How I... Use Blocking Wires to Nail Proximal Tibial Fractures

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Modern nailing systems have sufficient locking options, proximally and distally, to allow stable intra-medullary fixation of short-segment metaphyseal fractures. However, mal-reduction (particularly of the proximal tibia) after nailing is still common since metaphyses lack the cortical fit of the diaphysis, giving them less intrinsic alignment when nailed1-3.

‘Poller’ (German for bollard) screws and wires have been used to prevent such malreduction, by applying three-point fixation on the nail, effectively reducing the diameter of the medulla3,4,5. Our preferred technique for metaphyseal blocking uses poller wires (2mm or greater), which are removed after locking.

Wires are preferable because:
- If misplaced slightly, they are easy to redirect, fine-tune or use as reference for a second wire.
- They are more flexible when trying to pass the nail. Blocking screws are bulky, definitive and less forgiving, which increases the likelihood of fracture as the nail is ‘bullied’ past.

Tendency for mal-alignment
The typical deformity seen is valgus and apex anterior (Figure 1-2, far left). Techniques such as accessory plating and semi-extended supra-patella approaches are well described but are not discussed here. The importance of a good entry point is critical – high up on the tibia (lateral view) and just medial to the lateral tibial spine (AP view)1,4.

The technique (Figures 1-2)
1. The tibia is reamed, measured and nailed in the usual way, with emphasis on the entry-point.
2. The deformity is then noted (typically valgus and apex anterior).
3. In the proximal tibia, blockers belong on the concavity of the deformity
4. Blocking wires (we use 3.2mm) are taken down onto the nail
5. The wire is backed off slightly to allow the nail to move
6. The nail is knocked out and the wire advanced to the far cortex
7. The nail is re-inserted

Once reduction is achieved on both views, the nail is locked with three or more screws and wires are removed. Commonly held belief – blocking screws have to be left in place as part of the fixation. In our experience, with three or more locking screws through the nail, this is not the case. We only occasionally replace our wires with screws.

Comment – training and experience
The use of wires (rather than screws) is elegant, since they are much more forgiving and easier to adjust and get just right.

The technique described is excellent for those less familiar with poller techniques. It is also superb for training, since the surgeon doesn’t have to know the exact spot where to put the blockers in advance. With experience, one gets a feel of where blockers need to go, making it reasonable to place them pre-emptively, before the nail goes down, leaving the option of adjustment/fine-tuning.

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References can be found online at www.boa.ac.uk/publications/JTO or by scanning the QR Code.
References


