

A. MONBERG, COPENHAGEN:

CINEMATOGRAPHIC DEMONSTRATION
OF OSTEOSYNTHESIS IN FRACTURE OF THE NECK OF
THE FEMUR AND WEDGE-SHAPED OSTEOTOMY
OF THE TIBIA

When now I want to demonstrate the process of osteosynthesis in fracture of the neck of the femur treated after the method given by *Sven Johansson*, it is because I think that the complicated and expensive measuring apparatus constructed by *Sven Johansson* and modified by other clinicians is not necessary to establish fixation with the Smith-Petersen nail in order to retain the fragments as adjusted. Perhaps it will be more appropriate here to review the technique schematically and illustrate it cinematographically.

The fracture is reposed under local anæsthesia, and then the position is verified by means of roentgen plates taken in two different planes, by means of a transportable roentgen apparatus. Plate I is taken from the perineum; Plate II is taken antero-posteriorly. If the plates taken in both planes show proper reposition of the fracture, the extremity is fixed on the extension table at about 20—25° abduction and about 10° inward rotation. Corresponding to the head of the femur a strip of adhesive tape with 5 leaden marks is placed just over the inguinal ligament—but not extending in upon the abdomen. The latter applies in particular to obese patients in whom a displacement of the leaden marks may readily take place later on. At the level of the greater trochanter 5 other leaden marks are attached to the skin by means of adhesive tape, and finally a metal scale, divided in such a way that the centimeter measures are marked off plainly on the X-ray plate.

The angle at which this scale is fixed is the same as the angle formed between the neck of the femur and the horizontal plane, and this angle is measured in Plate I, taken from the perineum. In this way we obtain the same shifting in proportional sizes on the X-ray plate when the neck of the femur and the scale are taken under the same angle and at the same

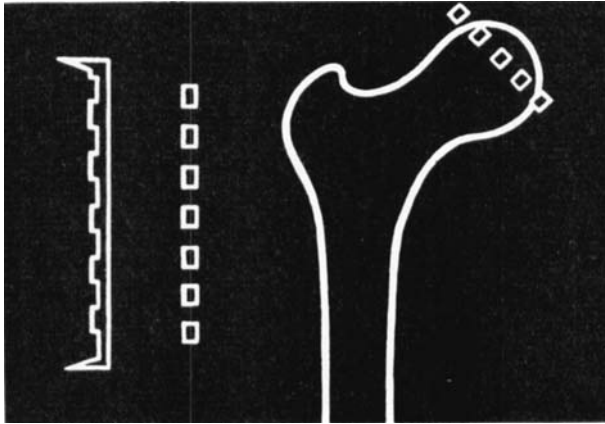


Fig. 1.

distance from the plate. As the centimeter gradation is seen plainly on the X-ray plate, it is possible directly to measure on the X-ray plate the length of the neck of the femur.

On the antero-posterior X-ray plate it is possible at the same time to determine the site of the insertion of the nail, as this is indicated by the leaden marks, and the direction of the drilling is determined according to the leaden marks fixed above the head of the femur. Thus the point of intrusion is determined. The direction of the drilling, its angle in relation to the horizontal plane and the length of the neck of the femur are determined in the same manner. Then, after disinfection of the skin the point of entrance is marked off by means of a needle which, after removal of the lead marks on the side, is replaced by a Hahn nail, as this nail may be fixed more properly in the bone, and the centre of the head of the femur is marked off at

the same time by means of a Michel clasp before the lead marks are removed.

Then an incision is made over the Hahn nail and the bone is laid open, so that the Johansson drill may be introduced as usually. After drilling, control examination of the field by roentgenography; then insertion of the Smith-Petersen nail.

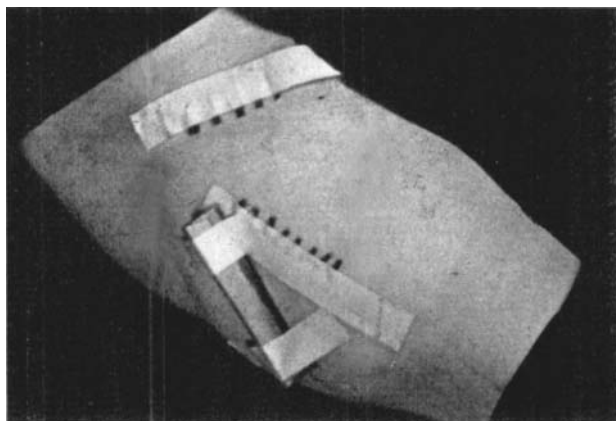


Fig. 2.

The cinematographic films show the technical details; at the same time roentgenograms are demonstrated in order to show the reposition of the fracture and the position of the introduced nail.

The next film demonstrates an instance of wedge-shaped osteotomy performed on the tibia by means of the Bayer pendulum saw. The Bayer saw consists of two blades constructed so that the teeth of the two blades are facing each other, so that one leg steadies the saw, while the other leg is brought forward. Thus "aberrations" of the saw are avoided. The Bayer saw is very serviceable, not only in various forms of osteotomy, but also—for instance—in resection of the capitulum of the first metatarsal bone in operative treatment for hallux valgus. In this way the injury to the bone is less than when the operation is carried out with hammer and chisel, helping thus to

avoid that necrosis of the bone which is often seen in later roentgenograms when the resection has been made with chisel and hammer. The film demonstrates the operation, and it also shows some close-ups of the Bayer saw in function.

The film is taken by the *Minerva Cinema Co., Ltd.*, Copenhagen.