Table 2. Classification and Treatment of Knee Fractures

Fracture Location	Classification	Imaging	Treatment	Tips
Tibia eminence	Meyers and McKeever (types I-IV)	• X-ray: AP/lateral/ intercondylar	• Nondisplaced or reducible type I/II: nonoperative, long-leg cast in extension for three to four weeks; urgent orthopedic follow-up • Irreducible type III/IV: ORIF vs. all-arthroscopic fusion; emergent orthopedic evaluation • Nonweightbearing	• ACL-equivalent injury; risk of instability and functional loss • Evaluate for associated meniscal and ligamentous injury.[21]
Tibia tubercle	Ogden (modified Watson-Jones)	• X-ray: AP/lateral (optional internal rotation view) • CT if concerned for condylar involvement	• Type I or minimal displacement (< 2 mm) after closed reduction/ cast application: nonoperative, long-leg cast in extension for six weeks; urgent orthopedic follow-up • Type II-V: open reduction and/ or operative soft tissue repair; emergent orthopedic evaluation • Nonweightbearing	• Highest risk of compartment syndrome; admit if there is clinical concern[21] • Fracture line may extend proximally with variable distance posteriorly. • On imaging, widening or hinging open of the apophysis may indicate fracture. • Anterior swelling may be the only sign of a periosteal sleeve avulsion (type 5 injury). • Patella alta associated • Associated with Osgood-Schlatter disease
Proximal tibia epiphyseal	Salter-Harris	• X-ray: AP/lateral (optional oblique view) • Avoid varus/valgus stress due to physis injury risk	• Nondisplaced, stable Salter-Harris I/II: nonoperative, long-leg cast; urgent orthopedic follow-up • Unstable Salter-Harris I/II: closed reduction and pinning; emergent orthopedic evaluation • Salter-Harris III/IV: ORIF • Nonweightbearing	• Very rare due to protective anatomy • Rarity leads to scant data; information primarily is from case reports
Proximal tibia metaphyseal		• X-ray: AP/lateral views • Bilateral films recommended	• Nondisplaced or reducible: nonoperative, long-leg cast with varus molding and stirrups; urgent orthopedic follow-up • Irreducible: open reduction and casting; emergent orthopedic evaluation • Nonweightbearing	• Watch for concurrent proximal fibula fracture; it may indicate a more unstable fracture pattern. • Apply a varus mold when splinting to help prevent the complication of progressive valgus angulation; compare post-splint films against bilateral films to ensure appropriate splinting. • Evaluate for child abuse with avulsion (bucket handle or corner) fractures.
Distal femoral physeal	Salter-Harris	• X-ray: AP/lateral and oblique views of knee • Full femur and hip films recommended • CTA if there is concern for vascular compromise	• If nondisplaced or easily reducible: nonoperative, long-leg cast with stirrups to immobilized the hip, urgent orthopedic follow-up[14] • If displaced, irreducible Salter-Harris I/II, or Salter-Harris III/IV: likely requires percutaneous fixation or ORIF; emergent orthopedic evaluation • Nonweightbearing	• Evaluate for neurovascular compromise: foot drop, sensation along the dorsum and plantar foot, and distal pulses; if present, obtain CTA and emergent orthopedic consult. • Stress films are no longer recommended. • Evaluate for child abuse in nonambulatory children.
Knee dislocation		• X-ray: AP/lateral	• Reduction and knee immobilizer at 15 to 20 degrees • Emergent surgical fixation and orthopedic evaluation • Nonweightbearing	• Traumatic intimal flap of the popliteal artery can occur even if it appears vascularly intact; can diagnose via CTA. • Look for "dimple sign"; can indicate a posterior dislocation that will not be able to be manually reduced
Slipped capital femoral epiphysis		• X-ray: AP and lateral in frog-leg or cross-table view • Bilateral films recommended	• No specific splint recommended • Strict nonweightbearing with crutches, wheelchair, or bed rest • Admit if acute or bilateral • Urgent orthopedic follow-up if chronic	• If traumatic and concerned limb movement with worsen injury, true lateral films can replace frog-leg or cross-table
Patellar dislocation		• X-ray: AP/lateral and merchant views	• Knee immobilizer • Reduced weightbearing with crutches and limited activity • Urgent primary care or orthopedic follow-up	• These often spontaneously reduce; if you suspect spontaneous reduction, the quadriceps angle test and the patellar apprehension test can help determine patellar instability and likelihood of slip. • Common association of chondral or ligament injury; nonemergent MRI if concerned
Patellar fracture and patellar avulsion (sleeve) fracture		• X-ray: AP/lateral and sunrise views • Bilateral films recommended	• Knee immobilizer in full extension (not hyperextension) • Strict nonweightbearing • Urgent orthopedic follow-up	• Associated with patella alta and patella baja

AP: anteriorposterior; ORIF: open reduction and internal fixation; ACL: anterior cruciate ligament; CT: computed tomography; CTA: computed tomography angiography; MRI magnetic resonance imaging

Note: Emergent orthopedic evaluation requires evaluation while in the emergency department or transfer to a facility with an orthopedic specialist. Urgent orthopedic evaluation refers to outpatient follow-up within the next one to three days.