

Technical note

A new technique of distal screw insertion for locked nailing

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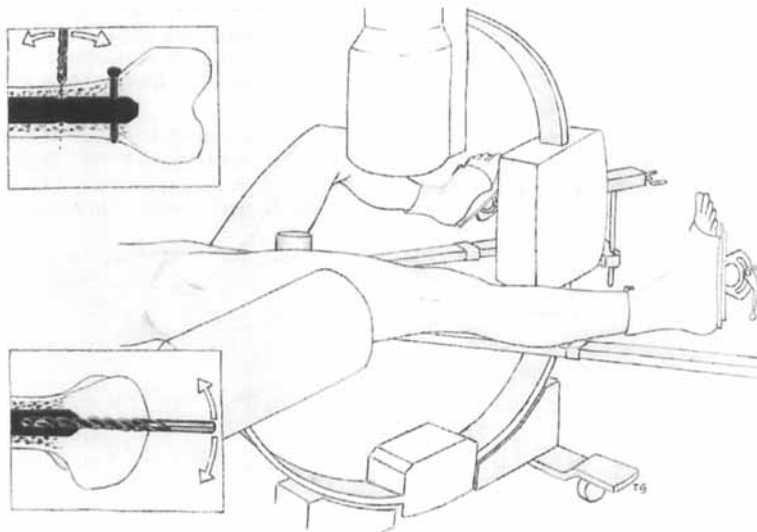
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A biplane image intensifier or 2 C-arm is centred over the distal holes of the nail. The lateral intensifier can be positioned 20–45 degrees oblique to the femur. The holes can now be seen, on the AP view, as 2 ovals of the same size on both sides of the nail. If not, the intensifier is rotated or, if the fracture is stable enough, the leg. With an anterior K-wire positioned exactly over the hole, the correct spot for the lateral incision in one plane is decided. By looking at the lateral view, the AP position for the screws can be selected. The incision should be positioned right in the middle of the nail on the screen. Now advance the awl or the drill to the cortex. The drill bit should be perpendicular to the nail and in line with 2 of the opposite ovals, checked with an external K-wire in the AP view. No holes can be seen in the lateral view, but the drill should be positioned in the middle of the nail and in line with it, in the lateral view. Proceed with the drilling and complete the procedure with the screws.

Discussion

It is sometimes difficult to find the distal holes of an interlocking nail and many different methods have been developed. Targeting devices attached to the nail exist, but are seldom used (Huckstep 1983, Boyle et al. 1986), mainly because they are unstable, or because the nails are more or less elastic and are bent during insertion. Targeting devices attached to a C-arm can be used, but are not common (Kempf et al. 1985, Grosse and Taglang 1993).

The most widely used is some kind of free hand method. Radiation of the hand is almost unavoidable with this technique. To minimize the radiation, an angulated awl or angulated radiolucent drill can be used (Cole 1985) and, to facilitate the placement of a second screw, an aiming device mouter on the first screw has been developed (Ordway 1995). The problem with the first screw still exists with these meth-



The AP-intensifier perpendicular to the holes (top left) and the lateral intensifier oblique to the nail and the holes (bottom left).

ods. MacMillan and Gross (1986) and Rao et al. (1989) have advocated the use of a thin guide-pin, placed through the lateral cortex. A thin K-wire is placed correctly with a C-arm. This thin wire can be replaced many times, without doing any harm to the lateral cortex. Once the pin has been properly placed, it should be over-drilled with a cannulated drill bit. Rau et al. (1989) also proposed that a second nail could be used as an external targeting device for the second screw. All free hand techniques hitherto have depended on perfect positioning of the C-arm to produce a true round hole on the lateral view.

My technique offers the following advantages. Exact positioning of the biplane intensifier or the 2 C-arms is not crucial. The lateral intensifier is not in the way of one's hands and the fluoroscope can be used during drilling with the hands out of the beam.

Finally, the technique is less time-consuming.

References

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