

## ON THE TRANSPOSITION OF THE ILEOPSOAS-MUSCLE IN OPERATIVE REDUCTION OF CONGENITAL HIP-DISLOCATION<sup>1</sup>

*By*

F. LANGENSKIÖLD

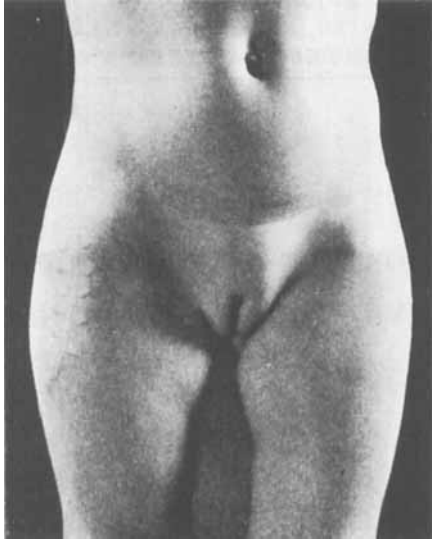
In a previous paper I reported on the method for operative reduction of congenital dislocation of the hip, used at the Invalid Foundation's Orthopaedic Hospital. For the technique I refer my readers to that report. In the follow-up of the operated cases (up to the time of writing 189 out of 360 treatments in all) we observed thirty-three failures; in these cases we found a new operation advisable. With few exceptions (one pseudarthrosis after osteotomy of the femur, two cases of upward sliding and some others), they showed recurrences of a specific type.

Practically all the recurrences were forward dislocations, the femoral head could be felt and often seen (Fig. 1) on the ventral side of the upper part of the thigh under the iliac spine; the Trendelenburg sign was slightly positive. The trochanteric region protruded less than on the sound side and the gait was a feeble limp. The roentgen picture showed a subluxation with broken Shenton-line. When the limb was brought into extreme inward rotation the palpable head disappeared and a roentgen picture, taken in this position, showed in many instances that the joint had been reduced and in the other cases that the position had improved considerably.

In some cases where, at the operation, we had found great anteversion of the femoral neck and also that the reduction was stable only when the limb was held in extreme inward rotation, we performed a rotation-osteotomy on the diaphysis of the femur, which brought the foot into a straight forward position, while the upper part of the femur

---

<sup>1</sup> Read at the meeting of the Nordic Orthopaedic Association in Oslo 13.VI.1952.



*Fig. 1.*

remained in inward rotation. When there was a recurrence in such a case the condition was exactly as described above, with the difference that the child walked with the foot turned more or less outwardly.

It was obvious that in the recurrent cases the inward rotation was insufficient. The backward position of the trochanter major, and the increased tension in the anterior part of the joint capsule, brought about by the operation, could not balance the strong outward-rotating muscles.

From this I drew the conclusion that it was necessary to create an active, inward-rotating force, and that this could be achieved only by transplanting one outward-rotating muscle so that it became an inward rotator. This would, at the same time, diminish the force of the outward rotators.

On searching for a muscle, most suited for this operation, I decided to use the ileopsoas, which is easy to reach at the operative reduction, is strong enough and can be transplanted without losing its chief function, the flexion of the hip joint.

I believed this to be quite an innovation, never before published, but when German literature again became available, I found that *Rohleder* had already realised and published the same idea in 1947, based upon quite similar observation and conclusions as I had reached myself. His method, however, differs considerably from mine and seems to have received little support. For this reason, therefore, I

submit that my experiences merit publication irrespective of the question of priority, which without any doubt belongs to Rohleder.

The transplantation is accomplished by chiselling off the lesser trochanter, liberating the muscle sufficiently, grasping the trochanter with a non-resorbable thread, pulling it across the anterior surface of the femur and the deep extensors, then fixing it subperiosteally to the outside of the femoral shaft. This is easy to perform when it is



Fig. 2.

done simultaneously with the operative reduction; but it is much more difficult if performed as a secondary operation.

It is obvious that all cases do not need a strengthening of the inward rotators and on searching for criteria we first devoted our attention to the anteversion of the femoral neck. We measured it regularly, both directly at the operation and by the roentgen method described by *Edgren* in 1948 and which *Dunn* recently has announced as quite new obviously unaware of *Edgren's* report. We found, however, that forward redislocations had occurred in some cases with an anteversion not exceeding the normal; on the other hand that great anteversion did not indicate that redislocation would occur.

In the course of these operations we had observed, that the acetabulum had a rather variable position. Sometimes it was turned so much forward that it was easy to see its base, when the patient was in a supine position. In other cases it was turned outward so that the patient had to be moved over to his other side for an inspection of it. It is obvious that if the opening of the acetabulum is turned to the front and there is at the same time an anteversion of the femoral neck, the head will be stable in the socket only when the leg is rotated inwardly; also that, upon an outward rotation, the femoral neck will

very soon bump against the border of the acetabulum and lift the femoral head out of the socket.

If one could determine both the angle of anteversion of the femoral neck and the angle between the acetabular axis and the frontal plane of the body, it should be possible to find out which total sum of both angles represents the limit, any transgression of which would involve the risk of forward dislocation, thereby indicating a transplantation of the ileopsoas.

To achieve this we have made many attempts, by several methods, to measure the angle of the acetabular axis. Among these methods we found the use of the instrument reproduced below, to be the most satisfactory (Fig. 2). As seen from the illustration it is a steel needle, attached perpendicularly to a ring with a cross and secured in position by two stays. This instrument is placed so that it steadily presses upon the borders of the acetabulum and the angle which the needle forms with the frontal plane is then measured. In many instances this can be done satisfactorily but in others it is very difficult, not to say impossible, to place the instrument with accuracy. For this reason, we did not find it expedient to trust the measurement completely. Instead we have chosen a more practical way. After reduction we simply rotate the leg outwardly and watch to see if the head is dislocated or not. If dislocation occurs we transplant the ileopsoas and put the leg in plaster with an extreme inward rotation. After two weeks we perform a rotation osteotomy which brings the foot and the patella to a straight forward position, the upper part of the femur remaining in inward rotation.

It is not possible to say beforehand which cases, according to this rule, need a transposition, but we have found that all forward dislocations belong to this group. And we have found quite an astonishing number since we became aware of the fact that there exists such a kind of dislocation.

By forward dislocation I mean cases in which the femoral head can be felt on the front side near the iliac spine. This corresponds to what was formerly called supracotyloid or supracotyloid and iliac dislocation. I am conscious of the fact, that there are orthopaedic surgeons who may have seen such cases very rarely. Nevertheless I can reply that neither did we see them before our eyes had been opened, and we have come even to expect them. I feel sure, that in the future many surgeons will come to share my own experiences.

Up to date we have performed eighty transpositions of the ileopsoas, forty-seven primarily and thirty-three secondarily. Among them we have seen two forward dislocations. In both cases the attachment of

the ileopsoas tendon to the femur had failed, as was found at the new operation, when the tendon was refastened with a good result.

It is too early for an estimate of the final results, but we have found the transplantation of the ileopsoas in selected cases to constitute an advance. The complete material will be published by one of my former assistants.

#### S U M M A R Y

The account is based on the experience gained from 80 transpositions of the ileopsoas. The author of the paper had "found the transplantation of the ileopsoas to be an advance in selected cases".

#### R E S U M E

Le compte-rendu donné est basé sur les expériences retirées de 80 cas de transposition du psoas-iliaque. L'auteur de ce rapport a "trouvé que la transplantation du psoas-iliaque est un progrès dans certains cas bien choisis".

#### Z U S A M M E N F A S S U N G

Dem Berichte wird die Erfahrung an 80 Transpositionen des Ileopsoas zugrundegelegt. Der Verfasser der Arbeit hat „gefunden dass Transplantation des Ileopsoas in ausgewählten Fällen einen Fortschritt bedeutet“.

#### R E F E R E N C E S

- Dunn, D. M.:* Anteversion of the neck of the femur. *J. Bone & Joint Surg. Brit.* Vol. 34-B: 181: 1952.
- Edgren, W.:* Metod för bestämning av femurhalsens anteversionsvinkel vid kong. höftledslux. *Nord. fören. f. med. radiologi, Möte i Oslo 11.VI.48.*
- Langenskiöld, F.:* Technical aspects of the operative reduction of congenital dislocation of the hip. *Acta orth. scand.* 20: 8: 1950.
- Rohleder, O.:* Das Torsionsproblem der Luxatio coxae und seine klinische Behandlung. *Verh. d. Deutsch. Orthop. Ges.* 36. Kongr. in Heidelberg. *Zeitschr. f. Orthop.* 78: 277: 1948.