

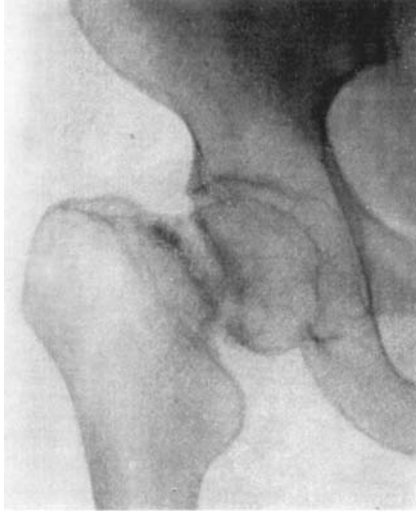
# ON OSTEOSYNTHESIS IN THE TREATMENT OF PSEUD- ARTHROSIS OF THE FEMORAL NECK

BY

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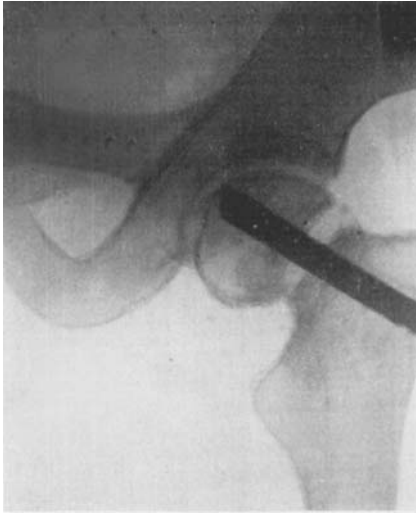
Pseudarthrosis of the neck of the femur has become much less common, since nailing became the usual method of treatment of fractures of the femoral neck. In its place, necrosis of the head has received increasing attention as the most common of the undesirable sequelae of these fractures. Pseudarthrosis is, however, still a problem which demands attention and definite treatment. Sub- or intertrochanteric osteotomy is the most widely used treatment, but even though its results are often satisfactory, one may occasionally see cases in which it is tempting to aim at a better anatomical and functional result. The treatment is usually an osteosynthesis with either some kind of nail or screw or with an inlay bone graft. *Watson-Jones* discusses this treatment in his "Fractures and Joint Injuries". He appears to reserve nailing, with or without simultaneous bone-grafting, for those cases in which there is delayed consolidation without significant displacement and with minimal shortening of the neck.

*Böhler* does not quite agree. He says that he operated one of his 28 cases 22 years after the fracture. He recommended reduction of the fracture by pin traction, and later on nailing. He does not use bone-grafting, which he regards as useless. His enthusiasm for the results is expressed in the following words: "die Pseudarthrose des Schenkelhalses ist also nicht wie man bisher allgemein glaubte durch Bösartigkeit sondern durch besondere Gutartigkeit ausgezeichnet". These words



*Fig. 1.*

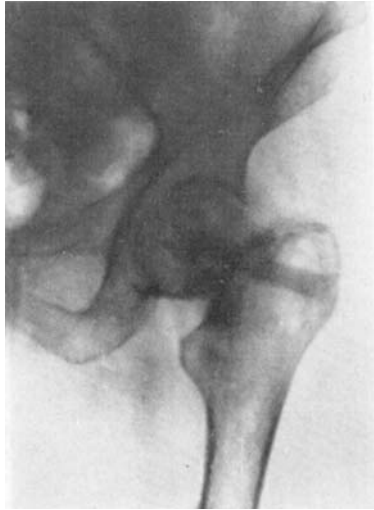
Case 1. Woman, aged 60 years, 1½ years after injury.



*Fig. 2.*

Case 1. After operation (nailing).

seam to be received with reservation even though the two cases I describe might be regarded as confirming them; actually one of the cases had considerable resorption of the neck and complete displacement, which Böhler considers to be a contra-indication to nailing.



*Fig. 3.*

Case 1. 7 months after nailing; nail replaced by bone graft.

*Case 1* was a woman, aged 60 years, who had a high fracture of the femoral neck in March 1940. The fracture was reduced and immobilised with plaster elsewhere. The radiograph taken after the reduction showed a good position, but unfortunately only an antero-posterior view had been taken. She was discharged from hospital 3½ months after the fracture, walking with a stick. I saw her 1½ years after the accident, when she was complaining of increasing difficulty in walking. Radiography showed pseudarthrosis with external rotation of the lower fragment. (See Fig. 1). I decided to attempt reduction and nailing. At operation, inversion of the thigh to reduce the fracture caused a spiral fracture of the shaft. The operation was continued. When the trochanteric

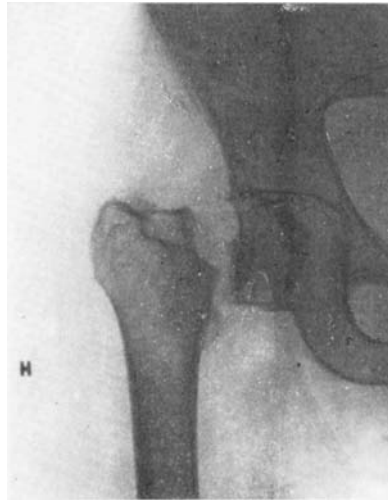
region was exposed, movement could be felt at the pseudarthrosis. (The fracture of the diaphysis was explained by the softness of the femur; the cortex could easily be pierced with a blunt instrument). A nail was hammered through the pseudarthrosis in good position (see Fig. 2). In view of the fracture of the shaft, traction was applied by means of a pin through



*Fig. 4.*

Case 1. 5 years after operation.

the lower end of the femur.  $2\frac{1}{2}$  months after operation the fracture of the shaft was united, and the pseudarthrosis appeared to be uniting. 5 months after operation the nail, which was loosened was replaced, as a precaution, by a graft from the tibia. 7 months after operation the patient was discharged from hospital. On examination a year later she could walk both up and down stairs. There was practically full range of active movement at the knee; at the hip, there was



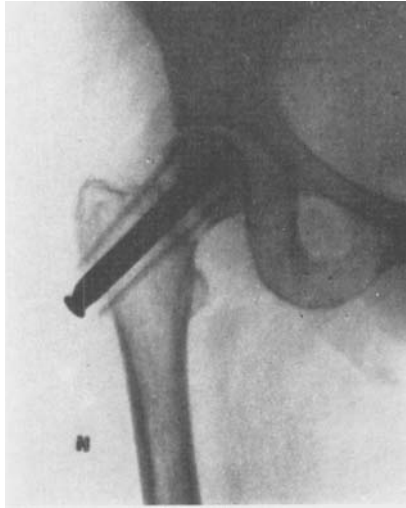
*Fig. 5.*

Case 2. Woman, aged 63 years, 11 months after injury.



*Fig. 6.*

Case 2. After reduction by traction.



*Fig. 7.*

Case 2. 6 months after operation (nailing and bone grafting).



*Fig. 8.*

Case 2. 2 years after operation.

60° flexion, 20° abduction, 30° adduction; 1 cm. shortening. No limp on walking (see Fig. 3). 5 years later the patient had further improved. She could go for long walks and had no pain. (See Fig. 4).

*Case 2* was a woman aged 63 years. She had a high fracture of the R. femoral neck in February 1946. The fracture was reduced and immobilised in plaster elsewhere. 2 months later, the plaster was removed, and she was discharged from hospital 4 months after admission, walking with two sticks. She could not raise the lower limb with extended knee while lying on her back. I saw her in January 1947, 11 months after the accident. There was external rotation and shortening. She still walked with two sticks. Radiography showed pseudarthrosis with resorption of the neck. (See Fig. 5). Operation was recommended and was accepted 1 month later. A 4 kg. plaster traction was applied, and 2 weeks later there was a surprisingly good reduction, though there was considerable separation between the ends, due to the resorption. (See Fig. 6). At operation osteosynthesis with a pin and two bone-grafts was done, the grafts being inserted into tracks prepared by drilling. After operation the patient was left free in bed. 2½ months after operation radiography showed beginning callus formation. There was approximation of the fracture ends so that both the nail and the grafts lay partly outside the corticalis. (See Fig. 7). 6 months after operation there was good callus formation. She began to walk with the help of a chair, and was discharged a month later, walking with two sticks. The nail became loose, and was removed in May 1948. At her latest examination, nearly 2 years after operation there was good union (see Fig. 8), but definite signs of necrosis of the head. The patient preferred to walk with a stick. Flexion at the hip: 110°, abduction, 20°; adduction 30°. No pain.

The last case is of special theoretical interest, because the neck has been reformed by replacment in the gap between the two ends of the pseudarthrosis. Thus one may, in some cases, agree with Böhrer about "besondere Gutartigkeit". The latest

radiograph, however, shows, as already mentioned, clear signs of necrosis of the head. It is not yet possible to say how far this may adversely affect the future condition, but some deterioration is by no means impossible.

#### SUMMARY

The author describes two cases of pseudarthrosis of the femoral neck, treated in one case by nailing and in the other by nailing and bone-grafting. The former case was operated 1½ years, the latter 1 year after the fracture. The latter case is particularly interesting, both because the fracture could be reduced, and because a new femoral neck was formed by filling up the space between the two ends at the pseudarthrosis.

#### RESUME

L'auteur décrit deux cas de pseudarthrose du col fémoral traités l'un par enchevillement, l'autre par enchevillement et greffe osseuse. Le premier cas a été opéré un an et demi après la fracture, le deuxième un an après l'accident. Le dernier cas est particulièrement intéressant, à la fois parce qu'il a été possible d'obtenir la réduction de la fracture et parce qu'un nouveau col fémoral a été reformé en remplissant l'espace séparant les deux bouts, à l'endroit de la pseudarthrose.

#### ZUSAMMENFASSUNG

Verfasser beschreibt zwei Fälle von Pseudarthrosis colli femoris, die mit Osteosynthese mit Nagel, bzw. mit Nagel und Knochentransplantat behandelt wurden. Der eine Fall wurde 1½ Jahre, der andere 1 Jahr nach dem Unfall operiert. Der letzte Fall ist von besonderem Interesse, einesteils weil man die Fraktur (die Pseudarthrose) reponieren konnte, anderenteils weil durch Ausfüllung der Diastase zwischen den Pseudarthrosenenden ein neues Collum femoris gebildet wurde.

#### DISCUSSION

*Wiberg, Silfverskiöld, Thomasen, Bentzon, Stören.*