Percutaneous bone grafting from the distal femur

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BACKGROUND

Internal fixation of lower limb fractures or non-unions may be supplemented with autogenous bone graft harvested from the iliac crest. This can be poor quality, especially in the elderly, and associated with morbidity from pain, haematoma and nerve damage and requires a prepared remote surgical site. Percutaneous harvesting of iliac crest bone¹ has a lower morbidity than an open technique² but is still limited by the quality and width of bone available and risks pelvic penetration. The distal femur contains excellent cancellous bone and an open technique for its harvest has been reported.³ We have routinely used a percutaneous approach for 9 years in over 50 patients.

TECHNIQUE

Through a 1-cm skin incision over the lateral epicondyle, a circular window is made in the lateral femoral cortex using a commercially available precision bone grafting trephine. Multiple cancellous bone cores (Fig. 1) are obtained by passing the trephine in different directions through this cortical window. It is important not to breach the opposite cortex and to be aware of the tibiofemoral and patellofemoral joints. Usually, up to six cylinders of bone can be harvested and, because only a single cortical defect is made, the distal femur is not structurally weakened. Patients are allowed to weight-bear postoperatively according to the surgical procedure they have undergone without additional cast or brace support.

DISCUSSION

This is now our standard bone grafting site for lower limb surgery unless structural tri-cortical graft is required when an open iliac

crest approach is used. It affords an excellent volume of good quality bone, even in the elderly, from within the operative field with minimal morbidity. There have been no bleeding complications, haematomas, nerve injuries or iatrogenic supracondylar femoral fractures.

References

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An aid to tibial alignment in total knee replacement

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Figure 1 Cancellous bone core.

Figure 1 Extensor hallucis longus marked at the ankle pre-operatively.