Accurate insertion of a guide pin for acute correction of bone deformity using a locked intramedullary nail

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BACKGROUND

Acute correction of bone deformity with the help of osteotomies and stabilisation with intramedullary nails (IMNs) is a recognised technique.¹ Often, for accurate correction, an external fixator is used to align bone segments, which are then stabilised with a locked IMN nail.² This strategy can be time-consuming and expensive.

Here, we describe an innovative technique that aids accurate intraoperative insertion of the guide pin in a direction that leads to correct alignment of the long bone after osteotomy and IMN insertion.

TECHNIQUE

On preoperative radiographs (Fig 1a, Fig 2a), the centre of rotation of angulation (CORA) is identified. The distance between the joint surface from the point of intersection of the joint orientation angle with the convex cortex of the bone, and its distance from the CORA, is noted. One spinal needle (Fig 1b) is placed at the joint surface. A

A

B

Figure 1 (a) Preoperative radiograph showing anatomical medial proximal tibial angle (87°), CORA, measured distance to CORA and convex cortex (green dots), and position of spinal needles. (b) Intraoperative placement of spinal needles as markers to guide insertion of the guide pin.

A

B

Figure 2 (a) Preoperative and (b) postoperative radiographs of acute correction of bone deformity with locked intramedullary nails

metal ruler is used to reproduce the pre-measured distance to identify the convex cortex and CORA. Another spinal needle is placed at the convex cortex. Under fluoroscopy, a guide pin is inserted towards the pre-measured point in the convex cortex, which is then reamed until the cortex. Then, an osteotomy is done, and an appropriately-sized locked IMN is inserted (Fig 2b) with the help of temporary blocking screws, thereby resulting in correction of deformities.

DISCUSSION

We have described a simple technique for deformity correction. Good preoperative planning is essential. We also recommend use of intraoperative blocking screws to improve the accuracy of correction. Oblique rather than transverse osteotomies are better for accommodating bony translation.

References

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