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Pocket Guide for External Fixation – Checklist

Presentation · May 2019

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EXTERNAL FIXATION CHECKLIST

Temporary skeletal stabilization in major trauma, Orthopaedics and Trauma, 29:6, 2015: DM Taylor, JM Tebby, PA Foster, PJ Harwood

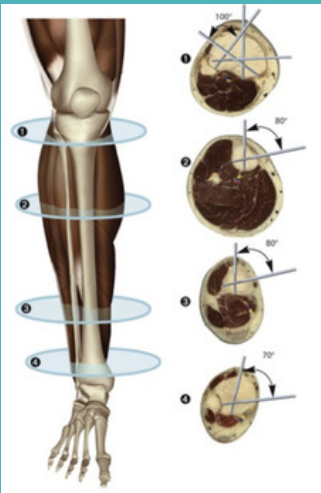


INDICATIONS

- Unstable shaft fractures
- Fracture dislocations (ankle, knee)
- Articular fractures (Pilon, Tibial plateau)
- Damage Control Orthopaedics (DCO)
- Open fractures
- Temporary fixation for transfer to trauma unit

PLANNING

- ExFix **configuration** (spanning or non-spanning)
- Consider MRI compatible kit (i.e. knee injury)
- Pin positions (**safe corridors**) - pins (4mm metatarsal, 5 mm tibia, 6 mm femur, pelvis)
- Consider access for vascular and plastic surgery
- Consider future treatment plan (circular frame, plate or IMN fixation)
- Organise **assistant** (!)
- Sequence: all Pins > Bars > Reduction > Re-enforce

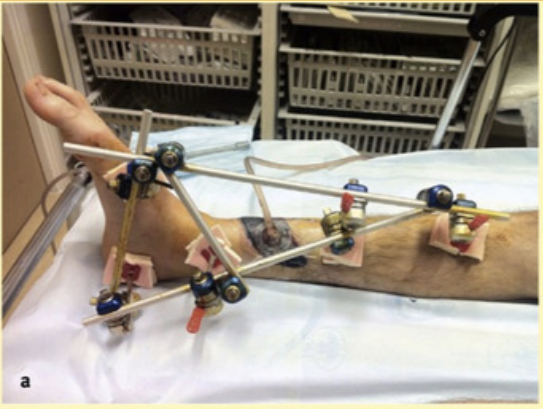


SETUP IN THEATRE

- Radiolucent** table (consider height of patient)
- C-arm (able to drive underneath table)
- Consider **screen position**
- Scrub nurse instructions: **ExFix tray**, Ortho tray, Denham pin (calcaneal pin), Power tool, pin clips, Foam dressing, Bolster(s), Drill bits (2.5, 3.2 mm)

PROCEDURE

- Supine** position and check contra-lateral leg for rotational alignment
- Full leg skin preparation and U-drapes
- Use **bolsters** (wrapped towels) to position leg, draw **landmarks** and **mark pin sites**
- Small skin incisions, **pre-drill** near and far cortex (protect soft tissues)
- Insert pins by hand (**self-drilling Schanz pins 4,5,6 mm diameter**) - avoid titanium pins
- Connect pins of **common segment** with bar(s) and tighten clamps
- Use interconnecting bar(s) with loose clamps to allow reduction maneuver
- Reduce fracture and tighten clamps (assistant)
- Re-enforce configuration (i.e. stacked bars, triangulating bars)



POST OP CARE

- Monitor **compartment pressure**
- Document neurovascular status
- Organise CT scan
- Pin site care**
- Tighten clamps** daily on ward round

STABILITY INCREASES WITH

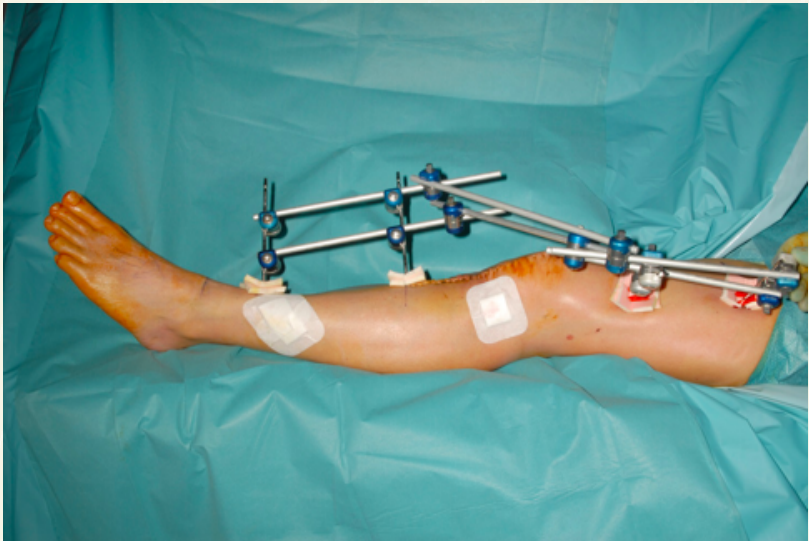
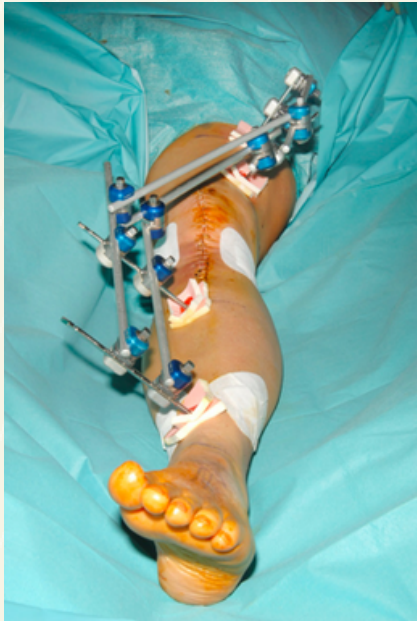
- Pin and bar size/number
- Near-far concept (pin spacing)
- Small skin to bar distance
- Frame design (3D > 2D)
- Bone on bone contact (Reduction)

ITEMS TO REMEMBER

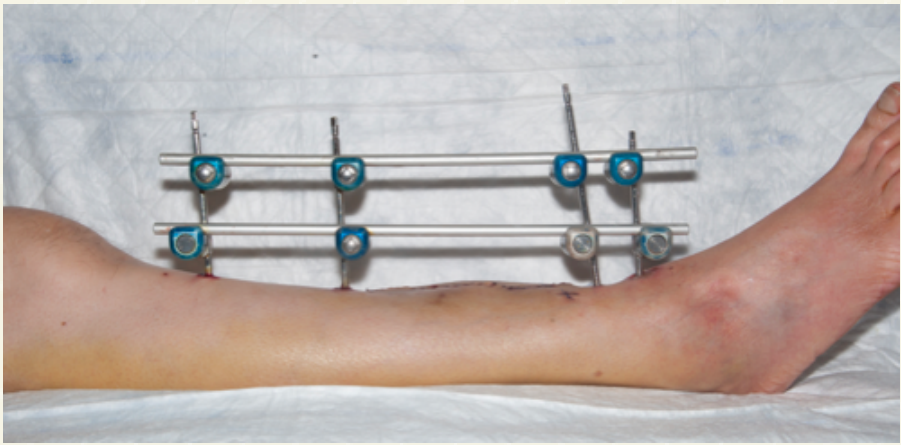
Priorities

1. Avoid neurovascular structures
2. Frame stability in even
3. Avoid the zone of injury
4. Avoid the zone of (future) fixation
5. Access to soft tissues
6. Patient comfort

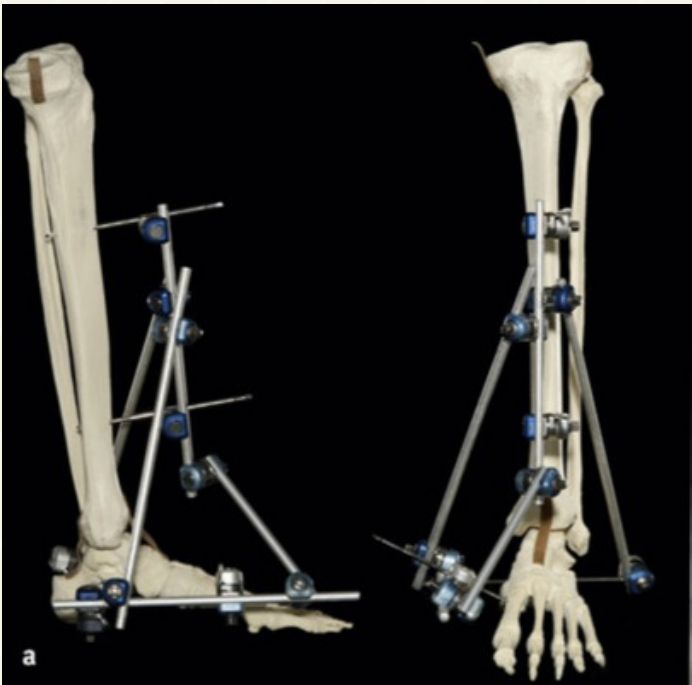
Examples of configuration



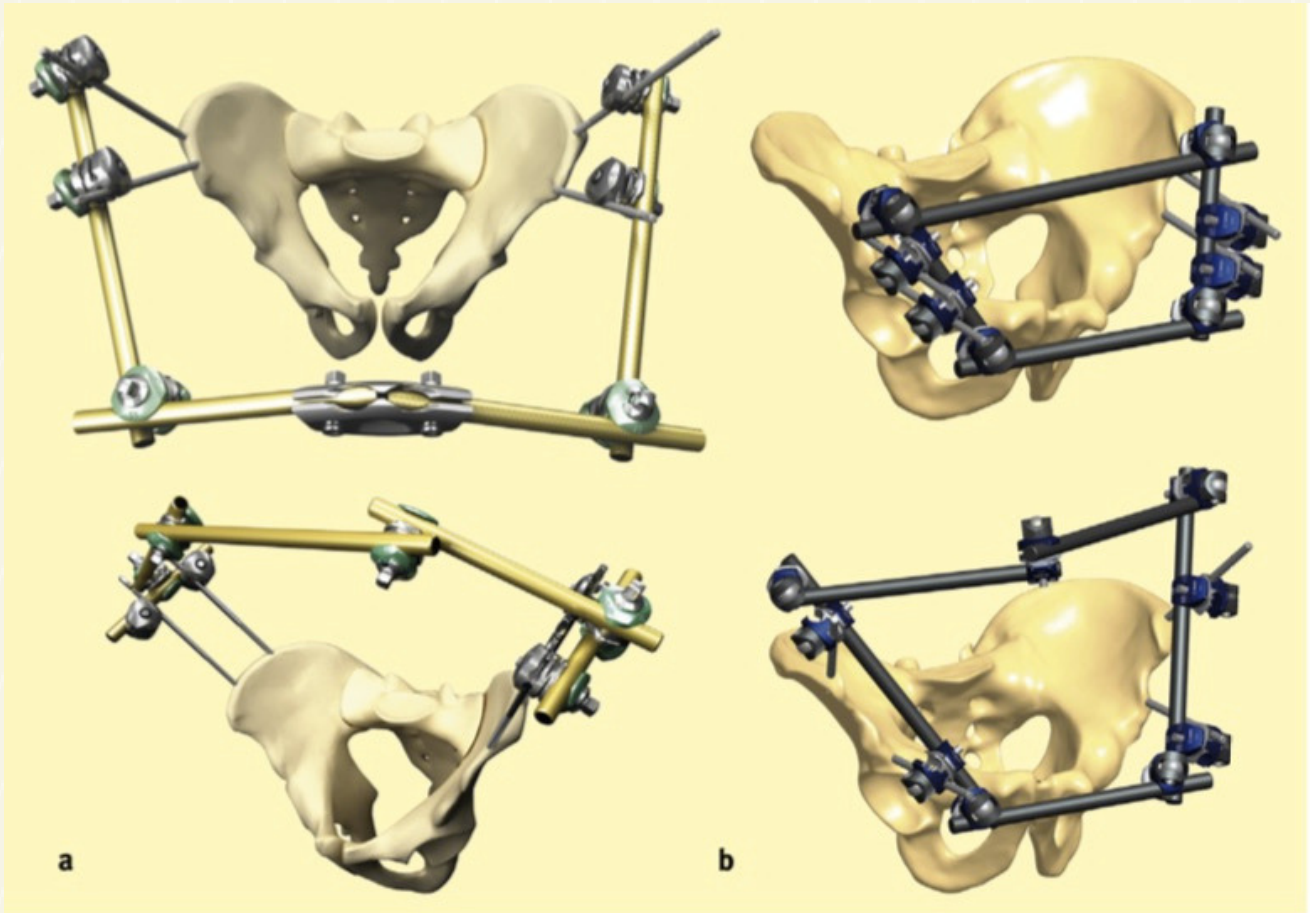
Knee spanning ExFix with anterolateral femoral pins and anteromedial tibial pins (stacked bars and interconnecting bars)



Tibial crest pins allowed single long stacked bar configuration (with difficult reduction 2 intact segment bars and interconnecting bar advised)



A-frame on medial side of ankle (spanning ExFix) and transcalcaneal pin with bilateral external fixation



a) A-Frame with iliac crest pins b) supra-acetabular pin and iliac crest pin for trapezoid configuration