

# The Tampered Implant

Intra-medullary nailing of the Femur for fracture of the shaft-unusual difficulty in extraction: Case report.

by *Dr. N. Subramanian*

**M.B.B.S., F.R.C.S. (Eng) F.R.C.S. (Edin)**  
Lecturer, Department of Orthopaedic Surgery  
University of Malaya,  
Kuala Lumpur.

THE USE OF a clover leaf Kuntschner Nail I (1958) for the internal fixation of fracture of the shaft of a long bone is a well established technique. The intra-medullary nail finds its maximum use in dealing with fractures of the shaft of Femur. From the extensive writings of Kuntschner and others in this field, it would appear that the operation by the open method is very much standardised. Any difference, if at all, is in the different ways individual surgeons measure the exact length required of the K-nail. Several nails of varying length and diameter are usually kept on the instrument table. Only one, of appropriate length and diameter is used. Occasionally a transverse bar is used either at the upper or lower end to prevent rotation of the fracture.

Recently a patient was seen at the University Hospital, in whom, in order to fix a fracture of the shaft of Femur, *two half nails* (Figure 1) were used.

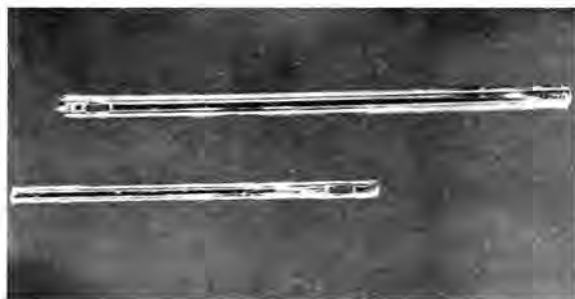


Fig. 1

The two 'half nails' that were removed from the Femur. Note the corroded metal at the sawn off ends. Both 'eye-lets' were buried in bone.

This was at another centre and three years before the present admission. The author had the unpleasant and tedious task of removing the nails, because of symptoms produced by 'metal reaction' on the bone.

## Case Report

Patient A. M. a 30 year old Malay male presented with a history of chronic discharging sinus in the back of the right lower thigh for six months. Three years ago he had sustained a fracture of the right Femur. He had two operations for this, the second one apparently to cut off a 'protruding nail'.

On examination, his general condition was satisfactory. There was a low-grade fever. All systems were normal. There were two operation scars on his right thigh - one over the Greater trochanter and a second larger one on the antero-lateral aspect of the right thigh. At the lower part of the back of the thigh, was a discharging sinus. The discharge was thin and watery, and was sterile on bacterial cultures. The surrounding tissues were indurated and painful.

Radiological examination of the right thigh showed (Fig. 2) a satisfactorily united fracture of the shaft of Femur. The intramedullary nail was visualised but its outline was not clear. The upper third of the nail appeared smaller in diameter than the rest of the nail. Though the radiological picture looked deceptively like a single nail, a correct appreciation of the presence of two nails was made pre-operatively. The bone around the lower end of the nail showed 'reaction' to metal and a possible focus of osteomyelitis.



Fig. 2

X'Ray of the Right Femur showing the intramedullary nails. Note the translucent area of bone at the lower end of the nail, due to metal reaction.

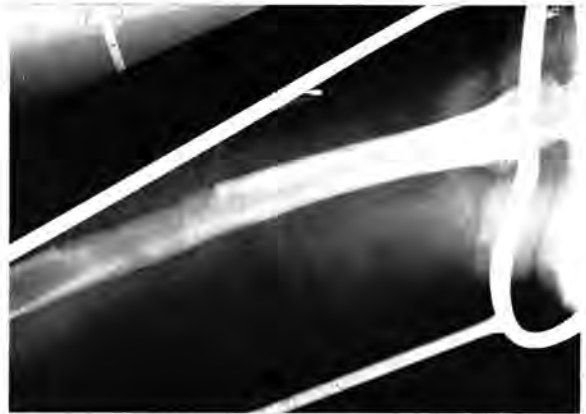


Fig. 3

Post-operative X'RaYs of the Femur, showing the area of bone removed to extract the nail.

At operation, the upper end of the nail was first exposed. There was no 'eye' to be seen and a tentative pull did not budge the nail. With a view to pushing the nail out from below, the lower part of the Femur was exposed and a roof of bone, measuring 4 centimetres in length and 2 centimetres in breadth was removed from the lateral surface. There was escape of a thin yellow fluid but no pus. With the lower end of the nail exposed, it was impossible to hammer this up. Exhausted, I decided to give a good pull to the upper end of the nail by a wrench. Quite unexpectedly, a nail measuring about 14 centimetres in length and 6 millimetres in diameter came out. The eye-let of this nail was at the lower end! The other nail was then gently coaxed up by blows with a mallet over a transverse rod and removed through the upper end with some difficulty. This measured 19 centimetres in length and 9 millimetres in diameter. The bone cavity which was exposed in the window was scraped clean and the wound closed with a Redivac drain in situ. The sinus at the back of the thigh was excised. (Figure 3).

Inspection of the nails (Figure 1) showed that both had been sawn off, at approximately their middle. It appeared that the sawn off lower end had set up electrolytic changes in the adjacent bone resulting in osteolysis of the bone and sinus formation. Swabs taken from the cavity of the bone and the sinus tract did not grow any organisms.

#### Discussion:

There are occasions when two nails may be required, especially when the medullary cavity is spacious and the nails of the necessary diameter

are not available. In such a case, two clover leaf nails devetailed to each other are used without cutting them. A search of the literature did not reveal the use of two 'half nails'. It should be pointed out that tampering with implants such as bending or cutting, produces a focus of electrolytic activity. This causes the adjacent bone to necrose and set up inflammatory changes in the surrounding tissues, requiring the removal of the implant. Metallic implants that are available now are certainly of very superior quality and for all practical purposes are inert and can be left in situ indefinitely. When multiple implants are used such as plates and screws or nails, care must be taken to see that both metals are the same quality. Preferably they should be from the same manufacturers and if possible the same batch of production.

There is one consolation in the present case, namely, the two 'half nails' did achieve their intended purpose - the fracture had soundly united.

#### Summary

A report of an usual case of Intramedullary nailing of the Femur is presented. Special attention has been drawn to the incidence of electrolytic changes in tampered implants, and the difficulties of a second operation, if the implants require to be removed. More care should be exercised in the technique of implant surgery.

#### Reference

1. Kuntschner G. 'The Kuntschner method of Intramedullary fixation' *Journal of Bone & Joint Surgery*, Vol. 40 - A No. 1. 17 - 26. 1958.