Trauma: Orthopaedics in the Fast Lane  
Mini-Elective  
Spring 2018

Course Dates:  
January 22, 29, February 5, 12, 19, 26  
Mondays, 5:30-6:34 PM

Maximum Students:  
20

Class Year:  
MS1 and MS2

Course Director:  
Peter A. Siska, MD  
Assistant Professor  
Director, Post-Traumatic Reconstructive Center

Contact Information:  
Alyssa Cook (MS2)  
ancl96@pitt.edu

Registration:  
Orthopaedic Surgery Interest Group  
https://docs.google.com/forms/d/e/1FAIpQLSe68OauoRxdA2ewpDev4TbnYVAvnQTh_ptEQPkrLzwWvuBQVg/viewform?usp=sf_link

Description:  
This course will introduce first and second year students to orthopaedic traumatology. The elective will highlight basic principles of musculoskeletal medicine and use orthopaedic trauma care to contextualize these subjects. This course will provide demonstrations of acute care assessment, workshops about key orthopaedic techniques, and guidance as to how to work with the trauma team to best aid in the patient’s recovery. Each meeting will be accompanied by a series of cases and clinical scenarios to provide context and facilitate discussion on the topic of each session.

Objectives:  
1. Understand the basic orthopaedic exam and the evaluation of trauma patients.  
2. Be able to describe an injury, its radiological findings and basic orthopaedic treatment options.  
3. Understand the most common complications of orthopaedic surgery and recognize compartment syndrome.  
4. Understand the importance of hip fractures as a major current public health crisis.  
5. Gain hands-on experience with applying splints and orthopaedic internal fixation devices.

Requirements:  
Students will be expected to prepare for and attend at least 5/6 sessions.

Pre-Requisites:  
None
COURSE OUTLINE

Trauma: Orthopaedics in the Fast Lane

Mondays, 5:30-6:30 PM
1/22, 1/29, 2/5, 2/12, 2/19, 2/26
Didactic sessions: LR 3, Scaife Hall
Practical sessions: LR 3, Scaife Hall

Texts/Required Reading: None other than as directed by session instructors

Faculty:
Peter Siska, MD; Ivan Tarkin, MD; Gary Gruen, MD; Sergei Pushilin, MD; Gele Moloney, MD; Lisa Blackrick, MD

Session One – THE LANGUAGE OF ORTHOPAEDICS:
Course Intro & Basic Trauma Assessment, Splinting workshop
Instructor: Dr. Siska
1/22/2018
Location: LR 3, Scaife

Students will be encouraged to take a short pre-test at the beginning of the session for benchmarking purposes and to determine the effectiveness of the course in meeting its objectives. Three to five cases of common orthopaedic trauma situations will be presented. Focus will be on the initial assessment and relevant anatomy and terminology such that a student will be comfortable describing an injury to their team members in a clinical situation. Instructor will review the foundations of biomechanical and biological principles of bone healing. A motor and sensory exam will be demonstrated. Principles of fracture imaging will be discussed and students will have the opportunity to read radiographs. For each case study the surgeon’s clinical findings and suspicions will be presented, imaging will be reviewed and the surgeon will emphasize how such information informs their approach to care. The session will also aim to reinforce physical exam skills and emphasize foundational concepts.

A splinting workshop will be held toward the end of the session. Each student will have the opportunity to create a short arm splint and gain familiarity with the materials used to create such.

Objectives:
- Describe usual presentation and mechanisms of injury.
- Learn about the orthopaedic surgeon’s approach in an ED assessment.
  - Illustrate common mechanisms of injury.
- Gain experience in using splinting materials and creating splints

Student Preparation: None

Session Two – INTRO TO FRACTURE TREATMENT:
Fractures and Fixation, Sawbones Workshop
Instructor: Dr. Moloney
1/29/2018
Location: LR 3, Scaife

An overview of the most common types of fractures seen in the trauma setting and their mechanisms of injury (MOI). Terminology and types of fractures will be demonstrated with 5-7 cases and associated radiography. Treatment options will be discussed along with the most common procedures for undertaking reduction (splinting, casting, nails, plates, ex-fix). Plating techniques will be discussed and lead into the workshop. Students will have the opportunity to use sawbones to practice orthopaedic fixation techniques and gain hands-on experience with the tools of orthopaedic surgery.

Objectives:
- Learn about fracture patterns and most common MOI.
- Review imaging patterns of common fractures and understand goals of treatment.
- Engage in closed reduction procedures via sawbones workshop.

Student Preparation: None.
Session Three – URGENCIES AND EMERGENCIES: Dislocations, Infection and Compartment Syndrome
Instructor: Dr. Pushlin
2/5/2018
Location: LR 3, Scaife

Five to seven cases will be presented with radiography. Surgeon will review indications for open reduction vs closed reduction for complex injuries and review the emergent procedures used in the ED setting. Cases will emphasize more complicated scenarios such as dislocations, irreducible fractures, neurological injuries and femoral neck fractures in younger patients. Complications of open reduction and compound fractures will be discussed with a primary focus on compartment syndrome and infection. The assessment for compartment syndrome will be demonstrated.

Objectives:
- Review principles of open reduction and internal fixation (ORIF) and apply to complex scenarios.
- Overview of complications of orthopaedic trauma.

Student Preparation: None.

Session Four – GERIATRIC FRACTURES: Hips, femurs and comorbidities
Instructor: Dr. Tarkin
2/12/2018
Location: LR 3, Scaife

Emphasis will be placed on the largest population seeking orthopaedic trauma care (geriatrics). Discuss growing public health crisis of hip fractures, intricacies of such fractures and the danger they impose on the short and long-term prognosis of the patient. Differentiate pelvic versus acetabular fractures and types of capsular injuries and femoral fractures. Discuss the common comorbidities in the senior population, how to assess and treat peri-prosthetic fractures, and the need for medical clearance. Five to seven cases will be presented with MRI, Xray, CT, US imaging.

Objectives:
- Understand the current hip fracture health crisis.
- Be able to discuss the intricacies of working with senior patients and the dangers imposed by hip/femur/pelvic fractures.

Student Preparation: None.

Session Five – POLYTRAUMA PATIENT: Polytrauma, Inter-department patient care
Instructor: Dr. Blackrick, Dr. Siska
2/19/2018
Location: LR 3, Scaife

Define polytrauma and the most common mechanism of injury. Discuss the role of orthopaedic traumatologist and priority of care. Differentiate early total care versus damage control. Three to five cases will be presented and students will be engaged in discussing possible sequelae in polytrauma patients. Polytrauma workup and coordination with general surgery/other specialties will also be discussed.

Objectives:
- Review the procedures for assessing polytrauma patients in the ED.
- Learn about interdisciplinary care and priorities of care in polytrauma patients. ---Be able to discuss polytrauma scenarios and goals of orthopaedic care.

Student Preparation: None.
**Session Six – ORTHO TRAUMA:**
**Fracture review and course concept applications**
**Instructor:** Dr. Gruen
**2/26/2018**
**Location:** LR 3, Scaife

Five to seven cases will be presented with an emphasis on having the students independently interpret radiographs, identify relevant information in the case and discuss basic treatment options. Session will primarily focus on 7 of the most common fractures (ankle, tibia/femoral shaft, hip, tibia plateau, clavicle, humerus and distal radius). Complex scenarios (femoral neck, talar neck, scaphoid, pilon, calcaneus, acetabular fractures) will also be reviewed.

Students will be encouraged to complete a short post-test which reviews the basic underlying principles of the previous lectures. Data will be compiled and sent to the Department of Orthopaedic Surgery to better understand how the DoOS and OSIG can work together to improve on this course for the upcoming year.

**Objectives:**
- Assess student’s learning from the previous lecture series by having them review radiographs.
- Emphasize complicated fracture patterns and synthesize treatment plans based on co-morbidities and demographics.

**Student Preparation: Review notes from previous lectures**