

Orthopedic Emergencies

Peter Gutierrez, MD
Pediatric Emergency Medicine
Children's Healthcare of
Atlanta



Disclosures

- I have no relevant financial relationships to disclose
- I do not intend to discuss unapproved uses for commercial products

Objectives

- Upon completion of this educational activity, participants will be able to
 - Identify common pediatric orthopedic emergencies, including fractures, dislocations, infection, and overuse injuries
 - Choose the correct evaluation tools and initial management for common pediatric orthopedic emergencies
 - Recognize pediatric orthopedic emergencies that should be transferred to a pediatric facility

Topics

Fractures	Dislocations	Infection	Overuse Injuries/ Misc
Buckle Fractures	Nursemaid's Elbow	Septic Arthritis	Osgood-Schlatter Disease
Clavicular Fracture	Patellar Dislocations	Osteomyelitis	Sinding-Larsen-Johansson Disease
Supracondylar Fractures			Sever Disease
Scaphoid Fracture			Slipped Capital Femoral Epiphysis
Salter-Harris Fractures			

Buckle Fractures- Mechanism and Presentation



Children's Healthcare of Atlanta | Emory University 5

Buckle Fracture- Radiographic Findings and Management



231a0767-fb98-45b5-92ee-3cced86748b3, Uploader: Alice Boyd Smith
Source: Alice Boyd Smith, 01-17-2005

Children's Healthcare of Atlanta | Emory University 6

Clavicular Fractures- Mechanism and Presentation



Children's Healthcare of Atlanta | Emory University 7

Clavicular Fracture- Radiographic Findings and Management



Children's Healthcare of Atlanta | Emory University 8

Supracondylar Fractures- Mechanism and Presentation



Children's Healthcare of Atlanta | Emory University 9

Supracondylar Fracture- Type 1



- Both cortices appear intact
- Soft signs present
 - Anterior humeral line
 - Posterior fat pad
 - Anterior fat pad
- Management
 - Posterior long arm splint

Children's Healthcare of Atlanta | Emory University

10

Supracondylar Fracture- Type 2

- Anterior Cortex Disrupted
- Management
 - Depends on degree of angulation



Children's Healthcare of Atlanta | Emory University 11

Supracondylar Fracture- Type 3

- Disruption of anterior and posterior cortices
- Management
 - Almost exclusively operative management



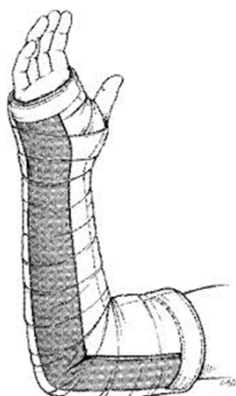
Children's Healthcare of Atlanta | Emory University 12

Supracondylar Fractures- Neurovascular Status



Children's Healthcare of Atlanta | Emory University 13

Supracondylar Fracture- Management

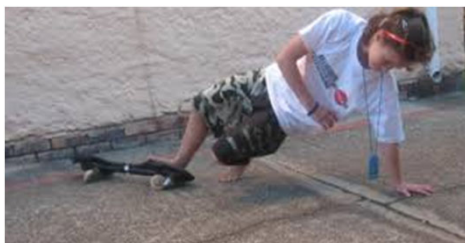


- Type 1
 - Need only splint
- Type 2 and 3
 - Splint for comfort and refer to emergency department



Children's Healthcare of Atlanta | Emory University 14

Scaphoid Fractures- Mechanism and Presentation



Scaphoid Fracture- Radiographic Findings and Management

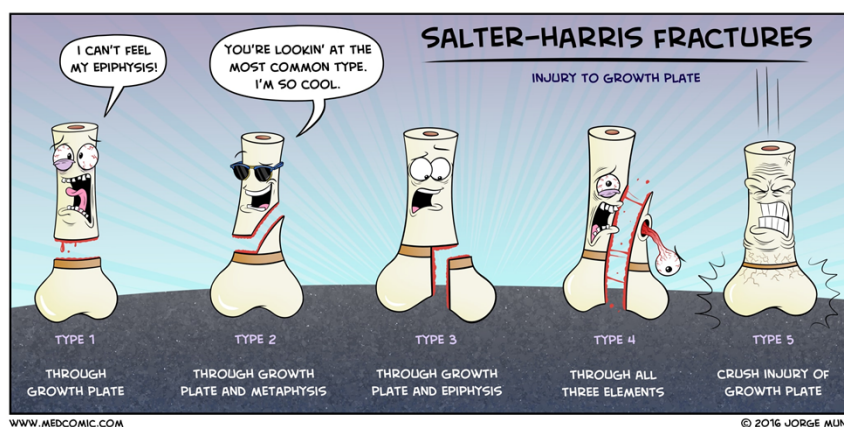


Salter Harris (SH) Fractures- Mechanism and Presentation



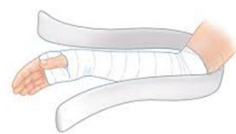
Children's Healthcare of Atlanta | Emory University 17

SH Fractures- Types



Children's Healthcare of Atlanta | Emory University 18

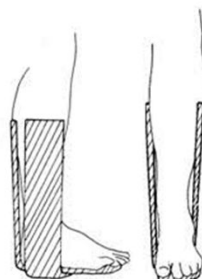
SH Fractures- Management



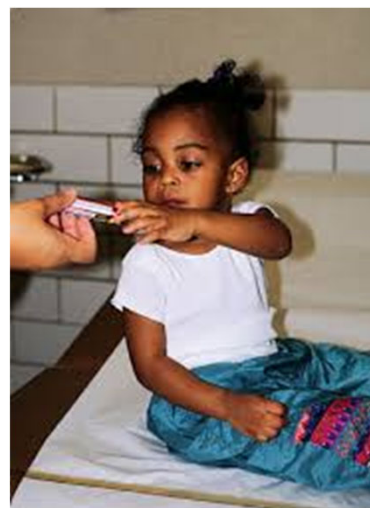
Source: Simon RH, Sherman SC. Emergency Orthopedics, 6th Edition.
www.accessmedicine.com
Copyright © The McGraw-Hill Companies, Inc. All rights reserved.



Source: Simon RH, Sherman SC. Emergency Orthopedics, 6th Edition.
www.accessmedicine.com
Copyright © The McGraw-Hill Companies, Inc. All rights reserved.



Nursemaid's Elbow- Mechanism and Presentation



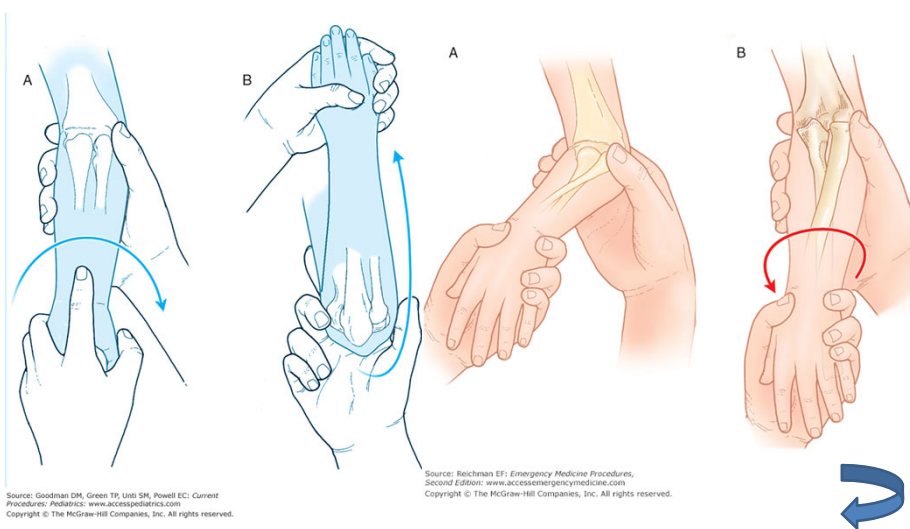
Copyright ©2006 by The McGraw-Hill Companies, Inc.
All rights reserved.

Nursemaid's Elbow- Radiographic Findings



Children's Healthcare of Atlanta | Emory University 21

Nursemaid's Elbow- Reduction



Source: Goodman DM, Green TP, Usher SM, Powell EC. Current Procedures in Podiatry. www.accesspediatrics.com Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

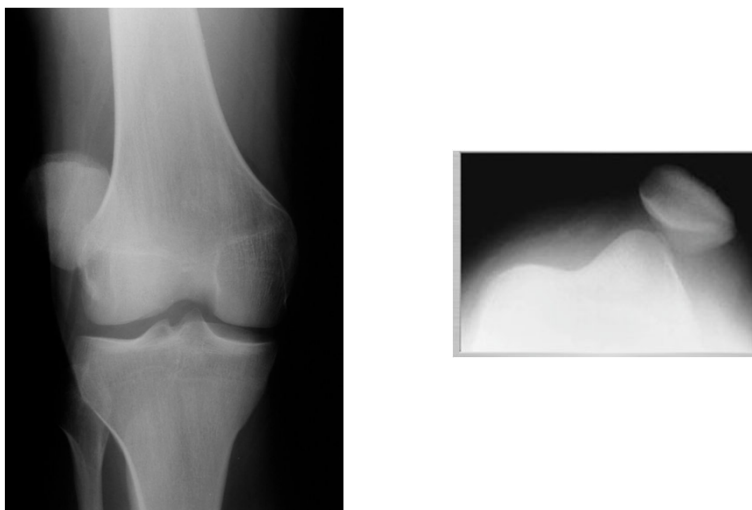
Source: Reichman EF. Emergency Medicine Procedures, Second Edition. www.accessemergencymedicine.com Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

Children's Healthcare of Atlanta | Emory University 22

Patellar Dislocation- Mechanism and Presentation



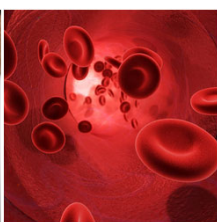
Patellar Dislocation- Radiographic Findings



Patellar Dislocation- Management



Septic Arthritis- Mechanism and Presentation



Septic Arthritis- Management



Children's Healthcare of Atlanta | Emory University 27

Septic Arthritis- Management

- IF
 - Feeling cavalier
 - Have access to labs
 - Hip is the joint involved
- Kocher Criteria
 - Non-weight bearing
 - Fever of 38.5 or higher
 - WBC >12
 - ESR >40
- Septic arthritis of the hip
 - 99% chance with 4/4
 - 92% chance with 3/4
 - 40% chance with 2/4
 - 3% chance with 1/4



Children's Healthcare of Atlanta | Emory University 28

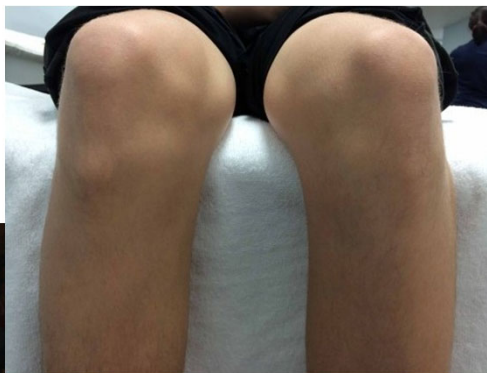
Osteomyelitis- Mechanism and Presentation



Osteomyelitis- Management



Osgood-Schlatter Disease (OSD)- Mechanism and Presentation



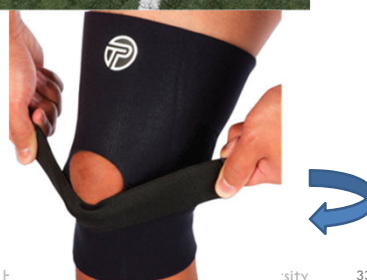
Children's Healthcare of Atlanta | Emory University 31

OSD- Radiographic Findings



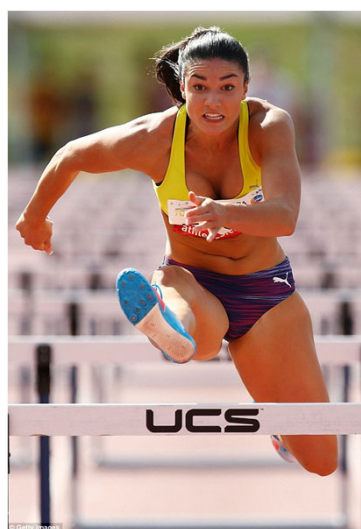
Children's Healthcare of Atlanta | Emory University 32

OSD- Management



Children's Healthcare of Atlanta | Emory University 33

Sinding-Larsen-Johansson (SLJ) Disease



Children's Healthcare of Atlanta | Emory University 34

SLJ- Radiographic Findings



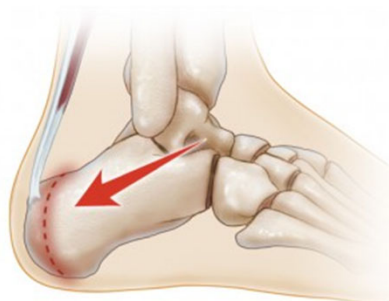
Children's Healthcare of Atlanta | Emory University 35

SLJ- Management



Children's Healthcare of Atlanta | Emory University 36

Sever Disease- Mechanism and Presentation



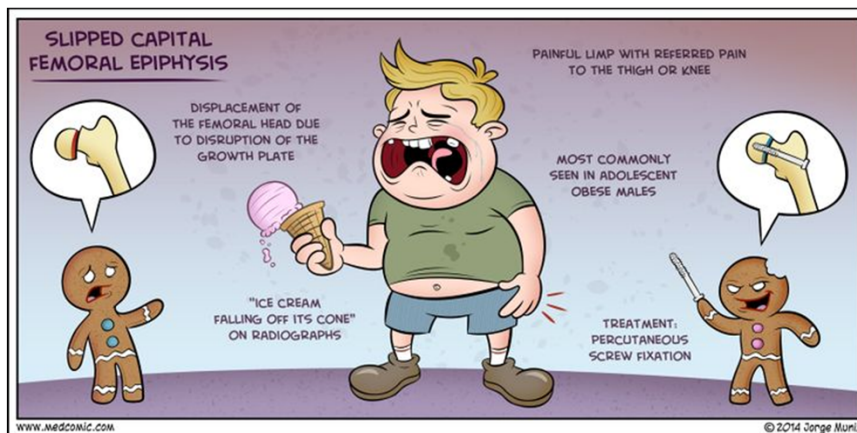
Children's Healthcare of Atlanta | Emory University 37

Sever Disease- Management

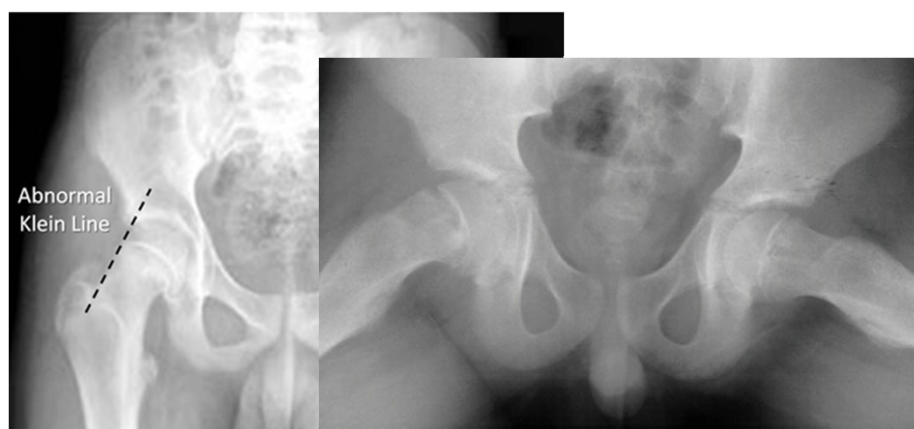


Children's Healthcare of Atlanta | Emory University 38

Slipped Capital Femoral Epiphysis (SCFE)- Mechanism and Presentation



SCFE- Radiograph Findings



SCFE- Management



Children's Healthcare of Atlanta | Emory University 41

References

- Fleischer and Ludwig's Textbook of Pediatric Emergency Medicine. 7th Edition
- Yang S, Andras L. "Clavicle Shaft Fractures in Adolescents." Orthop Clin N Am 48 (2017) 47–58
- Wheeless's Textbook of Orthopedics.
www.wheelsonline.com- multiple topics
- Emedicine- Sever Disease, SCFE
- Medcomic.com

Children's Healthcare of Atlanta | Emory University 42