A simple technique to ensure distal locking screws are bicortical

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BACKGROUND

The length of distal locking screws in tibial and femoral intramedullary devices is critical. Of particular concern is the soft tissue irritation caused by screws extending beyond the cortex, a known cause of postoperative pain.¹ Using fluoroscopy, it can be difficult to assess whether the screw length is adequate (Fig 1), particularly if the intramedullary device does not lie in the centre of the medullary canal. Screw length may be overestimated to ensure they appear bicortical on anteroposterior radiography. We describe a quick and simple technique to ensure the screw is bicortical without using a longer screw or excess radiation.

Figure 1 In this image it is difficult to assess if the screw length is adequate.

Figure 2 Backing the screws out reveals radiolucencies in the cortex; advancing the screws to fill the lucencies ensures the screw is bicortical.

TECHNIQUE

After sizing by the standard method, the screws are inserted through the distal locking holes and tightened until the heads are buried in the cortex. Both screws are then backed out by 3mm and an image is taken. If the screws have pierced the cortex, radiolucent marks will be seen on the image (Fig 2). The screws are subsequently tightened and a repeat image is taken. If the radiolucencies are filled, the screw is bicortical.

DISCUSSION

This technique is quick, simple and requires only two further images to ensure that the screw is bicortical. Shorter screws can be used with confidence, reducing the risk of soft tissue irritation and, consequently, presentations with postoperative pain.

Reference

1. Katsoulis E, Court-Brown C, Giannoudis PV. Incidence and aetiology of anterior knee pain after intramedullary nailing of the femur and tibia. *J Bone Joint Surg Br* 2006; **88**: 576–580.