

Can You Make the Diagnosis?



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A 69-year-old male presented to the emergency department brought in by his family after falling off a horse. He stated the horse was stationary and he fell onto his left side because the

saddle was not properly secured. He did not strike his head or have a LOC. He complained of left upper arm pain and low back discomfort with pain upon ambulation. He denied upper spine pain. His vital signs were stable.

The exam revealed left upper extremity swelling and tenderness at the mid humerus area with intact radial and ulnar function and intact circulation. He exhibited tenderness at the pubic symphysis and later had ecchymosis at the base of his penis. There was no blood at the urethral meatus. His head, neck, chest, abdominal, low back and extremity exams were unremarkable. What are your concerns? Can you make the diagnosis?

Imaging of the patient's left upper arm noted a transverse, displaced mid shaft fracture of his humerus. Lumbar spine x-ray was unremarkable. The patient had difficulty tolerating positioning for a pelvis x-ray and had a CT of his pelvis instead. The CT scan revealed an open book pelvis fracture with the symphysis pubis splayed 5.9 cm and widening of the SI joints bilaterally (Fig. 1).



Figure 1

The patient subsequently had an IV contrast CT of his abdomen and pelvis, which did not reveal intra-abdominal injury or retroperitoneal bleeding. He had a SAM splint applied and was transferred to a Level I Trauma Center where he had an open reduction and internal fixation of his pelvis injury.

Pelvic fracture is a disruption of the bony structures of the pelvis. In the elderly, the most common cause is a fall from a standing position. However, fractures associated with the greatest morbidity and mortality involve significant forces such as that from a motor vehicle collision (MVC) or a fall from a height. Because of the tremendous force necessary to cause most unstable pelvic fractures, concomitant severe injuries are common.

A patient who is hypotensive and bleeding from an isolated pelvic fracture has a mortality between 15-40%. These patients often lack the visual clues of life-threatening injury. If there is associated intra-abdominal

injury, the mortality increases to 50%. Patients with a pelvic fracture, intra-abdominal and head injury have a mortality of greater than 90%. In hemodynamically unstable patients, pelvic hemorrhage is venous in origin in 80-90% of cases. Patients with pelvic fractures combined with acetabular fractures have higher Injury Severity Scores, mortality rates and a greater need for transfusions than patients with either type of fracture alone.

The complication rate associated with pelvic fractures is significant and is related to injury of underlying organs, bleeding, and multiorgan system failure.

The bony pelvis consists of the ilium (i.e., liac wings), ischium, and pubis, which form an anatomic ring with the sacrum (Fig. 2). The pelvis is held together by iliolumbar ligaments which are strong ligaments that when ruptured, can lead to life-threatening exsanguination.

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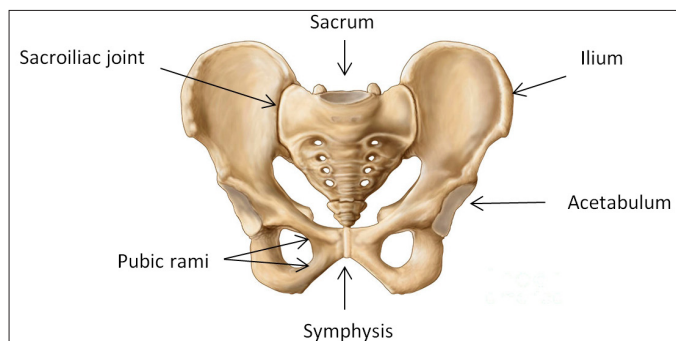


Figure 2

Disruption of this ring requires significant energy. Because of the forces involved, pelvic fractures frequently involve injury to organs contained within the bony pelvis. In addition, trauma to extra-pelvic organs is common. Pelvic fractures are often associated with severe hemorrhage due to the extensive blood supply to the region with a huge network of small arterial and venous structures that often anastomose. The venous plexus consists of fine, intricate, valveless veins overlying the posterior arch and tear easily. The bones are also very vascular structures as well.

The Young and Burgess Classification system (Fig. 3) helps to predict hemodynamic

stability and is based on mechanism of injury: lateral compression, anteroposterior compression, vertical shear, or a combination of forces.

Lateral compression (LC) fractures involve transverse fractures of the pubic rami, either ipsilateral or contralateral to a posterior injury. The most common mechanism for lateral compression is from a "T-bone" MVC. The pelvis shortens and implodes but does not bleed, as the pelvic ligaments stay intact. If there is hypotension, there should be suspicion for a source other than the pelvis, from intra-abdominal bleeding or blunt aortic bleeding, especially in the elderly (nearly 4 times as likely to require blood replacement products).

Anterior-posterior compression pelvis injuries usually occur from a head-on MVC impact or a fall from a horse (Fig. 4). The underlying pathophysiology is the pelvis implodes, creating an open book with either a small fracture

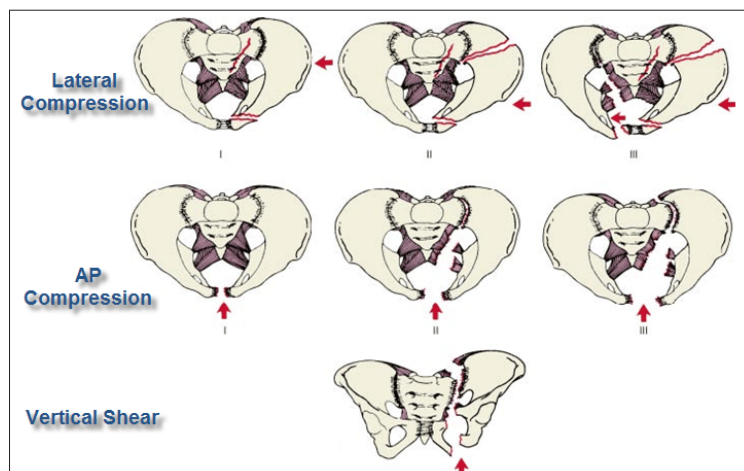


Figure 3

or no bony component. This often is a pure ligamentous rupture with the potential for extensive bleeding from tears in the surrounding venous plexus and arterial structures, leading to shock. Displacement of the symphysis pubis greater than 2.5 cm is unstable.

Vertical shear injuries can occur from a fall from a height or a head-on motorcycle collision. With this injury, there is complete anterior and posterior dislocation with the legs no longer connected to the axial skeleton. Bleeding should be anticipated with widening of the pelvic diameter.

Tenderness, laxity, or instability on palpation of the bony pelvis during the ITLS Primary Survey suggests fracture. However, while physical examination is specific for pelvic instability, it has a low sensitivity. Manual manipulation of the pelvis should be performed once, as repetitive testing can result in further hemorrhage. Other physical exam findings may include a hematoma over the ipsilateral flank, inguinal ligament, proximal thigh, or in the perineum; neurovascular



Figure 4

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Join Your ITLS Illinois Colleagues at 2017 Conference in Quebec City!

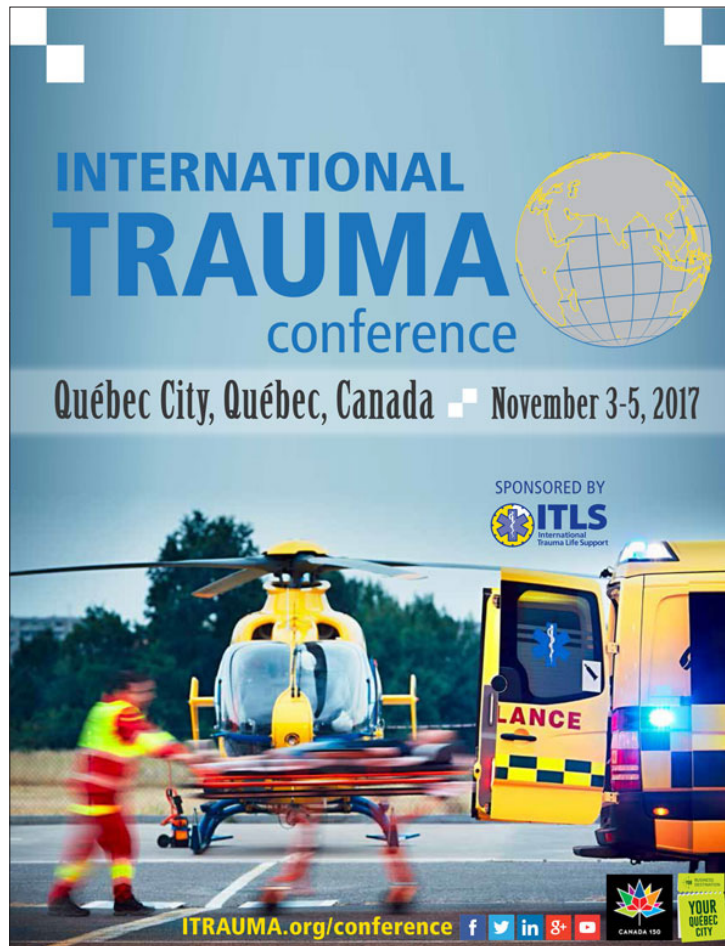
The 2017 International Trauma Conference will be held in Quebec City, Quebec, Canada on November 2-5. Join ITLS for trauma education and networking in the heart of picturesque Quebec City. Early registration rates expire September 25, so register at ITRAUMA.org/conference before the deadline to save!

Preconference workshops will be held Thursday and Friday, November 2-3. The Opening Reception will be the evening of November 3, and the conference will be held over the weekend, on Saturday and Sunday, November 4-5.

Featured speakers on the agenda in 2017 include:

- James Augustine, MD, FACEP, on the changing nature of trauma care from the specialty's roots to the present
- Bryan E. Bledsoe, DO, FACEP, on trauma pain management
- Sabina Braithwaite, MD, MPH, FACEP, FAEMS, on geriatric trauma patient assessment and management
- Jeffrey Freeman, MD, FACEP, on current thinking in trauma literature
- Chris J. Hartman, MD, FACEP, on simplifying complex trauma algorithms
- Joe Nemeth, MD, FCFP, EM, on advances in pediatric trauma care

Other hot topics to be presented include traumatic hemorrhage, pediatric traumatic brain injury, active shooter events, and a 2-part session on research. The full confer-



ence agenda and speaker line-up is available online at ITRAUMA.org/conference.

A variety of workshops will be presented November 2 and 3 for those who want to travel to Quebec early. Choose from options that include "Bridging the Gap with Simulation" workshop, the ITLS Access course, a workshop on sports helmet equipment removal, a Case Based ITLS Train the Trainer Workshop, and more. Workshop prices range from \$69 to \$145; space is limited.

Other conference events include the annual Trauma Competition, the Research Forum, and a social event at the Citadelle de Quebec, all on Saturday, November 4.

The Business Session for Voting Delegates will be held Friday, November 3. This year, ITLS Illinois will be represented by 8 delegates, who will help to elect the Board of Directors.

Travel & Accommodations

The conference hotel, the Hilton Quebec, is the perfect base for exploring the heritage and charm of North America's oldest city, located on Parliament Hill and just blocks from historic Old Town. The special ITLS room rate of \$179 CAN per night plus all applicable taxes includes complimentary guest room WiFi and is available (space permitting) until October 9. A direct reservations link is available online.

Québec City is beautiful year-round, but fall kicks it up a notch. Mother Nature paints the landscape in vivid colors, creating the idyllic backdrop for the city. The weather in early November is expected in the mid-40s Fahrenheit so plan to bring a jacket to enjoy all that Québec has to offer at this time of year.

We hope you'll join your ITLS Illinois colleagues in Quebec in November! To register, visit ITRAUMA.org/conference. The Full Two-Day conference registration fee is \$364 for nurses, paramedics, EMTs, and other EMS personnel, and \$419 for physicians, PAs, and medical directors. (These early registration rates increase September 26!) Discounts for military personnel and full-time students are also available.

Can You Make the Diagnosis? Case Study

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deficits in the lower extremities; scrotal hematoma; blood at the urethral meatus; limb length discrepancy; and rotational deformity of the leg without obvious fracture.

Hemodynamic instability, which may occur rapidly with disruption of the posterior ligament complex, mandates load and go. Look for associated injuries. Any patient with a pelvic injury should be evaluated for spine injuries, which must include lower extremity neurological assessment. Immobilization for SMR with a vacuum mattress is more comfortable than a hard backboard. Log rolling a patient with unstable pelvic fractures can aggravate the injury. IV access should be obtained en route, with judicious fluid administration to maintain a systolic BP of 90 mmHg. Analgesia should be provided per local protocol.

Pelvic stabilization of open book fractures, especially if hemodynamic instability, is indicated with pelvic binders that apply more consistent stabilization of the fracture. There is some evidence the pelvic binder decreases transfusion requirements but no evidence that mortality is decreased. In theory, splinting the pelvis decreases pelvic volume. It will stabilize bony fragments thereby reducing further injury. However, the pelvic binder does not tamponade arterial bleeding in the pelvis. Stabilization with continued hypotension is a clue for arterial bleeding.

The FAST exam provides consistently unacceptably high false negative rates in patients with a pelvic fracture. This may

be due to a retroperitoneal hematoma distorting the ultrasound windows. CT scanning of the abdomen and pelvis may help with planning and further management, such as operative intervention and/or angiography and embolization.

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News from ITLS Illinois Advisory Committee

New Affiliate Faculty Approved

Congratulations to Shelley Peelman, EMT-P, EMS System Coordinator at Presence Regional EMS System in Champaign. Shelley's Affiliate Faculty status was granted by the committee at its last meeting in April.

Congratulations to Mary Butzow

ITLS Illinois congratulates Mary Butzow, RN, MS, on her retirement from Presence Regional EMS System as EMS Education Coordinator. Mary has been an ITLS Illinois instructor and affiliate faculty since 1990, serving at almost 100 courses.

ITLS Illinois Advisory Committee Meetings Set for Sept. 27, Dec. 8

There are two remaining ITLS Illinois Advisory Committee meetings in 2017: September 27 and December 8, from 10 AM to 12 PM. Meetings are held at the ICEP office in Downers Grove, as well as at Illinois Central College in Peoria and Memorial Hospital in Belleville, with videoconferencing at all sites in September and at ICEP and ICC in December. Attendees may also participate by teleconference. As a reminder, all Affiliate Faculty are **required** to attend **one meeting every 2 years**. Attendance at additional meetings is optional.

Updated ITLS Illinois Publication Order Form Available

The revised ITLS Illinois Order Form has been updated to include the latest publications and pricing. Orders should be placed by calling ITLS Illinois at 630-495-6400, ext. 213. Orders may not be placed online.

8th Edition eTrauma Online Course Released; Physician CME Optional

ITLS is proud to announce the release of the 8th Edition ITLS eTrauma: Taking Trauma Training Online course.

ITLS's online provider course is updated to the 8th edition and better than ever! The new edition features:

- A streamlined, intuitive new user interface
- Modern look and feel with updated art and animations
- New content focusing on updated SMR guidelines, hemorrhage control and TXA, mass shooting events and more

The 8th Edition ITLS eTrauma course offers three options: the online course accompanied by a hard-copy textbook and eText built in, for \$133; the online course with the eText built in (no hard copy book), for \$107; or the standalone online course for those who already own the 8th edition book, for \$75.

What's included:

- 13 interactive lessons that correspond to textbook chapters
- 3 different options for course and textbook
- 8 hours of CAPCE continuing education credit upon successful completion
- Option for physicians to purchase AMA PRA Category 1 Credits™ separately (see details below)
- Option to take ITLS eTrauma for Advanced Providers or ITLS eTrauma for Basic Providers – different quiz questions depending on your skill level

8th Edition ITLS eTrauma is sold by Pearson Education through the MyPearsonStore

8th Edition ITLS eTrauma

Taking Trauma Training Online



website; a direct link is available at ITRAUMA.org/etrauma. New for the 8th edition course, course access codes will be delivered electronically immediately. Now you can start eTrauma right away, without the delay of shipping.

If you opt to purchase course access with the hard-copy textbook, your book will be shipped via FedEx in the U.S. Most orders arrive within 2 business days of purchase. Your course access code will be delivered electronically so you may start the course immediately.

Why choose ITLS eTrauma?

The interactive reinterpretation of the ITLS Provider Course lectures in an online format is flexible and self-paced, accessible and affordable, and accredited to provide continuing education hours. After completing eTrauma, students are eligible to attend

an ITLS Completer Course in-person to earn ITLS Basic or Advanced Provider certification.

Physician CME available

For the first time, the 8th Edition ITLS eTrauma course will provide CME hours for physicians and PAs, as the activity has been approved for AMA PRA Category 1 Credit™ by the American College of Emergency Physicians (ACEP).

ITLS will award CME credit to users of the ITLS eTrauma for Advanced Providers program who complete several required steps:

- Purchase option for 8 hours AMA PRA Category 1 Credits™ CME credit in advance of completing 8th Edition ITLS eTrauma
- Earn a score of 80% or higher on each of the 13 Lesson Quizzes at the end of each module
- Complete the eTrauma CME attestation form with score achieved and evaluation online.

To register for the optional AMA PRA Category 1 Credits™ CME credit, you must purchase the CME prior to the start of the eTrauma course. The link to purchase CME is: www.itrauma.org/etraumaCME

(Note that the CME purchase is separate from the course purchase. The cost is \$60.)

ITLS eTrauma is also accredited for all levels of EMS personnel by CAPCE, the Commission on Accreditation of Pre-Hospital Continuing Education (formerly CECBEMS).

Notes & Reminders from International

Make Sure You are Using Most Updated Provider Materials

The ITLS Editorial Board released a new version of the 8th edition ITLS Provider exams (Version 8.4) as well as minor revisions to the PowerPoint slides this spring. These materials were sent to all course coordinators. If you did not receive them, please contact ITLS Illinois Coordinator Sue McDonough at suem@icep.org.

Reminder: Pediatric ITLS Course Materials Updated in 2017

This spring, ITLS rolled out Pediatric Trauma Life Support 3rd Edition Update – 2017 materials to align with the changes published in the 8th Edition International Trauma Life Support for Emergency Care Providers. The PowerPoint slides and a textbook addendum have been updated to reflect

the latest guidance for pediatric patients on spinal motion restriction, airway management, and more. Get the materials:

PowerPoint Slide Set: \$25

ISBN: 978-0-9647418-4-3

To order, call the ITLS Illinois Bookstore at 630-495-6400, ext. 213. Sorry, orders cannot be placed online at this time.

3e Update 2017 Text Addendum eBook: FREE to download! (PDF)

ISBN: 978-0-9647418-3-6

Download from ITRAUMA.org/2017peds

The Pediatric Trauma Life Support 3rd Edition Update – 2017 text addendum should be used to supplement, not replace, the complete Pediatric Trauma Life Support, 3rd Edition, text.

Course coordinators should make sure their students download the text addendum to review before attending the course, just as they are expected to review the textbook.

ITLS Core Curriculum Teaching Scenarios In the Works

A new Editorial Board workgroup focused on scenario development is at work on the creation and revision of new teaching scenarios that will be released to support the Core Curriculum changes announced earlier in 2017. The Core Curriculum allows greater flexibility and customization of the ITLS Provider course to meet the needs for specific audiences; the additional scenarios will be used to facilitate more case-based learning for a more interactive experience. Scenarios are expected to be released in early 2018.

Upcoming ITLS Illinois Courses

For the most updated list of upcoming courses in ITLS Illinois, including registration information, please visit <http://cms.itrauma.org/CourseSearch.aspx>. You do not need to log in to access this page. Here are some of the upcoming courses in Illinois:

Sept. 22-23: Combined Provider Recertification

Registration: Karyn Eisemann, T 618-257-5736
Memorial Hospital, Belleville

October 5-6: Combined Provider Certification

Registration: Shelley Peelman, T 217-359-6619
Gibson Area Ambulance, Gibson City

October 10: Combined Provider Recertification

Registration: Jason Wright, T 217-258-2403
Sarah Bush Lincoln, Mattoon

October 14-15: Combined Provider Certification

Registration: Tony Cellitti, T 815-971-5205
Mercyhealth Prehospital and Emergency Services Center, Rockford

October 14-15: Combined Provider Certification

Registration: Jason Wright, T 217-258-2403
Sarah Bush Lincoln, Mattoon

October 17: Combined Provider Recertification

Registration: Danelle Geraci, T 309-624-4638
Peoria Area EMS Office, Peoria

October 18-19: Combined Provider Certification

Registration: Danelle Geraci, T 309-624-4638
Peoria Area EMS Office, Peoria

October 27: Combined Completer Course

Registration: Eric Brandmeyer, T 618-391-6516
Anderson Hospital, Maryville

November 11: Combined Completer Course

Registration: Nick Fish, T 815-780-3114
OSF St. Elizabeth Medical Center, Ottawa

November 11-12: Combined Provider Certification

Registration: Tony Cellitti, T 815-971-5205
Mendota Fire Department, Mendota