options
- Additional treatment (IVs and analgesia)

Anatomy of Pelvis

- Pelvis contains one pair of fused bone
  - Each half contains: ilium, pubis, and ischium
- Joined together in posterior by sacrum
- Joined in anterior by symphysis pubis

Anatomy of Pelvis



Anatomy Around Pelvis

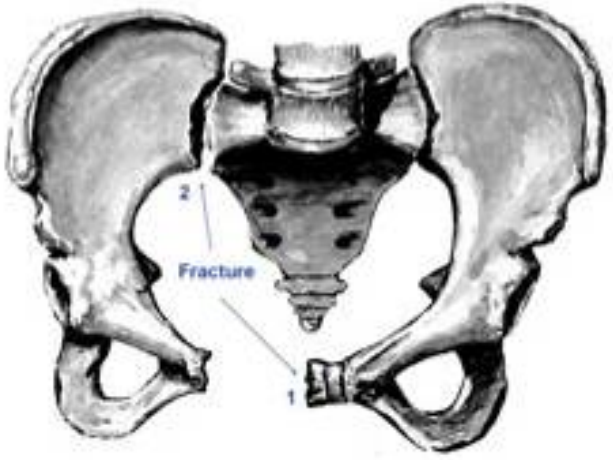
- Organs near pelvis
  - Parts of digestive system
  - Reproductive organs
  - Bladder and urethra
- Blood vessels run through and around
  - Right and left iliac arteries from off aorta
  - Right and left iliac veins returning from legs
  - Blood vessels supplying pelvis and tissues around pelvis

Function of Pelvis

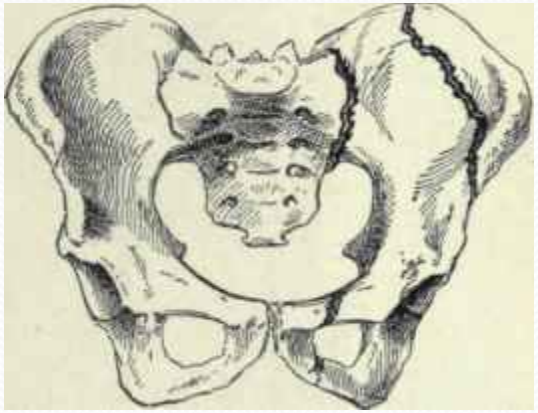
- Pelvis bears weight of upper body
  - Balances weight for legs when standing
- Protect blood vessels and organs
- Also serves as connection point for numerous leg muscles

Common Fractures of Pelvis

- Pelvic ring fractures (shown by 1 & 2)
  - Pelvic ring is likely to separate in more than one location



- Iliac crest fractures
  - Fractures to upper wing of ilium



Pelvic Fractures

- Common mechanisms of pelvic injury result from high energy
  - ex. MVC, significant falls, skiing accident
- Dislocated hip commonly associated with pelvic fractures
- Those at risk for pelvic fractures
  - Growing teens (especially those involved in sports)
  - Elderly patients (osteoporosis)

Risks of Pelvic Factures

- Iliac Crest fracture
  - Typically pelvis still stable
  - Little blood loss
- Pelvic Ring fracture
  - Internal organ damage
  - Significant blood loss (up to 2 liters)
    - Hypovolemic shock
  - Unstable pelvis
  - Risk of death (Mortality of 3.4%-42%)

Assessment

- Scene size up
  - Determine mechanism of injury
    - High energy?
- Consider stabilization of spine
  - Pelvic fractures commonly involve significant MOI
- Rapid trauma assessment
  - Include Airway, Breathing, Circulation
  - Manage life threats
  - Assess Pulse Motor Sensory
- Vital signs (watch for hypoperfusion and consider pain scale)

Assessment cont.

- Pelvis specific assessment
  - Check for bruising, deformity, or abrasions
    - Blood may enter retroperitoneal space
  - Listen for crepitus and check limb length
- Check stability of pelvis

1) Apply gentle medial pressure with palms by pressing inward on iliac crests
2) With patient supine, apply gentle posterior pressure by pressing downward on iliac crests
3) Apply gentle downward pressure on pubis to check pelvic ring stability

Stability Assessment

1) Medial pressure

2) Posterior iliac pressure

3) Posterior pubis pressure

Treatment

- Treat for life threatening injuries
- Treat for possible shock
  - Oxygen
  - Intravenous infusion
- Splinting
- Pain control
- RAPID TRANSPORT!!!

Benefits of Splinting

- Applies compression leaving less space for blood to accumulate
- Tamponades bleeding sources, such as fractured bony surfaces or ruptured vessels
- Reduces instability of the injured pelvis
  - Prevent further damage pelvis, organs, and vessels
- Reduces pain by limiting movement of pelvis

Methods of Splinting

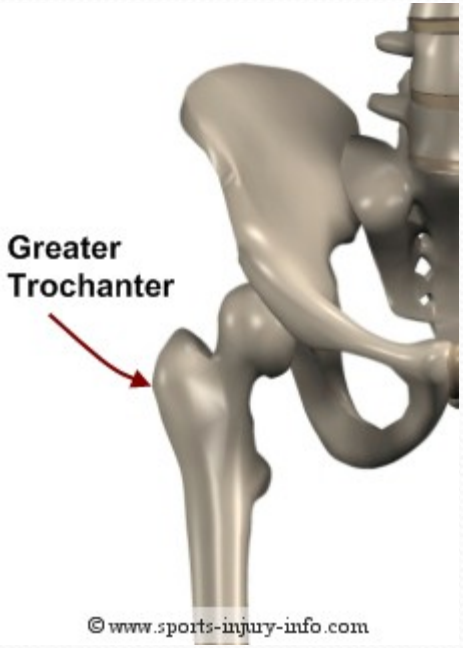
- Hospital Draw Sheet method
- PASG or MAST pants
- Commercial devices
  - Sam sling
  - Traumatic pelvic orthotic device (T-POD)
  - Pelvicbinder
  - Hip Hugger

Hospital Draw Sheet Method

- Fold sheet smoothly (do not roll the sheet)
- Place under patient so sheet is centered over great trochanters
  - Great trochanters can be palpated on lateral aspect of femur
- Wrap and twist running ends around pelvis
- Once tightened, cross the running ends and tie or clamp

Draw Sheet Method cont.

Locate the great trochanter



Wrap and twist the running ends around the pelvis

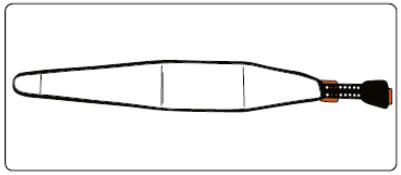
This method can also be used while patients are in the car

PASG/ MAST Pants

- Apply pants as normal
- Then inflate top compartment of pants
- Be sure middle of bubble is over great trochanters

SAM Pelvic Sling

1

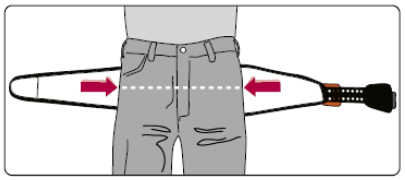


Unfold Sling with white surface facing up.

Video

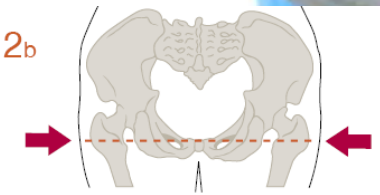
http://www.youtube.com/watch?v=w3AKwDSdtnU

2a



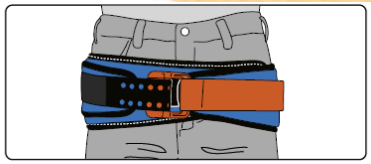
Place white side of Sling beneath patient at level of buttocks (greater trochanters/symphysis pubis).

2b



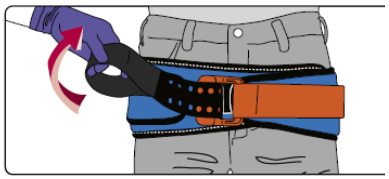
Placement: The correct level of application is at the greater trochanters.

3



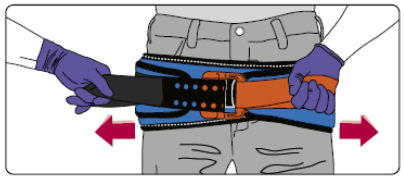
Firmly close Sling by placing black Velcro® side of flap down on black Velcro® strip. Fold back material as needed. Try to place buckle close to midline.

4



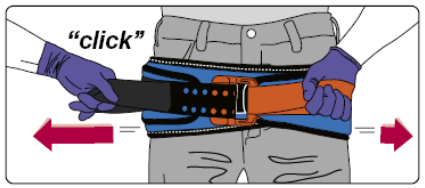
Grab orange free handle on outer surface of flap and release from flap by pulling upward.

5



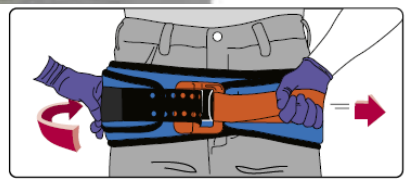
With or without assistance, firmly pull both orange handles in opposite directions to tighten Sling.

6



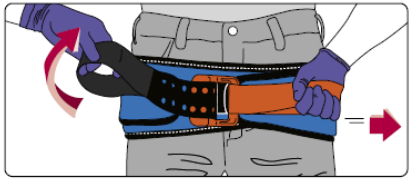
Keep pulling free handle until you feel or hear the buckle click.

7



As soon as the buckle clicks, **maintain tension** and firmly press orange handle onto the black Velcro® strip. *Note: Do not be concerned if you hear a second "click" after the Sling is secured.*

8



To remove Sling, lift orange free handle away from flap by pulling upward. Maintain tension and slowly allow Sling to loosen.

Contact Information

SAM Medical Products

(800) 818-4726

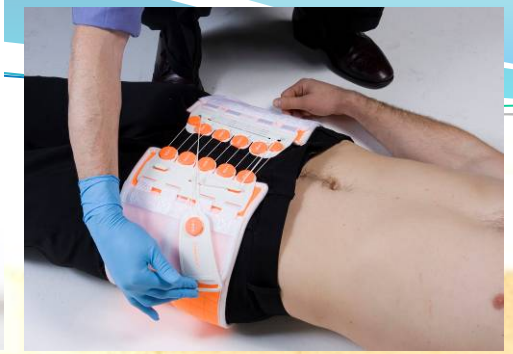
www.sammedical.com

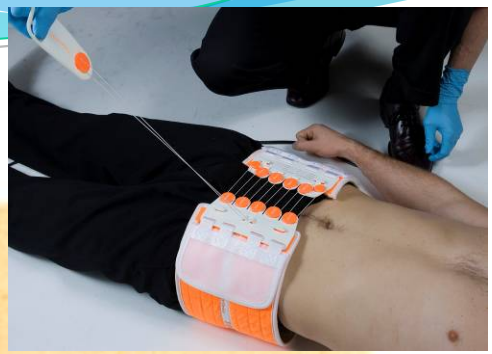
Photos courtesy of:

SAM Medical Products®

Traumatic Pelvic Orthotic Device (T-POD®)

Slide Belt under patient and into position under the pelvis.

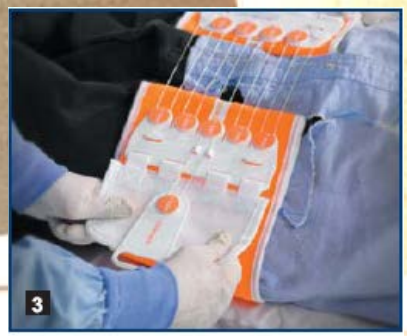




Trim the Belt, leaving a 6-8" gap over the centre of the abdomen.

Contact Information
Julee Arbuckle, RN
Product Manager
Pyng Medical
408-846-4204 Office
408-406-3217 Mobile
jarbuckle@pyng.com

Record the date and time of application.



Apply Velcro-backed Pulley System on each side of the gap.

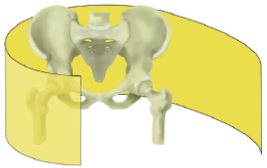
Draw the Pull Tab, creating simultaneous circumferential compression.

Secure the Velcro-backed Pull Tab to the Belt.

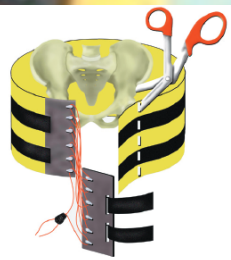
Photos courtesy of:
Pyng Medical

Pelvic Binder

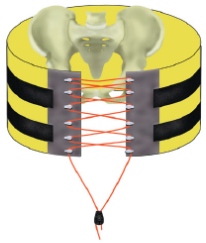
PelvicBinder, Inc.
(877) 451-3000
www.pelvicbinder.com



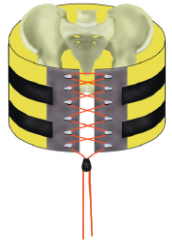
Step 1: Slide binder under supine patient. Center binder over greater trochanters.



Step 2: Cut the free end of binder to leave 6" - 8" gap.



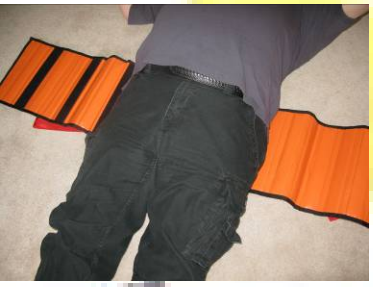
Step 3: Attach Velcro straps and plate to free end of binder.

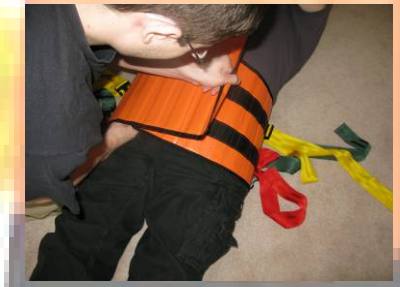


Step 4: Tighten shoelace mechanism, close fastener.

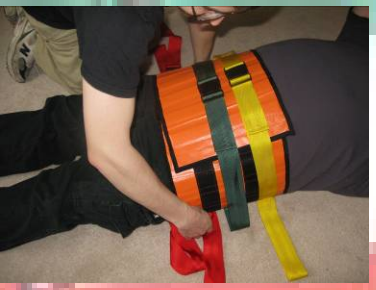
Hip Hugger/Hip Huggie

Hip Hugger



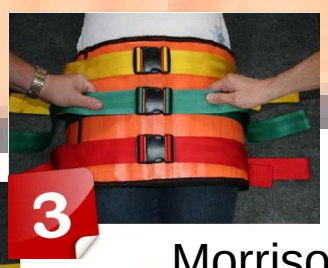


Place device over greater trochanters and fold velcro together



Snap buckles together

Then:



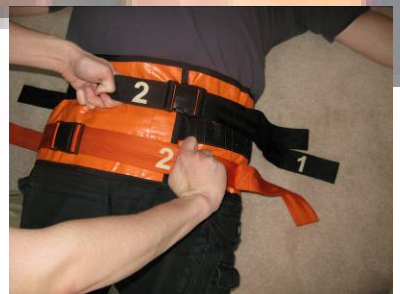
Photos used with permission

Hip Huggie

Place device over greater trochanters and fold velcro together

Snap buckles together

Then tighten straps labeled “1” at the same time, followed by “2”



Morrison Medical
800-GET-MORR (438-6677)
www.MorrisonMed.com

On Going Treatment

- High flow oxygen (should happen early)
- Fluid replacement
  - Normal Saline or Lactated Ringers
    - As much as possible
  - Large bore IV's
  - Maintain systolic BP of 90 or higher
  - Bolus fluid then go TKO/KVO
- RAPID TRANSPORT!!!

On Going Treatment

- Analgesia-Narcotic analgesics (ALS)
  - Morphine (2-4 mg up to 10mg)
  - Fentanyl (50-100 mcg)

- After pain management reassess:
  - Vital signs
  - Mental status
  - Pain level

Summary

- Pelvis contains iliac crest, ischium and pubis
- Fractures happen on iliac crest or pelvic ring
- Assessment includes rapid trauma assessment and specific assessment of pelvis
- Pelvic fractures can be unstable and life threatening
- Splinting is beneficial for patient
- Splinting methods include sheets, PASG, and many commercial devices
  - Whatever the method, it should be immobilized over the great trochanters

Summary cont.

- Advanced support includes:
  - IV treatment
    - Large and lots of it
  - Analgesia