

TRAUMATIC DISLOCATIONS OF THE HIP

Late Results in 76 Cases.

By

BERNHARD PAUS

The traumatic dislocations of the hip can be classified as central and non-central. In the central type the head of the femur is driven in towards the pelvic cavity through the fractured acetabular floor. In the non-central type the head is forced out over the acetabular edge.

1. *Non-central dislocations.*

The clinical picture is well known and will not be discussed here. It was admirably described by *Bigelow* (1869), who also dealt with the possibility of "dry arthritis" as a late complication.

From the time of Hippocrates the method of reduction has been either a vigorous pull upon the extended hip or manipulations of the joint in a flexed position.

The methods of after-treatment vary considerably, and may last only a couple of days or several months. Some authors of textbooks (*Böhler* (1941), *Christopher* (1947), *Speed* (1942)), consider bed rest for some few days or a couple of weeks to be sufficient; afterwards the patient can get up and walk without paying any special regard to the hip. Others (*Compere & Banks* (1943), *Key & Conwell* (1942), *Smith* (1949)) recommend rest in bed with traction, or with slight abduction of the joint after a posterior, or adduction after an anterior dislocation, succeeded by non-weightbearing for some months. *Watson-Jones* (1944) advises a hip spica for two months with subsequent non-weightbearing for six months. *Armstrong* (1948) reports from the R.A.F. that the treatment adopted for uncomplicated dislocations was immobilisation in plaster for 8 weeks, followed by exercises without

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weight-bearing for 4 weeks and finally 4-6 weeks' stay at a Rehabilitation Centre. That is to say, the treatment lasted 16 or 18 weeks.

This difference in the after-treatment is due to uncertainty respecting the prognosis. It is, of course, known that sequelae may arise in the form of avascular necrosis of the femoral head, hypertrophic arthritis or calcification in the soft tissues, but there are great differences of opinion as to how frequently such complications occur. *Böhler* (1941), for instance, says that he has never seen necrosis of the femoral head after uncomplicated dislocation. *Speed* (1942) states that "a small number" get necrosis. *Watson-Jones* (1944) mentions 20 to 30 per cent and *Compere* (1943) a "large percentage", larger than after fracture of the neck of the femur. Neither does the literature give any information as to what factors are significant in the occurrence of complications.

Hitherto, over fifty cases of necrosis of the head have been reported after dislocations (*Banks* (1941), *Ibsen* (1944) and others). Some believe that the age 15 to 20, the obturatorial type of dislocation, and late reduction (after 48 hours) are unfavourable factors.

In experiments on animals *Müller* (1924) found no necrosis after dislocation in very young or fully developed animals, whereas necrosis occurred in all animals of adolescent age.

In some of the follow-up investigations reported, the time of observation was too short, while others were incomplete. On reviewing the results of follow-ups where the observation time was at least 2 years and where cases with complicating fracture of the acetabular floor or of the femoral neck were excluded, and where the examination embraced the subjective, objective and radiological findings, it was seen that symptoms were noted by:

<i>Kaijser</i> (1936)	in 10 of 39 cases
<i>Buus</i> (1938)	" 6 " 41 "
<i>Böhler</i> (1941)	" 2 " 7 "
<i>Quist-Hanssen</i> (1945)	" 3 " 7 "
<i>Armstrong</i> (1948)	" 5 " 34 "
Total: 26 of 128 cases	

This is to say that about 20 % may be expected to get symptoms. NB! nothing is said, however, as to the severity of these symptoms.

I have followed-up the patients who in the period 1920-1946 were treated in the Ullevål or in the Aker Hospital for traumatic dislocation

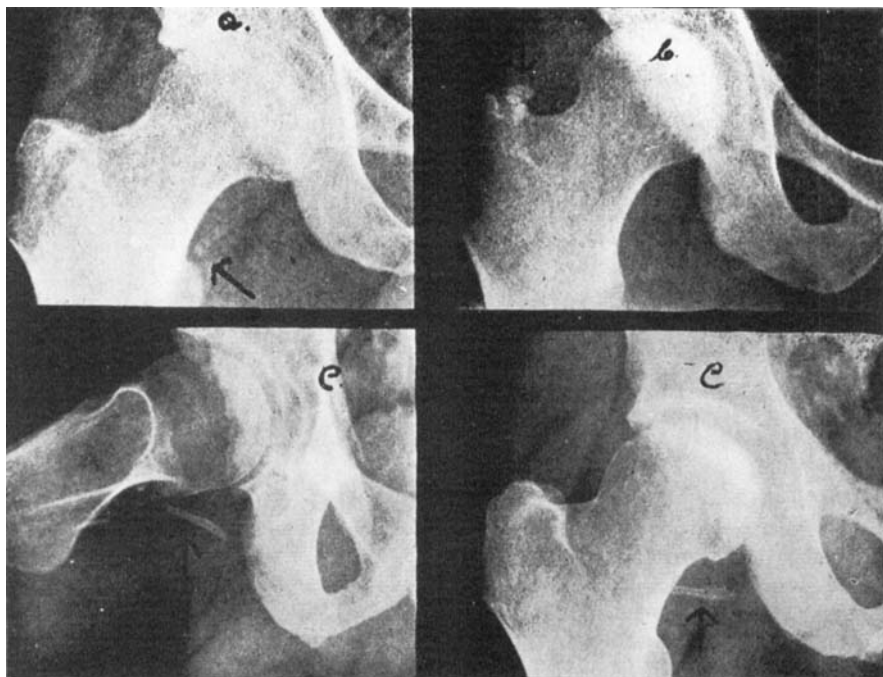


Fig. 1.

Insignificant calcification in the soft tissues, following posterior uncomplicated dislocation and with no subjective or objective symptoms.

- a) 33 years old man. Reduction after 5-6 hours. Bed rest for 22 days. 18 years follow-up.
- b) 13 years old boy. Reduction after 3-4 hours. Bed rest for 21 days. 10 years follow-up.
- c) 23 years old man. Reduction after 6 hours. Bed rest for 8 days. 22 years follow-up.

of the hip. Bearing in mind the possibility of a late-developing necrosis of the head, this allowed at least 3 years observation.

There were 70 dislocations sustained by 69 hips, as one patient had dislocated the same hip twice in 9 months. Most of them were sporting accidents sustained, for instance, in 30 cases, during ski-jumping or ski-running, owing to one ski catching in some obstacle. In 6 cases it was not the leg which was caught that was dislocated, but the other. In 14 cases the dislocation was due to falls from bicycles, car or tram. The rest were due to sledging accidents, motor-car or motor-cycle collisions, aeroplane crashes etc. "Dash-board injury" was met with only once.

The youngest patient was 4 years and the oldest, 73 years old.

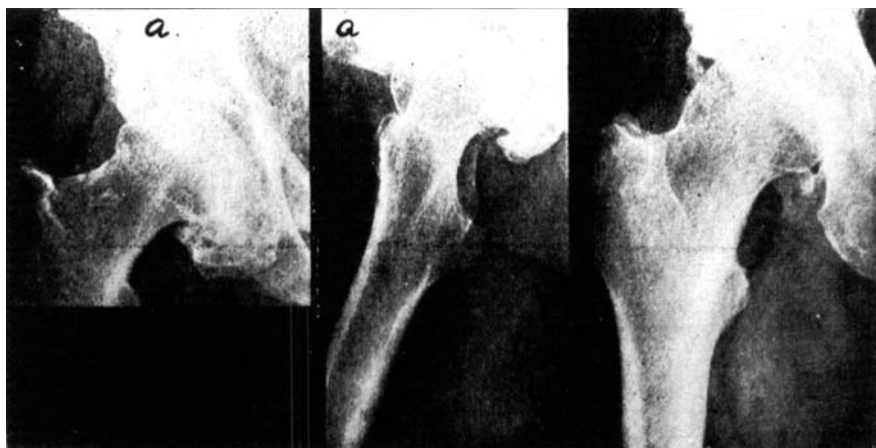


Fig. 2.

Marked calcification in the soft tissues with no subjective or objective symptoms.

a) 37 years old man. Dislocation of unknown type. Reduction after 6 hours. Bed rest for 9 days. 27 years follow-up.

b) 54 years old man. Posterior dislocation with fracture of the acetabular edge. Reduction after 3-4 hours. Bed rest for 2½ months because of other injuries. 4 years follow-up.

Most of them were aged from 11 to 30, with equal numbers in each 5-year group.

In 57 cases the dislocation was posterior and in 9 anterior, while 4 cases could not be grouped on the basis of the information in the records. Nor did these permit the type to be more precisely diagnosed. The dislocations were equally distributed between the two sides.

In 57 cases the patients were males and in 13, females. The distribution according to sex and type was the same in the different age-groups.

Type	4-15	16-25	26-40	41-73
Posterior	17	17	16	7
Anterior	1	2	3	3
Unknown	1		1	2
Total	19	19	20	12

In the great majority of cases the reduction was effected by manipulations of the flexed hip and it never presented any great difficulty. The after-treatment as a rule consisted in confinement to bed lasting from 1 or 2 days up to 2 or 3 weeks, in most cases less than 14 days. The patients were then allowed to get up and to put weight on the leg.

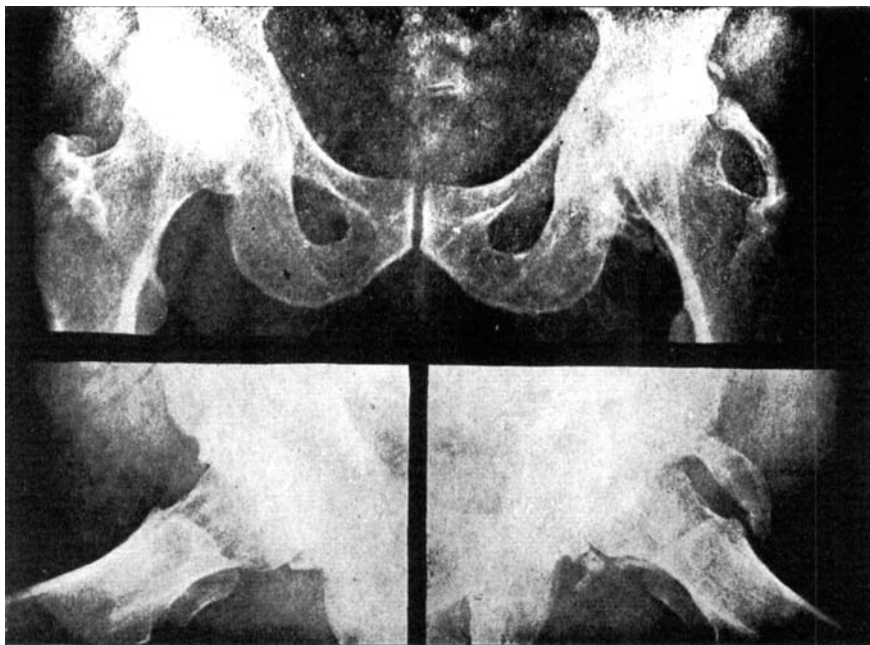


Fig. 3.

Marked calcification in the soft tissues.

67 years old man. Posterior dislocation and fracture of the acetabular edge. Reduction after 2 days. Bed rest for 4 weeks. 16 years follow-up (now 83 years old).

Subjective: slight pain in the hip for the last years.

Objective: approximately normal mobility.

In the follow-up I divided the patients into 3 groups: 1) Symptom-free. 2) Almost symptom-free. 3) Those showing symptoms. Almost symptom-free are the cases where the symptoms are so slight as to be without significance to the patient. The group is to be regarded as a subgroup of the symptom-free cases. It embraces, for instance, patients who only get slight "sensations" in the hip after long ski-races, skating-races, playing football, tennis etc. Likewise patients with quite insignificant restriction of mobility in only 1 direction or in whom the X-rays show unimportant calcification in the soft tissue, a trifling limitation of the joint space or insignificant osteophytes. If, however, 1) the patient has the slightest pain or if 2) the mobility is more restricted or is restricted in more than 1 direction, even if it is of insignificant degree, or 3) if the X-rays show more diffused calcification or distinct arthritis (even if only of very slight degree), then the case is entered in the group with symptoms. Altogether, I feel justified in asserting that my evaluation has been very strict.

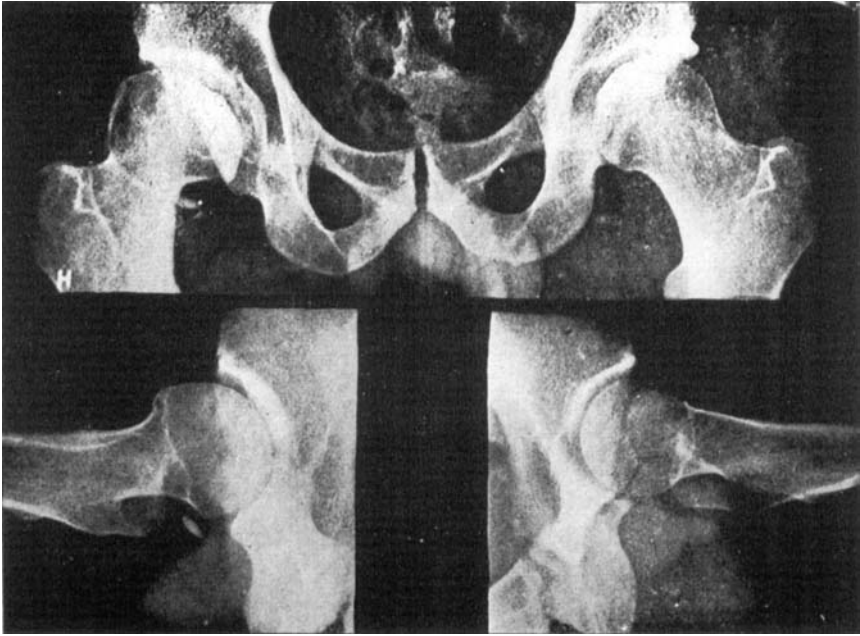


Fig. 4.

Aseptic necrosis of the femoral head.

9 years old boy. Posteriorly uncomplicated dislocation. Reduction after 10 days. Bed rest for 13 days. 16 years follow-up.

Subjective: slight fatigue after games of football.

Objective: normal mobility.

X-rays: Mushroom deformity of the femoral head with sclerotic and cystic areas. Some irregularity of the joint-line. Joint-space normal. Calcification in the soft tissues.

Of the original 69 patients one died as a consequence of the accident. No information is available about a second patient, who died 9 years after the accident. A third patient is now living in the U.S.A. and has not answered my letter. Of the remaining 66 cases 60 have been fully followed-up as regards the subjective, objective and radiographic findings, while 6 have been partially followed-up. Respecting 4 of these latter patients, who died from 9 to 18 years after the accident, we are informed by their nearest relatives that they had been free from subjective symptoms. 1 has written to say that he has no trouble from the hip, while 1 has been clinically examined, but refused to be radiographed.

The follow-up showed that about 9 % of the patients got subjective symptoms, about 11 % objective, about 26 % radiological and about 28 % subjective, objective and/or radiological symptoms.



Fig. 5.

Central dislocation.

45 years old man, 26 years follow-up.

Subjective: "Rheumatic pain" in the hip.

Objective: He walks with a limp. Mobility restricted.

	Followed up	Symptoms		Symptom-free	Completely + almost symptom-free
Subjective	66	6	9%	60	(44 + 16)
Objective	61	7	11½%	54	(49 + 5)
Radiological	60	16	26½%	44	(26 + 18)
Subj., Obj., and/or radiolog.	60	17	28%	43	(18 + 25)

The length of the observation time was without significance, perhaps because it had been at least 3 years in every case. For the 60 cases with a complete follow-up, the observation time ranged from 3 years and 4 months to 28 years and 4 months, the average being 15 years.

The sex of the patients and the type of dislocation were without prognostic significance.

Complicating fracture of the acetabular edge tended to produce radiological changes (arthritis and extensive calcification), but had no influence as regards the subjective and objective symptoms. There

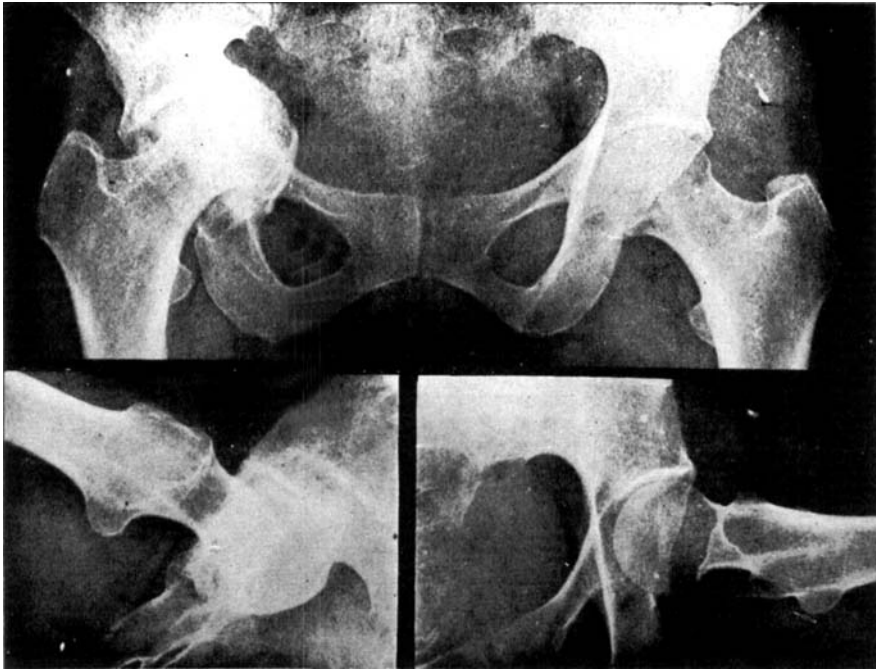


Fig. 6.

Central dislocation.

43 years old woman. 6 years follow-up.

Subjective: Pain in the hip in the first years after the accident, but later only very slight pain. She feels, however, very stiff in the hip.

Objective: She walks with a limp. Mobility restricted.

were originally 9 patients with such a fracture, one of whom died. In the follow-up all the other 8 patients were found to be free from subjective and objective symptoms, but only one was free from radiological symptoms.

The age had probably some significance. 1) In cases of uncomplicated dislocations it was found that 21 out of 23 patients under 20 years old were well, as against 21 out of 30 of those aged over 20. This difference, however, is statistically only probable and not significant. The subjective, objective and radiological symptoms, taken separately, showed no distinct difference between patients under and over 20 years old, but on taking all three groups of symptoms together the difference was revealed.—2) When once the patients had passed the age of 20 there was found to be no difference with increasing age, except that those aged over 40 were possibly more inclined to exhibit radiological changes: of the patients over 40 years of age and with

uncomplicated dislocation 3 out of 7 had symptoms, as against 7 out of 46 of those under 40. This difference too is not statistically significant. As far as the subjective and objective findings were concerned it made no difference whether the patient was under or over 40 years of age.

Late reduction, which in this material means from 24 hours to 10 days after the injury, seemed to have no definite influence. Of such patients 5 out of 9 were free from symptoms, whereas in case of reduction within 6 hours, 37 out of 44 were symptom-free (uncomplicated dislocations). The difference is not statistically significant.

The importance of the after-treatment cannot be judged from the present material, in which all the patients were treated alike, *i.e.* they received practically no after-treatment. But the results attained seem to be fully on a level with those reported by other authors after a prolonged period of non-weightbearing.

The sequelae which have been observed are:

Pain	in	4	of	66	cases
Feeling of stiffness	"	3	"	"	"
Restricted mobility	"	6	"	61	"
Limping	"	2	"	"	"
Persistent dislocation	"	1	"	"	"
Calcification in the soft tissues	"	22	"	60	"
— but significant only	"	9			
Hypertrophic arthritis	"	12	"	"	"
Necrosis of the femoral head	"	1	"	"	"

Calcification in the soft tissues was seen in 22 of 60 patients who were X-rayed (36 %), if we include the most minute calcification, but only 9 of them or 15 %, were of more than insignificant extent. I should like to point out that even marked calcification could be present without any subjective or objective symptoms.

Arthritis appeared in 12 cases, *i.e.* 20 %, but in half of them it was quite mild.

Persistent dislocation was seen in 1 patient—or rather redislocation.

Necrosis of the femoral head likewise occurred in only 1 patient *i.e.* in less than 2 % of the cases.

2. Central dislocations.

According to the extent of the fracture in the acetabular floor, the head may be dislocated more or less in a medial direction. The treatment usually consists in prolonged traction. The prognosis has always been regarded as being unfavourable.

Some few cases of operative reduction have been reported, possibly with better results than from traction treatment.

My material comprises only 6 cases. All occurred through a fall on the side, from car, bicycle or the like. The age distribution was quite different from that in the non-central type of dislocation the youngest patient being 26 years old and all the other five over 41. Four of them were men and two were women. All were treated by traction.

Two patients aged 81 years died within a year after the dislocation occurred. The other four have all been followed-up, 6 to 27 years after the injury, average 17 years. They all had symptoms, in some cases very severe subjective, objective and radiological. One of them suffered such intense pain that he had his hip joint fused after 2 years.

SUMMARY

Of 70 hips which had sustained traumatic *non-central* dislocation 60 were followed-up clinically and radiologically after the lapse of from 3 to 28 years, average 15. In 6 other cases information was obtained only in respect to the subjective condition. The treatment adopted had been reduction during flexion of the hip. The after-treatment as a rule had been confined to bed rest lasting from some few days up to 2 or 3 weeks.

If the patients in the follow-up were divided into only two groups: 1) those who had symptoms and 2) those without or, practically speaking, without symptoms; it was found that about 10 % *had subjective, about 10 % objective and about 25 % radiological symptoms*. Subjective, objective and/or radiological symptoms were found in 28 % (17 of 60 cases).

Aseptic necrosis of the femoral head was seen in only 1 patient.

Complicating fracture of the acetabular edge increased the risk of

radiological changes. The risk also increased with the ages over 40. For patients aged over 20 the prognosis was perhaps less favourable than for those under 20. Otherwise it did not seem that any prognostic significance could be assigned either to the length of the observation time, the age or sex of the patients, the type of dislocation, the presence of complicating fracture of the acetabular edge or to the time at which reduction was affected (which, however, in the present material was never later than 10 days after the injury).

There seems to be no reason for changing over from the short period of after-treatment here adopted, to a more prolonged treatment with non-weightbearing for several months.

Of 6 hips with traumatic *central* dislocation, 4 were followed up clinically and radiologically after the lapse of from 6 to 27 years, average 17. All the patients had severe symptoms, subjective, objective and radiological. The usual treatment with traction is therefore not found to be satisfactory. It is open to question whether better results cannot be attained by operative reduction.

RESUME

Sur 70 articulations de la hanche avec dislocation *non-centrale*, 60 ont été réexaminées cliniquement et radiographiquement après une période de 3 à 28 ans, en moyenne 15 ans après la lésion. Par ailleurs, on a recueilli des renseignements sur l'état subjectif dans 6 cas. Le traitement avait été une reposition en flexion de la hanche. Le traitement complémentaire s'était borné à l'alitement d'une durée variant entre quelques-jours et 2 à 3 semaines.

Si en se basant sur les examens complémentaires, on répartit les malades en deux groupes: 1) ceux présentant des symptômes, 2) ceux qui n'en présentent pour ainsi dire pas, on constate qu'il y avait des symptômes subjectifs dans 10 % environ des cas, objectifs dans 10 % env. et radiographiques dans 25 %. Env. 28 %, soit 17 cas sur 60, avaient des symptômes subjectifs, objectifs ou radiographiques.

Il y avait une nécrose aseptique de la tête du fémur chez un malade seulement.

Une fracture compliquée du bord de l'acétabule augmente le risque de modifications radiographiques. Il en est peut-être de même des malades dépassant la quarantaine. Au-dessus de 20 ans le pronostic est peut-être moins favorable qu'au-dessous de 20 ans. D'ailleurs la durée de la période d'observation, l'âge ou le sexe du malade, le type de dislocation, la présence d'une fracture compliquée du bord de l'acé-

tabule ou le délai après lequel a été pratiquée la reposition (dans ces observations ce délai n'a jamais dépassé 10 jours après la lésion) ne semblent pas présenter d'importance pour le pronostic.

On considère donc qu'il n'y a pas lieu d'abandonner le traitement complémentaire de courte durée avec alitement de quelques jours à deux semaines pour adopter un traitement plus long avec décharge de l'articulation de la hanche pendant plusieurs mois.

Sur 6 articulations de la hanche avec dislocation *centrale*, 4 ont été réexaminées cliniquement et radiographiquement après une période de 6 à 27 ans, en moyenne 17 ans après la lésion. Chez tous il y avait de graves symptômes subjectifs, objectifs et radiographiques. C'est pourquoi le traitement ordinaire avec traction n'est pas satisfaisant. La question est de savoir si l'on n'obtient pas de meilleurs résultats par réduction opératoire.

ZUSAMMENFASSUNG

Von 70 Hüftgelenken die eine traumatische, *nicht zentrale* Luxation erlitten hatten, wurden 60 klinisch und röntgenologisch 3—28 Jahre, im Durchschnitt 15 Jahre nach dem Schaden nachuntersucht. Ausserdem lagen in 6 Fällen Mitteilungen über den subjektiven Zustand vor. Die Behandlung bestand in Reposition bei flektiertem Hüftgelenk. Die Nachbehandlung bestand nur in Bettruhe für einige wenige Tage bis zu 2—3 Wochen.

Wenn man die Patienten bei der Nachuntersuchung in zwei Gruppen einteilte 1) diejenigen mit und 2) diejenigen ohne oder ohne nennenswerte Symptome, zeigte es sich, dass ungefähr 10 % subjektive, ungefähr 10 % objektive und ungefähr 25 % röntgenologische Symptome hatten. Subjektive, objektive und-oder röntgenologische Symptome hatten 28 % (17 von 60).

Aseptische Nekrose des Kopfes wurde nur in einem Falle gesehen.

Eine gleichzeitige Fraktur des Pfannenranden erhöhte die Gefahr röntgenologischer Veränderungen. Das gleiche war möglicherweise der Fall bei Patienten, die über 40 Jahre alt waren. Ein Alter über 20 Jahre gab möglicherweise eine schlechtere Prognose als unter 20. Im übrigen konnte man nicht sehen, dass weder die Länge der Beobachtungszeit, das Alter oder Geschlecht des Patienten, die Luxationstype, das Vorhandensein einer Fraktur des margo acetabuli oder der Zeitpunkt der Einrenkung (in diesem Materiale niemals später als 10 Tage nach dem Unfall) irgendwelche prognostische Bedeutung hatte.

Es scheint kein Grund vorhanden zu sein, von der hier angewand-

ten kurzfristigen Nachbehandlung, mit Bettruhe für einige Tage bis zu zwei Wochen, zu einer langfristigen mit Entlastung des Hüftgelenkes durch mehrere Monate, überzugehen.

Von 6 Hüftgelenken mit traumatischer, *zentraler* Verrenkung wurden 4 klinisch und röntgenologisch 6—27 Jahre, im Durchschnitt 17 Jahre nach dem Unfälle nachuntersucht. Alle hatten schwere subjektive, objektive und röntgenologische Symptome. Die gebräuchliche Behandlung mit Extension kann deshalb nicht als zufriedenstellend angesehen werden und die Frage erhebt sich, ob man nicht bessere Ergebnisse mit der blutigen Einrenkung erzielen könnte.

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