FROM THE SOPHIES MINDE ORTHOPEDIC HOSPITAL, OSLO
CHIEF SURGEON: MED. DR. EIVIND PLATOU

SHELF OPERATION FOR CONGENITAL DISLOCATION OF THE HIP

A post-examination of 57 cases

By

H. S. NISSEN-LIE

As far back as the last century attempts were made to secure reduction of congenital dislocation of the hip by means of the shelf operation. (Lexer, Clark, Albee).

This method has been practised since 1934 at Sophies Minde, the Orthopedic Hospital in Oslo. Up to December 31, 1946, altogether three hundred and twelve children with congenital dislocation of the hip had been treated. Shelf operations were carried out on 57 of these cases. Three patients were operated on both sides—thus the operation was performed 60 times in all. (Patients with subluxation are not included in these series).

The indication for operation has been reluxation. We have only performed the operation after one or more reductions and retention attempts. In a few cases (5 in all), on account of an especially inadequate acetabulum, it was decided at an early stage to use shelf operation although no reluxation had taken place.

The interval between the first reduction and the operation has varied considerably—from 3 months to 3 years. The ages of the patients at the first reduction were between 1½ and 6 years; most (34) were under three years of age. The operation was usually performed during the ages 2-4 years.

There have been few complications, no deaths, and no serious infection.

Observation and post-examination.

Aside from the usual observation, a post-examination was made in 1947. Of the 57 patients, 47 were kept under observation more than

two years after the operation. The longest period of observation was 11 years.

The age of the patient at the time of the examination is of great importance in considering the clinical result. Only 10 patients were over 15 years of age at the time of this examination. The clinical results would seem to be quite good: 20 were symptom-free; 23 without pain, but with a slight limp; 14 had pain and a severe limp. (Of the 10 patients over 15 years of age, about half suffered considerably).

From the roentgenological point of view, the results are less satisfying. Normal hip-joint, with caput covered by the shelf, was found in only 13 cases (22%). A less satisfactory result—subluxation, small acetabulum—caput too far out—was obtained in over half the cases (29). Reluxation was discovered 15 times; and 20 times the shelf was reabsorbed or lay too high.

DISCUSSION

Only the 22% with roentgenologically normal hip-joints have a chance of a joint which is free of pain at maturity. The other 78% will probably get arthrosis and their condition will grow worse.

The results are, therefore, unsatisfactory, and we have to discuss why.

1. *Operative technique.*

Serious complications, which may perhaps cause a bad result, do not exist. We have exposed the operative area by making an incision along the crista ilii and proceeded sub-periosteally down to the acetabulum, but did not open the joint. We then cut in a little over the acetabulum and inserted bone chips taken from the crista ilii. With this technique it is easy to put the shelf too high, in spite of roentgenological examination during the operation. So far as one can judge by the roentgen photographs at hand, in slightly more than half the cases the shelf was adjusted to the right height after the acetabulum was broken down. The size and position of the shelf, however, does not seem to have any decisive importance as regards the final result. The few satisfactory results are divided about equally in the two groups.

2. *Reduction.*

Most of the patients had had one or more reluxations before we decided upon shelf operation. A reluxation always points to pseudo-reduction with interposition of capsule and ligament. In the few cases

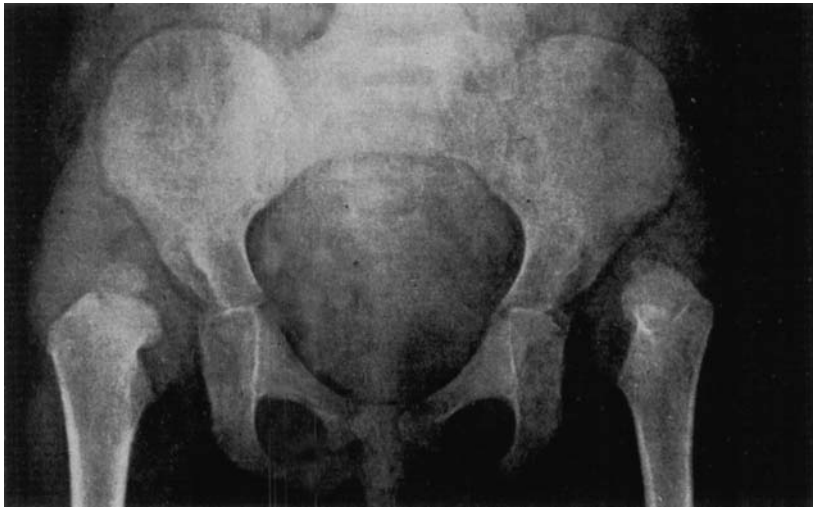

Fig. 1 a. E. S. born 7-9-30.
Double-sided hip luxation. Reduced first time 2½ years old. Right hip remained in place; left reluxated several times. Two years after first reduction shelf operation on left side.

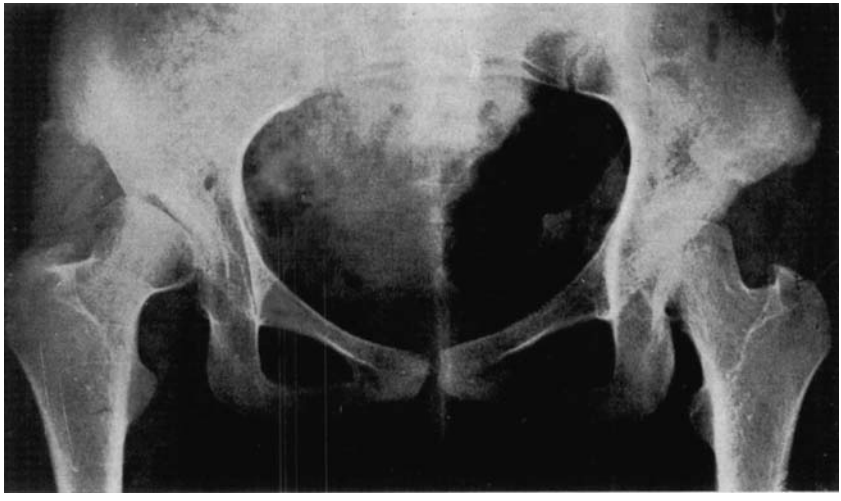

Fig. 1 b. Same patient.
Control 6-30-47. Twelve years after operation. Left hip shows normal condition. Right hip subluxation with deformed caput.

in which reduction has been really successful, and in which reluxation has not occurred, the result has been good. But in these cases, it is impossible to say whether the shelf operation has actually had anything to do with this good result.

We have some cases which show good reduction, good retention and a good result, but where the visible remains of the shelf lie so high that it can hardly have had anything to do with the satisfactory result.

My impression is that an early anatomical reduction is the most important factor. Where that does not succeed, and the hip reluxates, it should be reduced by operative means. It will then seldom need shelf operation. Shelf operation should be reserved for subluxation. In these cases the operation has a good effect.

We have, however, a case in which shelf operation seems to have played an important role in spite of questionable reduction with many reluxations. Fig. 1.

E. S. born September 7, 1930, 2½ years old, had double-sided luxation, pseudo-reduction and several reluxations of the left side. After 2 years, shelf operation was performed on the left side. Examination 12 years later shows a normal hip joint on the left side. On the right side, where the shelf operation was not performed, subluxation and caput deformation were seen.

SUMMARY

In 57 out of 312 patients treated for congenital dislocation of the hip, a supplementary operation was performed,—the shelf operation.

Röntgen examination 2-11 years after the operation shows that only 22% have a normal or almost normal hip-joint. Subluxation—or complete dislocation—was found to exist in the others. In no less than 20 instances the graft was reabsorbed or the remains lay so high that no effect was produced.

The reasons for this bad result are discussed and the conclusion is that an anatomic reduction is of decisive importance. If the reduction is not satisfactory the shelf-operation does not prevent a bad result, if the reduction is good, the shelf operation is seldom necessary. If reluxation occurs, an open reduction should be undertaken at once. In subluxations however, the shelf operation is of great value.

RESUME

Opération de la butée ostéo-plastique dans la dislocation congénitale de la hanche.

Chez 57 malades sur 312 traités pour dislocation congénitale de la hanche, il a été pratiqué une opération supplémentaire : l'opération de la butée ostéo-plastique.

Un examen radiographique pratiqué de 2 à 11 ans après l'opération montre que 22 % seulement des malades ont une articulation de la hanche normale ou presque normale. Chez tous les autres, il y avait subluxation ou dislocation complète. Dans 20 cas la greffe avait été réabsorbée ou ce qui en restait était placé trop haut pour produire de l'effet.

Les raisons de ces mauvais résultats sont discutées et la conclusion en est qu'une réduction anatomique est d'importance décisive. Si la réduction n'est pas satisfaisante, l'opération n'empêche pas un mauvais résultat, si la réduction est bonne, l'opération est rarement nécessaire. S'il y a une nouvelle luxation, il faut immédiatement pratiquer une réduction ouverte. De toute manière, l'opération de la butée ostéoplastique est de grande valeur dans les cas de subluxation.

ZUSAMMENFASSUNG

Unter 312 Patienten die wegen angeborener Hüftverrenkung behandelt wurden, führte man in 57 Fällen eine supplierende Operation — die Pfannendachplastik — aus.

Die Röntgenkontrollen 2—11 Jahre nach der Operation zeigen, dass nur 22 % ein normales oder beinahe normales Hüftgelenk aufweisen. Bei den übrigen fand man Subluxation oder Totalluxation. 20 mal war das Transplantat resorbiert worden oder sein Rest lag so hoch, dass er wirkungslos war.

Die Ursachen dieser schlechten Resultate werden besprochen und man hat die Meinung dass die anatomische Reposition von ausschlaggebender Bedeutung ist. Wenn die Reposition nicht zufriedenstellend ist, kann die Pfannendachplastik ein schlechtes Resultat nicht verhindern. Wenn die Reposition jedoch gut ist, sieht man sich selten genötigt eine Pfannendachplastik auszuführen. Wenn es daher zur Reluxation kommt soll man unmittelbar die blutige Reposition ausführen.

In Fällen von Subluxation ist hingegen die Pfannendachplastik sehr wertvoll.