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Küntschers nails for femoral fractures

Though others had tried before him,¹ it was Küntschers of Kiel who, at the beginning of the second world war, perfected intramedullary nailing for fractures of the shaft of the femur.² He described a relatively elastic hollow nail, V-shaped or clover-leaf in section, inserted over a guide wire after careful reaming of the medullary cavity to the best size. The dramatic success of the method led to its early adoption in continental Europe^{3,4} and, after the war, to its general use throughout the world.^{5,6} It is now a standard method of treatment.

In Küntschers original "closed" technique the nail was inserted through a short incision over the greater trochanter and was passed down the femoral shaft under x-ray control. Nowadays the open, retrograde method has become the more popular. The fracture is exposed and the bone ends are prepared. A nail of the correct size is hammered home into the proximal fragment so that the top end emerges in the buttock, where it is found through a separate incision. The fracture is reduced and the nail is driven back down into the distal femur. The fixation obtained is much stronger than that from plates and screws and is usually enough to allow unprotected knee exercises and weight bearing within a few days—a great advantage in the elderly, for whom the alternative of prolonged traction in bed threatens a major ordeal. Nailing is indicated when there is a complicating fracture of the patella or tibia on the same side, or damage to a major blood vessel, or when a head injury is causing prolonged loss of consciousness. It may again be of advantage in pathological fractures, particularly those caused by metastases, where union may sometimes be slow, and when, with life running out, a prolonged period in hospital is unwelcome. Finally, medullary nailing is often an important part of the treatment of non-union of the femur.

The operation is best applied to fractures of the upper or middle thirds of the bone, where both fragments afford a good grip. Transverse or short oblique fractures are easiest to hold, though the ingenious and resourceful surgeon will often succeed even with spiral or comminuted injuries. When the circumstances are favourable medullary nailing may well be seen as the method of choice for femoral shaft fractures, and, indeed, there is much evidence in its favour.^{7,8} The decision will be affected by the surgeon's confidence in his asepsis, and it may with advantage be discussed with the patient. When there is no urgency, delaying the operation a week or two appears to reduce the chance of later failure of union.⁹

When the open technique is used the main anxiety arises from the risk of introducing infection, which, when established deep in the bone, can cause prolonged invalidism and permanent disability. The safer "closed" technique, with an infection rate of less than 1%, has recently received fresh support¹⁰—and has certainly become easier and quicker now that the x-ray image intensifier is available for use in the operating theatre. Once inserted and free of infection the nail has few complications apart from a tendency to migrate, usually upwards so that the proximal end causes discomfort at the hip. Hunter¹¹ has pointed out that migration occurs more often than has been generally recognised; some movement occurs in as many as two out of three cases, though to an important extent much less often. The remedy is to replace the nail with a larger one, more firmly impacted. Migration stops when the fracture is united. A nail causing symptoms may then be removed, but the need to take out all Küntschers nails routinely is arguable.

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