

TRAUMATIC POSTERIOR DISLOCATION OF THE HIP - A LOCAL EXPERIENCE AND REVIEW OF THE LITERATURE

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ABSTRACT

The results of 30 patients who sustained traumatic posterior dislocation of the hip treated in both Departments of Orthopaedic Surgery in the Singapore General Hospital from January 1980 to May 1987 were analysed. The most common cause was motorcycle accidents. Young adult males formed the majority of affected cases. 90% of the dislocations were of the Types I and II. Associated injuries were common. The primary treatment was closed reduction under anaesthesia. The subsequent period of traction and non-weight bearing was variable, but it did not seem to affect the final results. Avascular necrosis of the femoral head and secondary osteoarthritis were the major complications. The overall functional results were good.

Keywords: Dislocation, Hip, Posterior, Traumatic.

SINGAPORE MED J 1990; NO 31: 22-25

INTRODUCTION

Posterior dislocation or fracture-dislocation of the hip is uncommon, but high velocity accidents have increased its incidence in recent years (1). Traumatic dislocation of the hip demands early recognition as an emergency and prompt reduction. Delay in treatment results in serious crippling complications.

A high index of suspicion, coupled with an understanding of the mechanism of injury, minimises the risk of missed diagnosis. Avascular necrosis and secondary osteoarthritis are well-known long term complications associated with this, particularly with delay in reduction. Post-reduction regimes vary and this study is to analyse such results with the aim of recommending an acceptable rehabilitative programme.

MATERIALS AND METHODS

The case notes of 30 patients with traumatic posterior hip dislocations seen in both Departments of Orthopaedic Surgery in the Singapore General Hospital from January 1980 to May 1987 were analysed retrospectively.

The chief problem encountered was that many patients defaulted follow-up after a few months. Though this may be an indication that they do not have much disability, the relatively short follow-up prevented the

authors from determining the incidence of long term complications. Those patients who were contactable were recalled for further assessment. However, the majority of them were not traceable.

The average length of follow-up was 11 months. There were 3 patients who did not come for any follow-up. The longest follow-up was 6 years and 2 months and the shortest was 2 weeks.

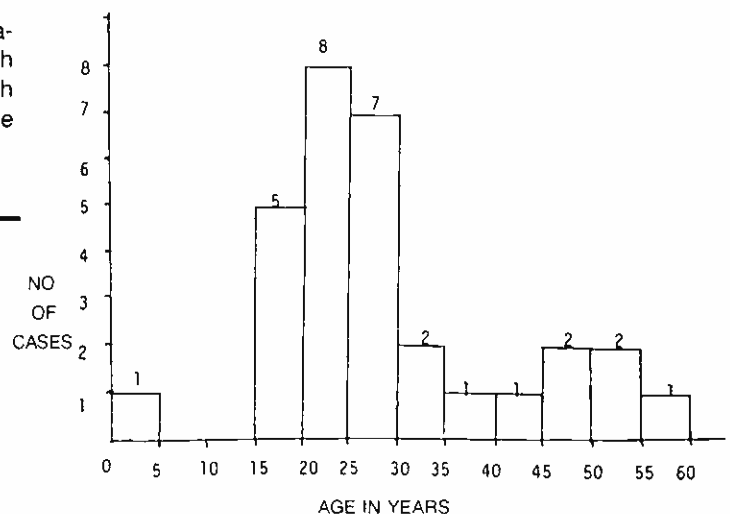
RESULTS

AGE

The age distribution is shown in Fig 1. 66% of the cases were in the age group 15-30 years. The youngest was 5 years old and the oldest was 57 years old.

All patients were males. There were no females in this series.

Fig 1
DISTRIBUTION OF CASES ACCORDING TO AGE



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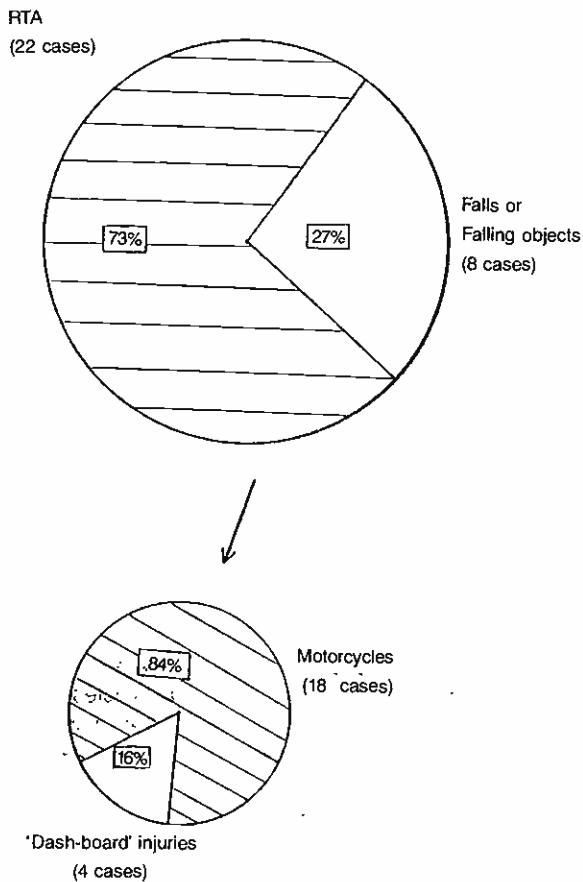
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Table I
TYPE OF DISLOCATION OR FRACTURE DISLOCATION

	No. of cases	% of cases
Type I Without minor fracture	13	44
I# With minor fracture	8	28
Type II Single large fragment of posterior acetabular rim	6	20
Type III Communion of rim with or without a large fragment	1	3
Type IV Fracture of acetabular floor	0	—
Type V Fracture of femoral head	2	6

Fig 2

Pie chart showing distribution of the Aetiology



AETIOLOGY

3/4 of the cases were due to road traffic accidents (Fig 2). Of these, the great majority were motor-cyclists. Only 4 patients sustained the classical 'dash-board' injuries. The rest were due to falls or injuries from falling objects.

SITE

Equal incidence of both left and right dislocations were noted.

TYPE OF DISLOCATION

The distribution of the types of dislocation is shown in Table I. The classification as described by Thompson and Epstein (2) is adopted.

All except one were diagnosed at the Accident and Emergency Department. One was diagnosed after the patient was admitted.

ASSOCIATED INJURIES

50% of the cases were associated with other significant injuries (Table II).

MODE OF TREATMENT

All the cases were treated by closed reduction under anaesthesia. None was operated primarily. 4 cases subsequently required an operation - 1 for failed reduction, the other 3 for unreduced fragments.

TIME LAPSE BEFORE REDUCTION

The time lapse before reduction was taken as the difference between time of registration at the Accident and Emergency Department and the time of anaesthesia for reduction.

Table II
ASSOCIATED INJURIES

	No. of cases
Head Injury	5
Knee Injury: Posterior Cruciate Tear	3
Laceration	1
Severe sprain	1
Pott's fracture	2
Clavicle fracture	1
Humerus fracture	1
Laceration of kidney	1

It ranged from 35 minutes to 3 days. The average time was 5 hours and 5 minutes. There were 3 patients whose hips were reduced after 6 hours. This did not take into account the time taken from injury to admission.

DURATION OF TRACTION

The duration of traction was variable. Some surgeons allowed the patients to lie free in bed, while others subjected their patients to traction for as long as 4 weeks. The average length of traction was 10 days.

In the final analysis, there was no correlation between the length of traction and the degree of disability.

DURATION OF NON-WEIGHT BEARING

Likewise, this depended on the surgeon. It ranged from immediate weight-bearing to 4 weeks of non-weight bearing. The average period prescribed was 14 days.

The duration of non-weight bearing too did not seem to affect the final result.

COMPLICATIONS

SCIATIC NERVE INJURY

Only 1 patient had sciatic nerve palsy associated with the dislocation. He recovered fully by the second week.

AVASCULAR NECROSIS

A period of 18 months was considered to be adequate for the development of avascular necrosis of the head (3). In our series, 7 cases were followed up for 18 months or more. Only 1 case developed radiographical evidence of avascular necrosis after 2 months post-injury. He had Type III fracture-dislocation which was reduced after 6 hours and had to undergo open reduction and internal fixation for an unreduced fragment.

POST-TRAUMATIC OSTEOARTHRITIS

In our series, 3 patients developed radiological evidence of osteoarthritis. One had a Type I injury which showed mild OA changes after 16 months. The second case was a Type I injury with a small fragment. He developed mild osteoarthritis 5 months post-injury. The third case had a Type II injury, with no fixation of the acetabular fragment. He developed OA changes 19 months post-injury.

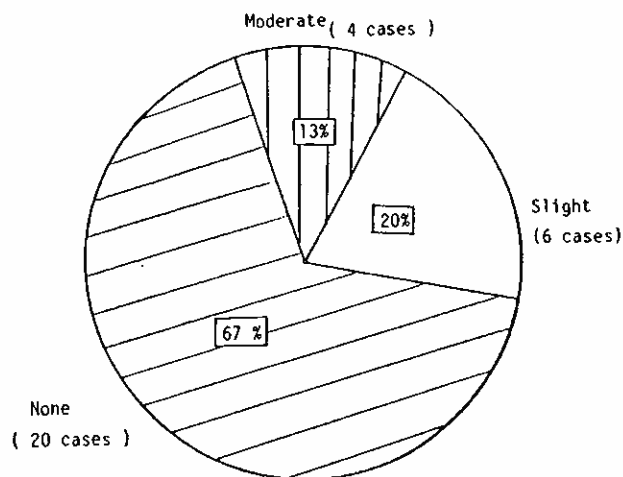
OVERALL FUNCTIONAL DISABILITY

The disability was graded as shown in Table III. The distribution of disability is shown in Fig 3. No patient had severe disability.

Table III
OVERALL FUNCTIONAL DISABILITY

Disability	Description
None	No pain and Full ROM
Slight	Slight occasional pain or ROM > 90° < Full
Moderate	Presence of pain not affecting work or daily activities or ROM < 90° > 60°
Severe	Presence of pain affecting work or daily activities or ROM < 60°

Fig 3
Pie chart showing distribution of Disability



87 % of cases had slight or no disability.

Only 5 out of the 27 patients with Type I or II injury had slight disability. 2 of them had moderate disability. Those with Type III and V injury all had slight or moderate disability.

DISCUSSION

Traumatic posterior dislocation of the hip is not common as the hip joint is intrinsically stable. A great amount of force is required to dislocate it. This accounts for the distribution in the young, adult males who form the majority in the risk group for violent accidents.

Road traffic accidents have always been universally the main culprit. The rest of the cases in our review, as well as that in other centres, were due to falls or injuries from falling objects. The majority (82%) of the RTA leading to hip dislocation were those involving motor-cyclists. Only 4 out of our 30 cases sustained the classical dashboard injury. This is in sharp contrast to other studies in which front-seat passengers in automobile accidents form the great majority of cases (4). The most likely reason must be the relatively slower speed of our vehicles compared to the British or American drivers. The male predominance amongst motor-cyclists is probably the reason that all our cases were males.

Majority (90%) of our cases were minor (Type I and II). This is a reflection of the relatively low velocity of force occurring in the accidents locally.

Associated injuries are common. In our cases, 50% had significant associated injuries. Knee and head injuries were the commonest. Hunter (5) and most other authors also found high incidence of knee injuries on the same side. However, these associated injuries did not seem to affect the final outcome.

All cases were treated primarily with closed reduction. All except one was reduced under general anaesthesia. 4 cases were subsequently operated upon, 1 for failed reduction and 3 for unreduced fragments. This is in line with the usual mode of treatment, which is immediate closed reduction, reserving open reduction for those patients in whom closed reduction is not successful or where

reduction is unstable for the presence of trapped fracture fragments. More recently, Epstein (1974) (7) recommended primary open reduction, debridement of the joint and anatomical internal fixation of the fracture fragment to increase the incidence of good results in Type II, and above fracture-dislocation.

Whether open or closed reduction is selected, most authors agree that reduction within 12 hours of injury is necessary. The incidence of AVN was about 20-30%. Hougaard (1986) (6) found the incidence of AVN to be only 4.8% of hips reduced under 6 hours, and in 52.9% of the hips reduced more than 6 hours after injury. One should therefore aim towards achieving reduction within 6 hours. Most of our patients were reduced early. There were 3 patients in our study whose hips were reduced after 6 hours. We were unable to compare the final result with those who were reduced early due to the small number.

The incidence of sciatic nerve injury was low in all series. In our series, there was only one who had sciatic nerve neuropraxia. However, this recovered within 2 weeks.

Bohler (1935) and Paus (1951) (8) considered bed rest for a few days sufficient. However most authors would recommend continuous traction and non-weight bearing for a variable period of time. Nicoll (1968) (9) reported excellent results by putting them on traction for 3 weeks followed by non-weight bearing for 3 weeks. In our review, the period of traction and NWB were variable depending on the surgeon and bed availability. However the period of traction and NWB did not seem to affect the final result. Hougaard (1986) (6) too could not demonstrate any benefit from traction or NWB. We recommend traction till the hip is painfree followed by mobilisation in bed and a period of NWB according to the patient's comfort.

Nicoll (1952) (3) stated that the radiographic changes of AVN always developed within 2 years. The incidence varies from 6% (Upadhyay 1981) (10) to over 40% (Stewart and Milford 1954) (11). Time interval between injury and reduction was found to be the most important factor determining the incidence of AVN. In

our series, 7 cases were followed up for 18 months or more. Amongst them there was one which developed AVN 2 months post injury. This was a Type III fracture-dislocation which was reduced after 6 hours and had to undergo subsequent open reduction and internal fixation. The rest of them who were reduced within 6 hours did not have any radiological evidence of AVN after 18 months.

The incidence of post-traumatic arthritis has been as high as 71% in some series (Stewart and Milford) (11). The severity of initial trauma is the major factor in determining the later development of post-traumatic arthritis. In our series, which consists mainly of Types I and II cases, there were only 3 cases (11%) which developed mild OA relatively early. All the 3 cases were reduced by closed method well within 6 hours. In one case, loose fragments were seen on CT scan. They were left alone. Our impression is that there were probably small unreduced fragments in the other 2 cases that were not visualised radiologically.

Our overall result was excellent. 87% had either no or slight disability. None had severe disability. This was expected as our cases were mainly Types I and II. Those with Types III or V fracture-dislocation all had either slight or moderate disability. The patients who developed AVN or OA had resultant moderate disability except for one, who had mild disability.

In our series, only 2 cases had CT scan done, and then only when post-reduction X-ray revealed loose fragments. In the newer series in which CT scan was part of the initial investigation, the authors have uniformly emphasised its usefulness in accurately defining the lesion (12). However its impact on overall management and reduction of complication remains to be determined.

ACKNOWLEDGEMENT

We wish to thank Miss M Kala of the Medical Records Office for her assistance and the Staff of the Department of Orthopaedic Surgery, Singapore General Hospital, for their kind support and encouragement.

REFERENCES

1. Wainwright D : Fractures and Dislocations of the Hip Joint. Clinical Surgery. Fractures and Dislocations. Edited by R Furlong. London : Butterworths 1966.
2. Thompson VP, Epstein HC: Traumatic Dislocation of the Hip. J Bone Joint Surg 1951;33A:746-78.
3. Nicoll EA : Traumatic Dislocation of the Hip Joint. J Bone Joint Surg 1952;34B:503-7.
4. Epstein HC: Traumatic Dislocation of the Hip. Clin Orthop 1973;92:116-42.
5. Hunter GA : Posterior Fracture Dislocations of the Hips. J Bone Joint Surg 1969;51B:38-44.
6. Hougaard K : Traumatic Posterior Dislocation of the Hip. Arch Orthop Trauma Surg 1986;106(1):32-5.
7. Epstein HC: Posterior Fracture Dislocations of the Hip: Long Term Follow-up. J Bone Joint Surg 1974;56A:1103-27.
8. Paus B : Traumatic Dislocations of the Hip. Late Results. Acta Orthop Scand 1951;21:99-112.
9. Nicoll EA: In : Hunter GA. Posterior Fracture Dislocations of the Hip. J Bone Joint Surg 1969;51B:38-44.
10. Upadhyay SS: Long Term Results of Traumatic Posterior Dislocation of Hip. J Bone Joint Surg 1981;63B:548-51.
11. Stewart MJ, Milford LW: Fracture Dislocation of the Hip. J Bone Joint Surg 1954;36A:548-51.
12. Hougaard K: Computerised Tomography after Posterior Fracture Dislocation of the Hip. J Bone Joint Surg (Br) 1987;69(4):556-7.