

OPEN REDUCTION FOR SLIPPING OF THE UPPER FEMORAL EPIPHYSIS¹

BY

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The slipping femoral epiphysis is a problem, generally not solved and therapeutically difficult. The later the diagnosis is made and the more advanced the slipping, the greater are the difficulties in the treatment. A slipping epiphysis at a very early "preslipping" stage we nowadays nail and secure a normal hip joint for the patient. At the orthopaedic clinic of the Karolinska Institute up to now we have 70 nailed cases. However, with prospect of a good functional result nailing is useful only when the slipping has not gone too far; there must be at least about two-thirds of the slipping surfaces in contact with one another. When the slipping has gone further occasionally closed reduction + plaster fixation still is used. However, the so-called reduction is mostly an illusion and is also so great a trauma that necrosis often results. Traction with or without plaster fixation may prevent further slipping but seldom gives an improvement of the displacement.

An advanced slipping gives an early and severe arthritis deformans. For that reason 15 years ago Waldenström made some open reductions without internal fixation but stopped doing these operations because in two cases he got total head necrosis. We see slipping epiphysis in two to some degree different forms, one where the slipping occurs very smoothly and

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almost imperceptibly, and one with more acute symptoms, similar to those in a neck fracture, where the slipping or part of it has occurred by external influences. In the beginning of 1944 we had in the clinic two patients with a maximal slipping belonging



Fig. 1.

Frontal view of hip regions. In left hip a slight general decalcification, a wide epiphyseal line and a distinct slipping.



Fig. 2.

Lateral view of left hip: advanced slipping.

to the latter group. There was no surface contact between the neck and the head, no vessel connections to risk, so I made an open reduction and a nail fixation. If nothing had been done, the patient would have got an early and severe arthritis de-

formans and if a head necrosis had been seen postoperatively it could not reasonably be the result of the operation.

It turned out well. Up to now we have operated upon 13 cases, 10 boys, 3 girls, all between 13 and 16 years.

In the first case was used only a longitudinal incision in the fibrous capsule, after which I went in with a curved chisel in the epiphyseal line. Now I make a cross-incision with the transverse cuts near to the labrum and for two reasons I



Fig. 3.

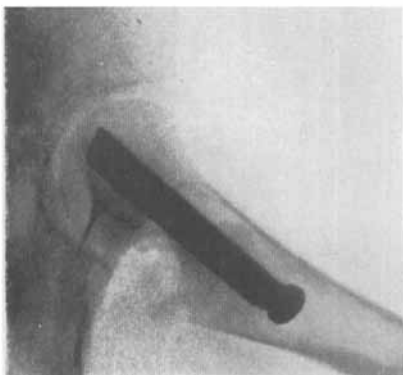


Fig. 4.

After open reduction + nailing.

do not try to dissect along the epiphyseal line. Partly it is difficult and one does not get a good view of the posterior part of the epiphyseal zone, partly there might be a risk of injuring the head cartilage and the soft tissue with vessels which always is to be found between the head and the neck in the posterior part of the joint. Therefore, in most of the cases I have begun by making a wedge osteotomy of the neck; when the wedge has been removed, the epiphyseal zone can be inspected and as a rule the reduction made without difficulty.

The osteotomy must be done carefully; the soft tissue connections on the posterior side of the head-neck must not be cut. That might be the reason why in this series no head necrosis has occurred. In order to avoid stretching of these soft tissue

structures with risk of circulatory damage the wedge must be made big enough. My experience seems to be the same as is reported by W. T. Green of Harvard University.

In fresh displacements, where the neck is not especially deformed, it is often sufficient only to remove 4-5 mm. of the neck; where the deformity is more pronounced, a wedge osteotomy is done close to the epiphyseal line with the base of the

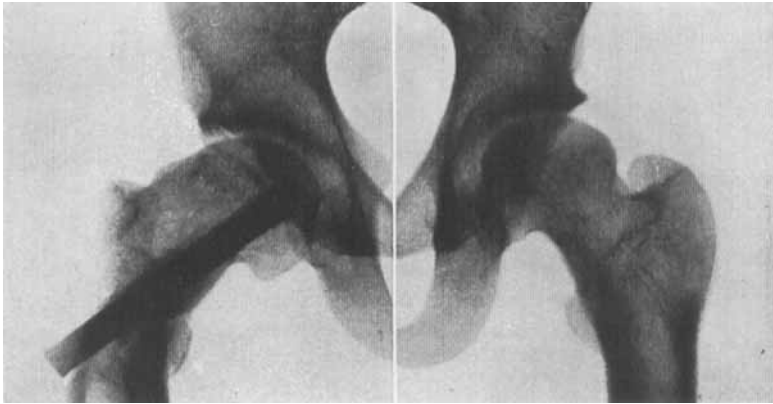


Fig. 5.

2½ years after operation. The nail in left hip removed. Right hip meantime nailed. In left hip the socket is slightly sclerosed. Functional result up to now excellent.

wedge ventrally and cranially. The purpose of the osteotomy is both to facilitate the reduction and also better to adapt the neck to the head.

The reduction done, by help of a guide, a Smith-Petersen nail is inserted longitudinally through the neck. It is easy to get in with guide and nail, but it is necessary to control the nail, so that with its point it does not displace the head. In one case it was rather difficult to get the nail into the head and I had to use a screw instead. If a nail is used, it is advisable to insert it rather posteriorly in the head; when the nail is hammered home in the head in that way a tendency to a new displacement is avoided.

In 12 cases the preliminary results can be judged. In 10 cases, up to now, no necrosis. In the 11th case there was a total necrosis before the intervention. In the 12th case was seen a partial necrosis of the size of a hazel-nut in the cranial part of the head. It disappeared very quickly. Both subjectively and objectively the results can now be considered as very good in 10 cases. The 11th case is the boy with a total necrosis before

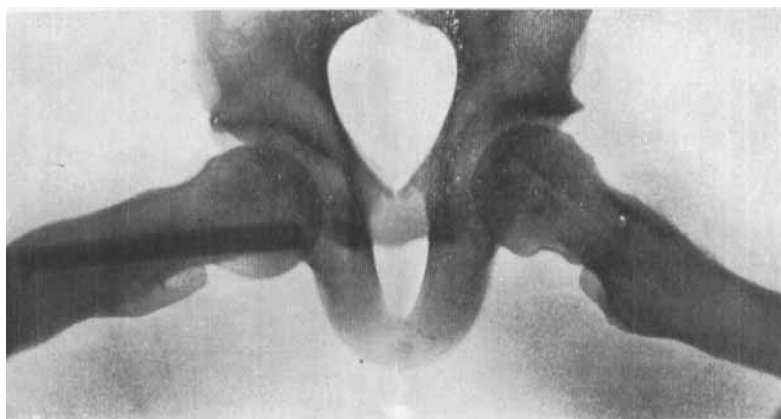


Fig. 6.
Lateral view of Fig. 5.

the reduction, in the 12th case the reduction was not acceptable. Finally in one case there was a slight infection postoperatively with some decalcification and narrowing of the joint space. This patient considers himself as symptomfree, but the future of the joint is doubtful.

The open reduction ought to be an unnecessary operation, if the diagnosis is made in proper time, i.e. very early. It is from a technical point of view rather difficult and the necessary condition for a good functional result is an exact reduction. About the late results nothing can be said now. Not infrequently already preoperatively the radiologic examination reveals a slight narrowing of the space and at the operation a softening of the cartilage is seen. A normal hip cannot be expected but

the results must be evaluated in comparison with the condition of the patients without operation.

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