**Femoral Shaft Fracture Flexible Intramedullary Nail**

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1. **Template fracture (10 points)**

* evaluate key fragments of fracture and plan technique to obtain reduction
* measure diameter of intramedullary canal by looking at the narrowest part of isthmus
* flexible nail should be 40% the width of the narrowest part of the canal

1. **Identify the distal femoral physis  (10 points)**

* usually at junction of the upper and middle third of the patella
* confirm site of physis with c-arm fluoroscopy
* mark the location on the skin

1. **Mark and make 2 cm incision both medially and laterally with distal aspect at the level of the distal physis (10 points)**

* carry incision through the fascia in line with the incision
* elevate the vastus medialis or lateralis anteriorly and spread with hemostat to develop plane down to bone

1. **Identify starting point (15 points)**

* the entry point is 2 cm superior to the physis
* place a drill with a soft tissue protector through the incision against the distal metaphysis of the femur
* the drill bit used should be slightly larger than the nail being used
* alternatively an awl may be used
* breach the femoral cortex with drill
* once cortex is breached, angle the drill obliquely
* it is imperative to angle the drill or awl proximally once the cortex is breached. if the drill or awl are advanced to far transversely instead then it will be very difficult to advance the nail up the femoral shaft

1. **Prebend nail (5 points)**

* prebend the nails to a gentle C shape

1. **Place the nails (20 points)**

* place the nail through the breached cortex
* gently tap the first nail to the fracture site
* gently tap the second nail to the fracture site
* caution should be used when advancing the nails as the tips are sharp enough to penetrate the cortex

1. **Reduce the fracture (10 points)**

* the F tool or a mallet can be used to manipulate the fracture
* once a satisfactory reduction is achieved then the nails are advanced across the fracture site

1. **Advance to final position (10 points)**

* the lateral nail should end near the greater trochanter apophysis
* the medial nail should end at the lesser trochanter or can be advanced up the femoral neck (especially in cases of proximal femur fractures)
* confirm that there are no rotational issues (that an AP of the hip is in line with an AP of the knee and a lateral of the knee is in line with a lateral of the hip

1. **Back nails out a few centimeters, cut them at the level of the skin and then advance with a tamp until only approximately 1 cm is outside the cortex (10 points)**