

PRACTICE GUIDELINES: Reduction and Immobilization of Fractures and Dislocations

OBJECTIVE:

1. Identify common orthopedic injuries
2. Identify radiographic studies that may be used to define specific injuries.
3. List immobilization and reduction techniques that can be applied in the trauma room until definitive treatment can be undertaken.
4. Provide a list of potential definitive orthopedic procedures that will be considered for each injury.

DEFINITION:

Reduction is the repositioning of bones to their normal position after fracture or dislocation. The purpose of reduction is to promote healing, normal function and reduce pain. Immobilization is used to prevent movement of the bone or joint after realignment.

GUIDELINES:

1. The following are guidelines for immobilization and definitive management of fractures and dislocations by body part. As a general rule of thumb, most pediatric fractures can be treated conservatively based on the amount of displacement and the location of the fracture.

INJURY	X-RAYS	REDUCTION IMMOBILIZATION	TREATMENT
HAND:			
DIP or PIP dislocation	AP/Lat finger	Dorsal splint in extension, or Buddy tape	Closed reduction
Metacarpal fracture	AP/Lat hand	Dorsal-volar splint	Closed reduction, wires
ARM:			
Wrist	AP/Lat wrist	Short Arm Cast	Closed reduction
Distal radius	AP/Lat forearm	Short Arm Cast	Closed reduction, or ORIF
Forearm, radius and/or ulna	AP/Lat forearm	Short or Long Arm Cast	Closed reduction, or possible ORIF for adolescent patients and older
Radial head	AP/Lat Elbow AP/Lat forearm	Posterior elbow splint vs. Sling	Closed reduction, or ORIF
Olecranon	AP/Lat elbow AP/Lat forearm	Posterior elbow splint	Closed vs ORIF based on displacement
Distal humerus / Supracondylar fracture	AP/Lat elbow AP/Lat humerus	Long Arm Cast vs Long Arm Splint	Closed treatment vs. Closed Reduction Percutaneous Pinning vs. ORIF
Humeral shaft	AP/Lat humerus	Coaptation splint	Conservative vs. possible ORIF for rare indications
Proximal humerus (surgical and anatomic neck)	AP/axillary shoulder AP/Lat humerus	Sling	Majority Conservative treatment vs ORIF rare indications
SHOULDER:			
Scapula	AP/axillary/scapular shoulder	Sling	Majority Conservative treatment vs ORIF rare

			indications
Clavicle	AP/axillary shoulder	Sling	Majority Conservative treatment vs ORIF rare indications
PELVIS:			
Anterior ring, pubic symphysis, rami	AP, inlet and outlet pelvis, CT scan	Initial bedrest and mobilization once fracture established as stable or s/p ORIF	Majority Conservative treatment vs ORIF rare indications
Posterior ring, sacrum, SI fracture/ dislocation, iliac wing	AP, inlet and outlet pelvis, CT scan	Initial bedrest and mobilization once fracture established as stable or s/p ORIF. If hemodynamically unstable consider T-POD, angioembolization or external fixation	Majority Conservative treatment vs ex-fix vs ORIF rare indications
Acetabulum	AP pelvis, Judet views, thin cut (3mm) CT scan	Buck's traction, or nothing	Conservative treatment vs. ORIF based on displacement
FEMUR:			
Femoral head	AP pelvis, AP/lat hip	Distal femoral traction, or nothing	ORIF
Femoral neck	AP pelvis, AP/lat both hips (uninjured side with templates)	Buck's traction, or nothing	ORIF
Intertrochanteric femur	AP pelvis, AP/lat hip	Buck's traction, or nothing	ORIF
Subtrochanteric femur	AP pelvis, AP/lat femur	Buck's traction, or nothing	ORIF
Femoral shaft	AP/lat femur, AP/lat knee, AP pelvis	Buck's traction, or nothing	Hip Spica cast vs. elastic nails vs. ORIF vs. IM Rod based on patients age and weight
Supracondylar femur	AP/lat femur, AP/lat knee, AP pelvis	Knee immobilizer, or tibial traction	Conservative vs. ORIF based on displacement
LOWER LEG:			
Patella	AP/lat knee	Knee immobilizer	ORIF
Tibial plateau	AP/lat knee, CT scan (after spanning ex-fix if applicable)	Knee immobilizer	Conservative vs. ORIF based on displacement
Tibial shaft	AP/lat tibia	Long Leg Cast vs. Long Leg Splint	Conservative vs. ORIF based on displacement
ANKLE:			
Pilon	AP/lat ankle, mortise view, AP/lat tibia, or CT scan after spanning ex-fix	Short Leg Cast vs. Short Leg Splint	Conservative vs. ORIF based on displacement
Malleolus (medial, lateral, posterior)	AP/lat ankle, mortise view	Short Leg Cast vs. Short Leg Splint	Conservative vs. ORIF based on displacement
FOOT:			
Calcaneus	Lat foot, oblique foot, Harris heel view, thin cut CT (3mm)	Short Leg Cast vs. Short Leg Splint	Conservative vs. ORIF based on displacement

Talus	Lat foot, oblique foot	Short Leg Cast vs. Short Leg Splint	Conservative vs. ORIF based on displacement
Metatarsals and phalanx	AP/lat and oblique foot	Short Leg Cast vs. Short Leg Splint	Conservative vs. ORIF based on displacement

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