

Lower Extremity External Fixation Skills Lab

Orthopaedic Trauma for PAs and NPs
OTA Annual Meeting, October 17, 2018

Objectives

1. Indications for external fixation
2. Perform appropriate operative technique
3. Know various methods to increase external fixator construct stiffness

Overview

1. External frame stabilizing bone fragments via pins inserted through skin into bone
2. Limited damage to bone blood supply
3. Rapid application
4. Minimal interference with soft tissues
5. Multiple uses
 - a. Provisional stabilization
 - i. Polytrauma patient / damage control orthopaedics (DCO)
 - ii. Closed periarticular fractures for soft tissue stabilization and swelling reduction
 - iii. Open contaminated fractures
 - b. Definitive fixation

External Fixation Components

1. Pins
 - a. 5 mm self-drilling pins most common
 - b. Various lengths available (e.g. 150, 200, 250 mm)
2. Bars
 - a. Carbon fiber
 - b. Various diameters available
3. Clamps
 - a. Pin-Bar
 - b. Bar-Bar
 - c. Universal multipin

Technique

1. Mark future definitive surgical incisions so pin placement is remote, if possible
2. Skin incision and blunt dissection to bone
3. Protective sleeve and pin placement
 - a. Controversial: Predrill or not; hand or drill insertion, irrigation or not during drill/pin placement
4. Confirm fluoroscopically that pins are advanced to appropriate depth
5. Perform reduction
6. Tighten clamps

Methods to Increase Construct Stability

1. Increase pin diameter
2. Increase number of pins
3. Increase spread between pins in bone segment (close to fracture and as far away)
4. Increase rod diameter
5. Increase number of rods
6. Decrease distance between bone and rods