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PERTROCHANTERIC FRACTURES OF THE FEMUR TREATED WITH A KÜNTSCHER TROCHANTER NAIL

E. B. RISKA, H. VON BONSDORFF, S. HAKKINEN, H. JAROMA, O. KIVILUOTO & T. PAAVILAINEN

Department of Orthopaedics and Traumatology, University Central Hospital in Helsinki, Finland.

Thirty-nine patients with pertrochanteric fractures were treated with the Küntscher trochanter nail. Six were males and 33 females. Their mean age was 76 years. Excellent or good results of treatment were recorded in 25 cases, and good union of the fracture was noted in 19 patients within 4 months and in 15 cases as early as 2 months after the operation. The primary mortality rate was of the same order as with other methods of nailing, 15 per cent in this series. The operation is easy and short, and is suitable at least for stable pertrochanteric fractures of elderly patients.

Key words: trochanteric fractures; fracture fixation, intermedullary, internal

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The choice of the method of internal fixation of pertrochanteric fractures is in the first place dependent on the type of fracture (Riska 1971), while the after-treatment has to be planned according to the method employed. Early mobilization is essential in the treatment of patients with pertrochanteric fractures in order to avoid complications, but the duration of the operation is important too. In 1970, Küntscher presented a new method of internal fixation of pertrochanteric fractures which enabled the patient to become ambulant very soon after the operation and permitted early weightbearing. The technique was easy and the operation was rapid (Küntscher 1970 a, b). Because of this, some centres soon adopted the method (Giebel 1970, Hansen & Helland 1972, Koch & Zelder 1972). In 1973 our clinic published a preliminary report of good results (Riska & Lyytikäinen 1973). The method seemed to be suitable for certain types of pertrochanteric fractures. This motivated the follow-up of these patients and a report of late results.

MATERIAL AND METHODS

Material

The series consists of the first 39 consecutive patients with pertrochanteric fractures treated with a Küntscher nail. The nail was inserted through the medial femoral condyle after reduction of the fracture on the operating table under general anaesthesia. Six patients were male and 33 females. They ranged in age between 51 and 90 years, with a mean of 76 years. Seven of the patients had a comminuted type of pertrochanteric fracture (Table 1).

Table 1. Patients with pertrochanteric fractures treated with a Küntscher nail.

Sex	Number of patients	Average age (years)	Type of fracture	
			Pertrochanteric	Pertrochanteric comminuted
Male	6	67	6	0
Female	33	77	26	7
Total	39	76	32	7

Preoperative treatment

Twenty-six patients were treated with traction before nailing, and prophylactic anticoagulation treatment was given to 29 patients. Because of their many concomitant diseases most of the patients required an average of 4 days' preoperative treatment for high blood pressure, heart conditions, chronic renal conditions and infections of the respiratory tract.

Operative technique

The operative fixation of the fracture was carried out with the pertrochanteric Küntscher nail (Figure 1) under general anaesthesia. The fracture was reduced by extension, abduction and internal rotation under the control of an X-ray television screen. Special attention was paid to reconstruction of the calcar femorale and a slight valgus position seemed to be favourable for the procedure. A curved guide pin was introduced through a small incision at the medial femoral condyle and pushed up to a distance of 1–2 cm from the surface of the femoral head. Along this guide pin the curved trochanter nail, 10 mm in diameter, was introduced into the medullary cavity and hammered in place, and then the pin was removed. A small flat pin was inserted through the distal hole in the nail to prevent extrusion of the nail. Half an hour was usually enough for the nailing procedure. In some cases the nail perforated the lateral cortex of the femoral neck without any damage being done, but in these cases the nail was removed after the fracture had healed.

Aftertreatment

Seventeen patients were mobilized on the first day and 12 on the second day after the operation. Full weightbearing on the operated limb was allowed from the beginning. For five patients the mobilization was started later because of their poor general condition (Table 2). Three patients died on the first postoperative day. Twenty-six patients left the hospital within 4 weeks, but five of them subsequently died (Table 3). For 13 patients the hospital treatment lasted longer.

Complications

The primary mortality rate was 15 per cent (Table 4). Three patients died of pulmonary thrombo-embolism on the first day after the operation, two of heart infarction within 4 days, and one of apoplexy 32 days after the operation. Six patients died later at home. No infections were recorded.

Table 2. Pertrochanteric fractures treated with a Küntscher nail.

Mobilization after operation	Number of patients
On the 1st day	17
– 2nd day	12
– 3rd day	2
– 4th day	1
– 5th day	1
– 6th day	1
– 7th day	1
– 10th day	1
Total	36

Table 3. Pertrochanteric fractures treated with a Küntscher nail.

Duration of hospital treatment	Number of patients
Less than 2 weeks	10
2– 4 weeks	16
4– 6 weeks	9
7–10 weeks	4
Total	39

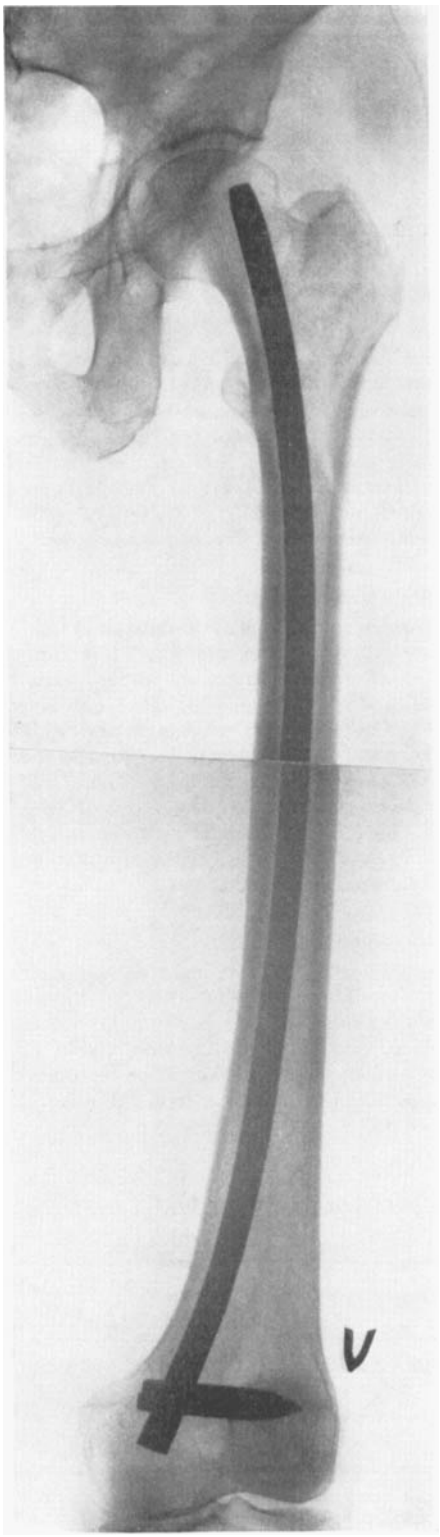

Table 4. Pertrochanteric fractures treated with a Küntscher nail.

Follow-up time	Number of patients
7–11 months	3
12–17 months	7
18–23 months	2
2 years	8
Over 3 years	7
Primary mortality (within one month)	6
Insufficient follow-up (because of death)	6
Total	39

Follow-up

In all the cases for which the follow-up period was adequate, good union of the fracture was verified within 4 months, and in 14 cases within 2 months. Nine patients were followed up for over 1 year, 15 for over 2 years. For six patients the follow-up period was insufficient because they died within 1 year after the operation (Table 4).

Table 5. Results and complications of the treatment of 39 patients with a Küntscher nail.

		Number of patients
Results		
Excellent		18
Good		7
Fair		2
Insufficient follow-up (because of death)		12
Total		39
Complications		
Mortality		12
Primary	6	
At a later stage	6	
Thrombo-embolic disease (all leading to death)	3	
Infection		0
Total		12

Figure 1. Radiograph 1 year after an operation on a 65-year-old woman with a pertrochanteric fracture of the femur treated by a Küntscher trochanter nail inserted through the medial femoral condyle.

RESULTS

For 18 patients the result of the treatment was considered to be *excellent;* there was good union of the fracture and they walked without a limp. The result was *good* for seven patients, i.e. good union of the fracture, but the patient had to use a walking stick and the range of movement of the hip joint was slightly reduced (Table 5). For two patients the result was *fair;* there was pain in the hip joint, and the fracture had united in a poor position, in one case because of a comminuted pertrochanteric fracture and in the other because the nail perforated the femoral cortex. The result of treatment could not be evaluated in 12 cases because of the insufficient follow-up period.

DISCUSSION

In spite of the advanced age of the patients, 26 could be sent home within 1 month, 25 of these cases with excellent or good results. The result was excellent in four cases and good in one case with comminuted pertrochanteric fracture although the fractures were regarded as unstable. Union of the fracture occurred in 14 cases within 2 months, which is rarely seen with other methods of nailing. The introduction of the nail in a position remote from the fracture site is probably responsible for this rapid consolidation. Additionally, no incision was made at the fracture site. This may accelerate the healing process of a fracture in the trochanteric region. The forces acting in the proximal part of the femur follow the same line as the nail (Hansen & Helland 1972). Thus, several facts speak in favour of this nailing method at least for stable pertrochanteric fractures. In some cases there was trouble from the knee joint, but this was easily treated by removing the nail later. Problems often arise in the treatment of elderly patients with hip fractures, one of them being prolonged hospitalization. Of our series, however, 26 patients went home within 1 month of surgery which is a short hospital stay (cf. Riska 1970b). The primary mortality rate was high, but the same is true of other methods of nailing (Riska 1970 a). In most cases concomitant diseases seem to be the usual cause of fatal outcome soon after the operation; this was also true of our series. Three patients died of pulmonary thrombo-embolism and two of heart infarction. Thus, in this age group the prevention of primary deaths is hardly possible.

The results of the treatment of these 39 patients with pertrochanteric fractures indicate that it is possible to achieve qood stability of the fracture with the Küntscher trochanter nail. The operation is easy and short. Early mobilization of the patient is possible and full weightbearing of the operated extremity is allowed on the first day after the operation. With this method of internal fixation it is possible to prevent, at least to some extent, the usual postoperative complications, and to shorten the hospital stay for elderly patients. But the primary mortality rate seems to be of the same order as with other methods of internal fixation of pertrochanteric fractures.

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Correspondence to: Dr. Erik B. Riska, M.D., Department of Orthopaedics and Traumatology, University Central Hospital in Helsinki, Topeliuksenkatu 5, 00260 Helsinki 26, Finland.