

TOPIC:

**A FIVE YEAR RETROSPECTIVE STUDY
AND A SIX MONTHS PROSPECTIVE
STUDY OF TRAUMATIC POSTERIOR
DISLOCATION OF THE HIP**

BY

DR. PETER ASEYO SORE, MBCChB, NRB.

**MEDICAL LIBRARY
UNIVERSITY OF NAIROBI**

**A DISSERTATION SUBMITTED IN PART FULFILMENT FOR THE
DEGREE OF MASTER OF MEDICINE IN SURGERY OF THE
UNIVERSITY OF NAIROBI**

University of NAIROBI Library

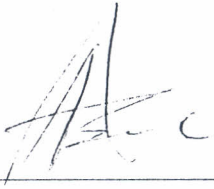


0390037 0

DECLARATION

This dissertation is my original work and has not been presented for a degree in any other University.

Signed:



DR. P.A. SORE, MBChB, NAIROBI

This dissertation has been submitted for examination with my approval as University supervisor.

Signed:



PROF. L.N. GAKUU, MBChB, MMED. (SURG.)
CONSULTANT ORTHOPAEDIC SURGEON
DEPARTMENT OF ORTHOPAEDIC SURGERY
UNIVERSITY OF NAIROBI

DEDICATION

To my daughter Ayuma and son Alex for their love and patience during this period of study.

TABLE OF CONTENTS

PAGES

1.	Title	i
2.	Declaration	ii
3.	Dedication	iii
4.	Acknowledgement	iv
5.	Table of contents	v
6.	List of tables and figures	vi
7.	Summary	1
8.	Introduction and Literature Review	2
9.	Objectives	10
10.	Materials and Methods	10
11.1	PART 1 Retrospective Study	13
	Results	13
11.2	Discussion	19
11.3	Conclusion	22
12.1	PART II Prospective study	23
	Results.	23
12.2	Discussion	27
12.3	Conclusion	28
13	Recommendations	29
14	Appendix	30
15	References	33

ACKNOWLEDGEMENT

I wish to express my honest gratitude to Professor L.N. Gakuu for his guidance, objective criticism and encouragement throughout the period of study.

I also thank Florence department of surgery and Flora Mukoko of Healthinfo Networks for their secretarial services.

I also thank the records and X-ray departments for file and records retrieval.

LIST OF TABLES AND FIGURES

Part I	Retrospective Study	Page
Table 1	Age distribution	13
Table 2	Sex distribution	14
Table 3	Causes	14
Table 4	Time of presenting to hospital	15
Table 5	Presentation	15
Table 6	Posterior dislocation type	16
Table 7	Posterior dislocation with other injuries	16
Table 8	Mode of treatment	17
Table 9	Time before surgery	17
Table 10	Complications	18
Table 11	Follow up period	18

FIGURES

Fig 1	Incidence per year	13
Fig. 2	Age Distribution	13
Fig. 3	Sex distribution	14
Fig. 4	Complaints	14
Fig. 5	Time of presenting to hospital	15
Fig. 6	Presentation	15
Fig. 7	Posterior dislocation type	16
Fig. 8	Mode of Treatment	17
Fig. 9	Time before surgery.	17
Fig. 10	Follow up period	18

Part II Prospective study

Tables

Table 12	Age distribution	23
Table 13	Sex distribution	23
Table 14	Causes	24

Table 15	Time of presenting to hospital	24
Table 16	Presentation	25
Table 17	Posterior dislocation type	25
Table 18	Posterior dislocation with other injuries	25
Table 19	Mode of treatment	26
Table 20	Complications	26
Table 21	Follow up period	26

List of Figures

Fig. 11	Sex distribution	23
Fig. 12	Causes	24
Fig. 13	Presentation	24
Fig. 14	Mode of treatment	25

SUMMARY

This study was done in two parts.

Part I is a retrospective study from Jan 1995 to December 1999 of patients who were admitted in Kenyatta National Hospital with traumatic posterior dislocation of the hip. 89 patients were studied. It was found that young adults between ages 21 – 30 were the most commonly injured. Majority of the injured were males (74 or 83%). 69 patients (77.5%) sustained posterior dislocation following road traffic accidents. Majority of the patients presented to hospital within ½ hr – 6 hrs and closed reduction was the most common method of treatment. The standard radiographs were the only method of imaging.

There was no follow-up in the majority of patients (70 or 78.7%) and most of them (72 or 80.9%) had no complications.

Part II- This was a prospective study of 9 patients who sustained traumatic posterior dislocation of the hip. One patient died of diabetic complications during the study. Male to female ratio was 8:1 and 5 (55.6%) were in the age group 21 – 30 yrs. Road traffic accident accounted for the majority (7 or 77.8%) of those injured. 5 (55.6%) had associated injuries and majority (8 or 88.9%) were treated by closed methods. 7 (77.8%) had no complications. Only one had post traumatic osteoarthritis.

INTRODUCTION

Traumatic posterior dislocation of the hip is a very common injury and presents management challenges to the orthopaedic surgeon. In the last generation every writer emphasized the rarity of this injury ⁽¹⁾. However with violent crashes on high-speed roads the injury has become very common ^(2,3,4,5).

It should be noted that these injuries are associated with severe soft tissue injuries and the patient may be in severe shock. Always during examination the presence or absence of sciatic nerve function should be recorded. The same examination should be performed after reduction. Radiographs should include AP and lateral views to show the presence or absence of acetabular fractures.

Delay in reduction even in terms of minutes may produce severe vascular impairment of the femoral head and also increase the incidence of aseptic necrosis ^(5,6,7). Posterior dislocation of the hip may complicate a fracture of the shaft of the femur. Other associated fractures of the lower leg especially patella, tibia plateau and upper end of the shaft of the tibia may occur. Prognosis is guarded in all cases because of the possibility of late complications.

LITERATURE REVIEW

Mechanism of injury

When the femur is flexed and adducted the stability of the hip joint is impaired because in this position the femoral head is unsupported by the acetabulum and is held in position only by the capsule. A powerful thrust in the long axis of the limb forces the head through the capsule onto the dorsum of the ileum ⁽¹⁾. The external rotators of the hip (i.e. the piriformis, gemelli and obturator internus) are usually disrupted. The femoral head may assume a high (ilial) or a low (ischiatric) position depending on the degree of flexion of the thigh at the time of the dislocation ⁽⁸⁾.

The injury has been described as a 'dashboard dislocation' because the usual victim is a front seat passenger sitting with the hips flexed and knees crossed so that the knee which lies nearest the dashboard and sustains the impact is that of the flexed and adducted hip ⁽¹⁾.

The injury can also occur from a fall of a roof on the back of a stooping miner. In this position the flexed joint is not fully adducted and the femoral head is at least protected by the acetabulum is usually fractured and displaced with it ⁽¹⁾.

There is increasing recognition that these injuries can be associated with other activities including several sports ^(9,10).

Tennet T.D. reported a case of posterior dislocation of the hip that occurred while the victim was playing basketball. The player slipped on landing from a jump shot, forcing him into a side split position from which he sustained a posterior dislocation of the hip resulting in sciatic nerve palsy ⁽¹¹⁾. Bilateral dislocation simultaneously one anterior and another posterior has been reported where a very drunk driver crushed his car causing uncontrolled trauma ⁽¹²⁾.

PRESENTATION

For the iliac dislocation the hip is flexed, adducted and internally rotated ⁽⁸⁾. The affected extremity is shorter and the greater trochanter and the buttock on the affected side are unusually prominent. The knee of the affected extremity rests on the opposite thigh.

Pre-reduction radiograph shows one femoral head displaced upward and backward. The head lies on the dorsum of the ileum and posterosuperior to the acetabulum. The femur is adducted and internally rotated.

For the ischiatic dislocation the affected hip is flexed, markedly adducted and the knee lies on the opposite thigh ⁽⁸⁾. The greater trochanter and buttock on the affected side are unusually prominent. Pre-reduction radiographs show a femoral head lying inferior to, lateral to and behind the acetabulum. The lesser tuberosity is not seen. The femoral shaft is in extreme adduction. The findings resemble those of coxavara.

TREATMENT

Thompson and Epstein formulated a classification for the posterior dislocation of the hip before advent of computerized tomography ^(1,2,6,13,14). The proper treatment of this injury depends primarily on the type of injury but regardless of the type of dislocation a few guidelines apply.

- The severity of initial injury determines long term results.
- Reduction must be performed within the first 12 hours
- Only one or two attempts at closed reduction should be made. If this fails open reduction must follow.

Epstein classification is as follows:

Type 1 Posterior dislocation of the hip with no more than minor chip fractures

Type II	A dislocation with a single large fracture of the posterior acetabular wall.
Type III	There is comminution of posterior acetabular wall
Type IV	There is associated fracture of acetabular floor.
Type V	The dislocation is associated with fracture of the femoral head.

Unusual dislocation with ipsilateral fractures of the femoral head and neck has been reported. ⁽¹⁵⁾

Type I dislocation

This is treated by closed reduction. There are various types:

1. Bigelow Manouver

Jacob Begelow of Boston ⁽¹⁾ first described this classical method of reduction of the dislocation. As a young man at Massachussets General Hospital he established his skill in the correction of this dislocation so that on one occasion he differed with his senior for side tracking and obligingly he redislocated the joint only to be called later to reduce it. His method depended on circumducting the limb through the opposite position of deformity into the neutral position. In posterior dislocation the limb is flexed, abducted, laterally rotated and brought down into extension and the neutral position.

2. ALLI'S Manouver

The patient lies supine and an assistant stabilizes the pelvis by applying pressure to the anterior superior iliac spines. The surgeon applies longitudinal traction in the line of the deformity followed by flexion of the hip to 90° while continuing traction. Internal and external rotation of the hip is performed until reduction is achieved ⁽⁶⁾.

3. Gravity Method of Stimson

The patient lies prone on a table with both lower extremities hanging off end. The involved knee and hip are flexed at 90° while the assistant stabilizes the pelvis. The surgeon grasps the leg just distal to the flexed knee and applies longitudinal force. Gentle internal rotation of the hip may aid the reduction ⁽¹⁶⁾.

This method is said to be less traumatic but it is impractical in-patients with other injuries⁽⁶⁾.

4. The Rochester Method

This method described by Stefanich RJ in the American Journal of Orthopaedics (Jan 1999 vol. 28) is unique in that it can be done by one trained medical care provider ⁽¹⁷⁾. The patient is placed in the supine position and reduction performed while the patient is sedated, although some patients may require general anaesthesia. The non-dominant arm is used for pelvic counter-force while the other arm provides longitudinal traction and rotation control.

In all these methods reduction is typically performed in the emergency room with I.V. sedation and muscle relaxation based on the diagnosis obtained with AP films.

If reduction cannot be achieved, the patient is taken to theatre where one more attempt is made at closed reduction with the patient under general anaesthesia. If one is not successful open reduction is performed.

Causes of failed closed reduction ^(7,18) are:

1. Button holing of the femoral head through the posterior capsule.
2. Interposition of short lateral rotators
3. A torn acetabular labrum

4. Osteochondral acetabular fragments and fracture fragments from the femoral head being lodged into the joint.

Preoperative computerized tomography (CT scans) helps identify the location and nature of the obstructing structures. It also helps in planning of open surgery.

After reduction radiographs are taken to ensure that the reduction is concentric.

Postreduction management ⁽⁸⁾ includes skin traction to the lower leg by keeping the hip extended and slightly abducted. Traction is the simplest way to rest the limb that has *sustained this severe injury. This is maintained for 3 weeks during which time passive and active motion at the hip joint and muscle exercises are instituted within five days of starting traction. After 3 weeks the patient is ambulated on crutches without weight bearing on the affected limb.*

Unprotected weight bearing is permitted by the end of 12 weeks.

Light work 14 to 16 weeks and full activity 6 to 10 months after injury.

The patient is followed up to a period of 1 to 2 years. At each examination check radiographs to note any changes in the femoral head and acetabulum are taken. The range of motion in the hip is checked and recorded. Recommended time for follow up is approximately 3 months.

TYPE II, III, IV POSTERIOR DISLOCATIONS.

These types of dislocations can be reduced by the same closed techniques used for uncomplicated dislocation. ^(6,19)

Once the femoral head has been reduced accurately within the intact acetabulum open reduction of acetabular fragments can be delayed for up to 5 to 10 days. While waiting

the patients are put on skeletal traction and radiographs AP lateral and Judet views are taken including CT scan. This helps in planning management.

Epstein however prefers primary open reduction because osteocartilaginous fragments commonly within the joint prevent concentric reduction. Further if surgery is performed after closed reduction dislocation of the joint is necessary and this adds trauma to the articular cartilage ^(6,7,14,20,21)

It should also be noted that progressive sciatic nerve deficit is an absolute indication for operative exploration.

TYPE V DISLOCATION

This is rare.

Treatment is by closed reduction. If this fails operation is indicated

PROGNOSIS

After a dislocation of the hip, excellent function usually can be expected, provided that neither avascular necrosis nor traumatic arthritis of the joint develops ^(2,6,22).

Early complications

1. Sciatic nerve injury
If there is progressive deficit exploration is required.
2. Vascular injury
Superior gluteal artery
3. Associated fractures of femoral shaft.

Late complications

1. Avascular necrosis
2. Myositis ossificans
3. Unreduced dislocation

4. Osteoarthritis due to

- cartilage damage
- presence of retained fragments
- ischaemic necrosis

RATIONALE

With the ever increasing road traffic accidents the incidence of posterior dislocation of the hip is bound to rise. Delay in treatment is the cause of poor prognosis. The purpose of this study is to find the pattern of presentation, the mode of management and complications of posterior dislocation of the hip.

About 20 patients are seen every year at Kenyatta National Hospital with traumatic posterior dislocation of the hip. The information derived from this study will help in the formulation of management protocols for the patients with posterior dislocation of the hip.

OBJECTIVES

Broad objectives

To determine the management and outcome of traumatic posterior dislocation of the hip at Kenyatta National Hospital.

Specific objectives.

1. To determine the incidence pattern of posterior dislocation of the hip.
2. To determine the causes of the injury
3. To determine the kind of investigations carried out.
4. To determine the mode of treatment for various types
i.e. closed, closed followed by open reduction or open reduction primarily.
5. To determine complications and their incidence.

MATERIALS AND METHODS.

Study design

The study was carried out in two parts.

Part I - This was a retrospective study from January 1995 to December 1999.

Part II - This was a prospective study over a period of 6 months – January 2001 to June 2001.

Study population

All patients in the adult orthopaedic wards who had traumatic posterior dislocation of the hip were included in the study.

Sample size

The study population was determined by the sample size. This was based on patients who were admitted in the adult orthopaedic wards and fitted the criteria mentioned below.

STUDY METHODOLOGY.

The study was conducted by the principal investigator under the guidance of a supervisor from the department of orthopaedic surgery, University of Nairobi.

The instruments comprised of the medical records and radiographs of patients who had been admitted with traumatic posterior dislocation of the hip.

The principal investigator studied the records in order to determine the cause of injury, the mode of investigations and treatment given. Follow-up notes were studied to find complications. The information gathered was tabulated and analysed.

ELIGIBILITY CRITERIA

Inclusions

1. Those patients who had clinical and radiographic evidence of traumatic posterior dislocation of the hip.
2. All patients above the age of 12 and fit criteria 1

Exclusions

1. All patients with posterior dislocation of the hip not due to trauma.
2. All patients with posterior dislocation of the hip below 12 years.

LIMITATIONS OF THE STUDY

1. Failure by the surgeons to record the type (Epstein) of posterior dislocation. This was overcome by looking at the radiographs.
2. Failure by surgeons to record sciatic nerve function before reduction of the dislocation. The prospective study did not have this limitation.
3. The medical records department does not specifically indicate posterior dislocation of the hip as a diagnosis in their records. The diagnosis is indicated as sprains and injuries around the hip. This was sorted out by specifically looking at the files, the ward and theatre books.

ETHICAL CONSIDERATIONS

1. Permission to carry out the study was sought from the Ethical and Research Committee based at Kenyatta National Hospital for approval.
2. All the information obtained was confidential and only used for intended purposes.
3. All questionnaires and entry tables bore no patient name or ethnicity and were identified by serial numbers.
4. Informed consent was sought from the patient.
5. Any relevant information will be made available to interested party/parties on request from the principal investigator.

Data Collection and Management

A pretested questionnaire was used for data collection. The principal investigator under the guidance of the supervisor did this. The case records of patients were retrieved from the records department of KNH and the radiographs from the X-ray department of KNH. All the questionnaires were coded and data entered into SPSS data sheet. Analysis was then done using SPSS computer software program.

Data presentation

Data is presented in tabular and geographical forms. Bar charts and pie charts are used as necessary.

Part 1 - Retrospective study

This was from January 1995 to December 1999. A total of 89 files were retrieved from the medical records department of Kenyatta National Hospital.

1. Incidence

The average per year was 17.8 with the lowest of 9 and the highest of 26

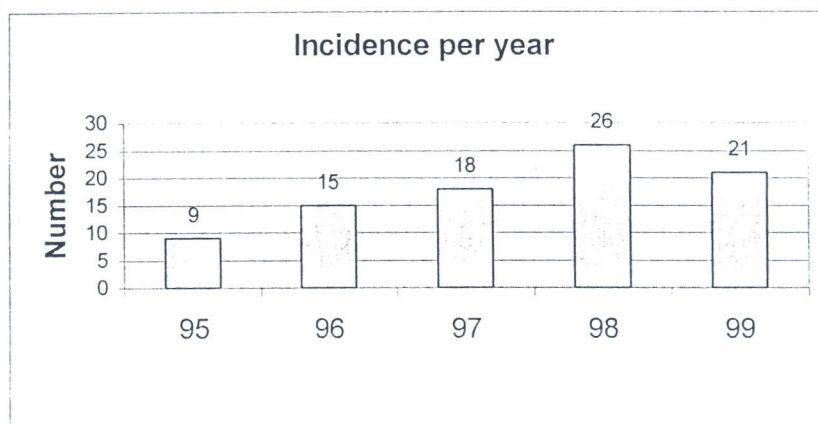


Fig.1

2. AGE DISTRIBUTION.

	Frequency	Percent
13-20	11	12.4
21-30	39	43.8
31-40	19	21.3
41-50	11	12.4
51-60	7	7.8
>60	2	2.2
Total	89	100

Table 1

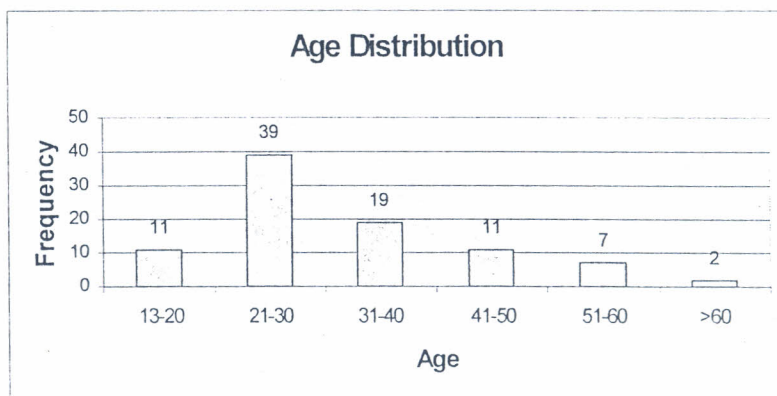


Fig 2.

3. SEX DISTRIBUTION

Sex	Frequency	Percent
Male	74	83%
Female	15	17%
Total	89	100

Table 2

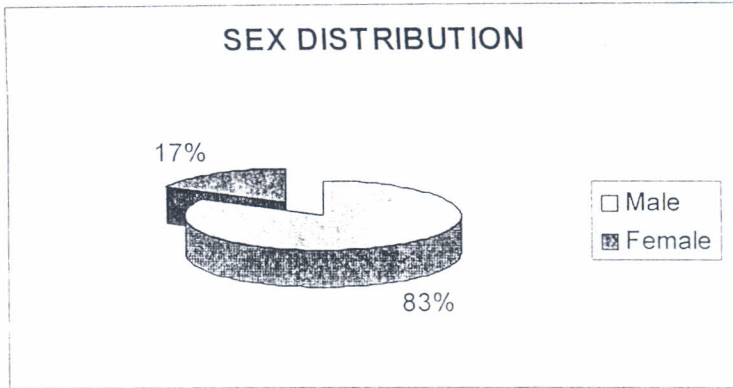


Fig 3

4. CAUSES

Causes	Frequency	Percent
R.T.A	69	77.5
Fall from height	15	16.9
Others	5	5.6
Total	89	100

Table 3

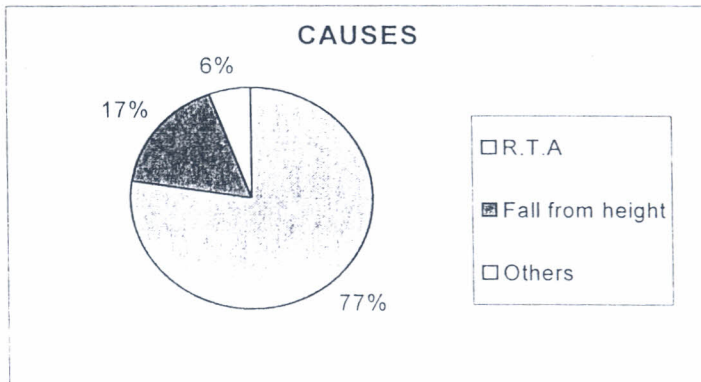


Fig. 4

5. TIME OF PRESENTING TO HOSPITAL.

Time of presenting to hospital	Frequency	Percent
Half an hour	5	5.6
1/2 hr to 6 hours	38	42.7
6 to 24 hours	29	32.6
> 24 hours	17	19.1
Total	89	100

Table 4

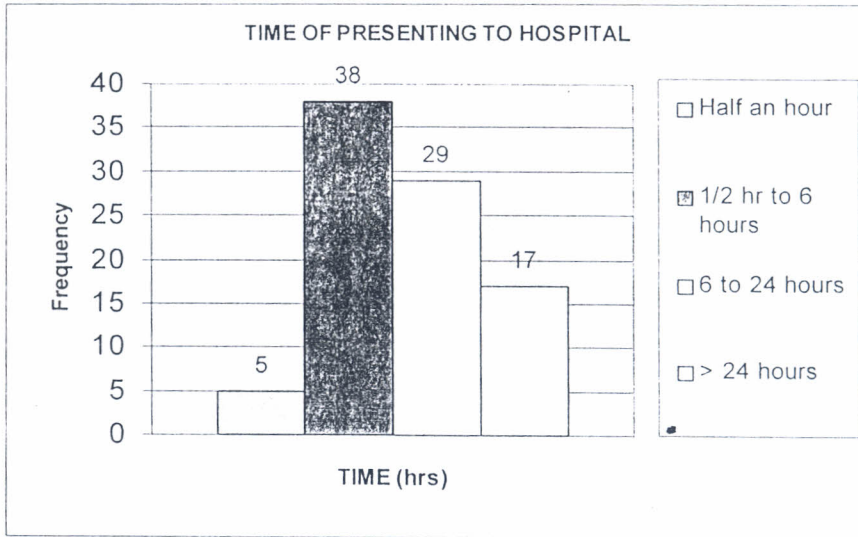


Fig. 5

6. PRESENTATION.

Presentation	Frequency	Percent
Posterior dislocation alone	43	48.3
Posterior dislocation with other injuries	46	51.7
Total	89	100

Table 5

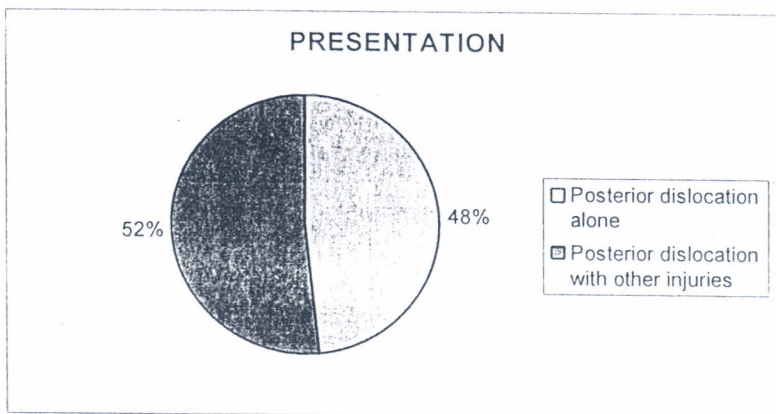


Fig.6

7. POSTERIOR DISLOCATION TYPE.

Posterior dislocation type	Frequency	Percent
Epstein type I	72	80.9
Epstein type II	8	9
Epstein type III	2	2.2
Epstein type IV	4	4.5
Epstein type V	3	3.4
Total	89	100

Table 6

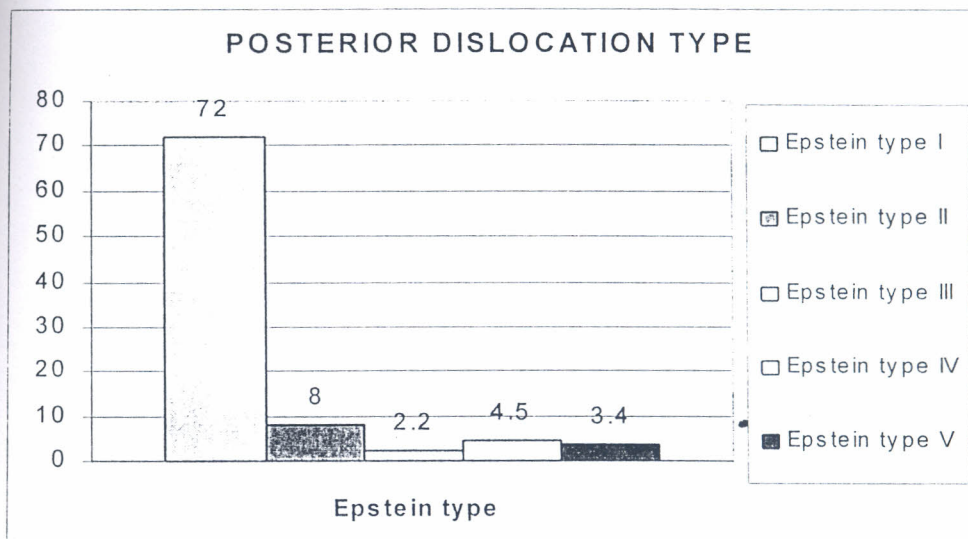


Fig. 7

8. POSTERIOR DISLOCATION WITH OTHER INJURIES.

Other injuries	Frequency	Percent
Sciatic nerve injury	2	2.2
Shock	1	1.1
Associated fractures	19	21.3
Abdominal injuries	1	1.1
Soft tissue injuries	3	14.6
Head injury	2	2.2
Friction burns	1	1.1
Sciatic and shock	1	1.1
Sciatic and associated	1	1.1
shock and associated	4	4.5
Associated No. and degloving injury	1	1.1
Total	46	51.7

Table 7.

9. **IMAGING**

Radiographs were performed on all the patients admitted. There was no other form of imaging.

10. **MODE OF TREATMENT**

Mode of treatment	Frequency	Percent
Closed reduction	80	89.9
Closed then open	7	7.9
Open reduction	2	2.2
Total	89	100

Table 8

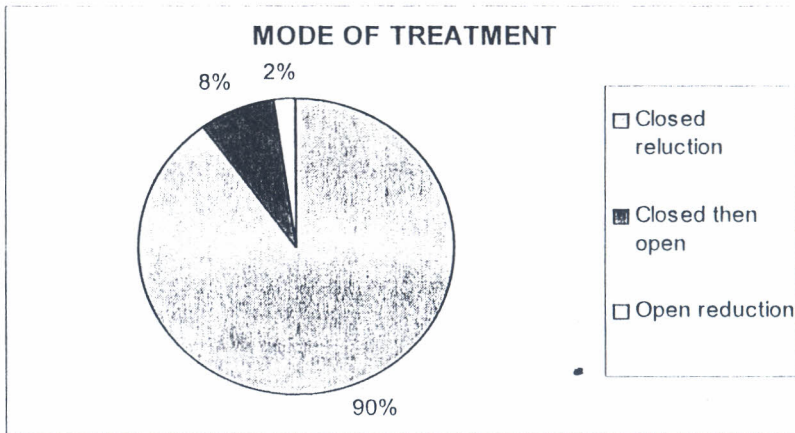


Fig. 8

11. **TIME BEFORE SURGERY.**

Time	Frequency	Percent
6-12 hrs	2	22.2
> 24 hrs	7	77.8
Total	9	100

Table 9

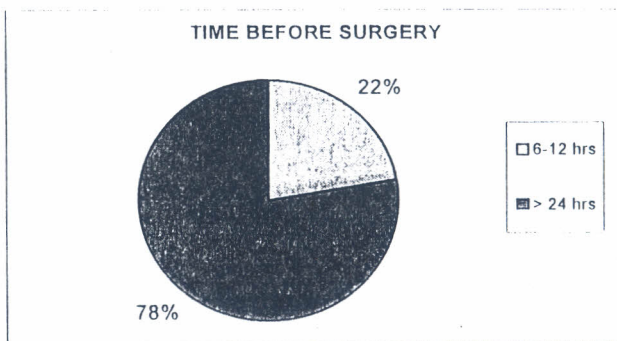


Fig 9

12. COMPLICATIONS

Complications	Frequency	Percent
Nil/none	72	80.9
Osteoarthritis	9	10.1
Failed reduction	2	2.2
Limb shortening	1	1.1
Unreduced dislocation	3	3.4
Sciatic nerve injury	1	1.1

Table 10

13. FOLLOW UP PERIOD.

Follow up period	Frequency	Percent
No follow up	70	78.7
< 1/2 year	8	9
1/2 - 1 year	1	1.1
> 1/2 - 2 years	9	10.1
> 2 years	1	1.1
Total	89	100

Table 11

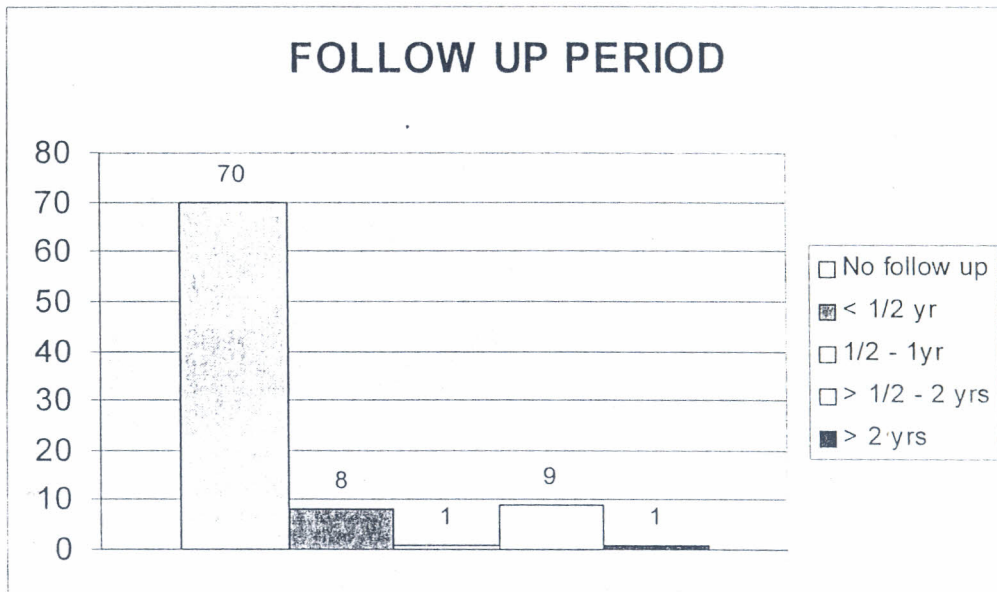


Fig.10

DISCUSSION PART 1 – RETROSPECTIVE STUDY

89 patients with traumatic posterior dislocation of the hip were seen between January 1995 to December 1999. This gives an average of 18 patients per year. 1995 had the lowest and 1998 the highest number. The numbers would be much higher if Kenyatta Hospital was the only one in the City of Nairobi. Quite a number of patients are treated in the various hospitals that have mushroomed in Nairobi.

Majority of the patients (39 or 43.8%) were in the age group 21-30 (Fig 2), and minority (2 or 2.2%) were in the age group above 60. 11(12.4%) were below the age 20 years. In one multicenter study of 86 patients 15% were found to be below the age of 16 ⁽²³⁾. Several studies have shown a low incidence in the younger age group especially children ^(24,25).

In our study 83% were males and 17% were females (Fig 3) . In the study mentioned above 38% were females and 62% males. In children below 15 years male to female ratio was seen to be 4:1. These studies show that men are more prone to this injury than females. This is probably due to a higher male mobile population in most communities.

The causes of the dislocation (Fig 4 and Table 3) were 77.5% from RTA, 16.9% from fall from a height and 5.6% others.

All over the world RTA remains the most important cause of traumatic posterior dislocation. In our study a lady was trampled on by fighting bulls and she sustained posterior dislocation. Another unique case in this study is one where a man standing at the roadside was thrown off balance by wind from a moving track and he sustained posterior dislocation. In Western countries sports are major cause of posterior dislocation of the hip. ^(10, 11, 23).

Most patients (38 or 42.7%) presented to the hospital within ½ hrs to 6 hours. A few 5.6% presented within ½ hr. Nairobi has good transport system and accident victims arrive the shortest time possible.

Treatment is usually carried out as emergency by the senior house officer on duty in conjunction with a plaster technician. Literature reveals that delay in reduction due to whatever reason is the cause of poor prognosis^(26, 27)

51% of patients presented with dislocation and other injuries (Fig 6 and Table 5). In this study Associated fractures (21.3%) and soft tissue injuries were the main associated injuries (Table 7). A review of literature reveals that sciatic nerve injury constitutes approximately 10% in adults and 5% in children⁽²⁸⁾. One study indicated local injuries in 76.9% of traffic accidents⁽²³⁾. In another study by Schwarzkopf et al., 86 percent of the 49 patients studied over a 15year period had associated injuries⁽²⁹⁾. This suggests that the injury is a high-energy trauma and associated injuries must be looked for.

72 patients (80.9%) presented with posterior dislocation type I (Fig 7 and table 6). This probably was due to the sitting arrangement in our vehicles in which case the thighs are usually flexed and adducted favouring this type of injury. The different patterns of injury depend on the speed, direction of the forces and the position of the femur at the moment of impact⁽³⁰⁾.

All patients entered in this study had radiographs as the only mode of imaging. Standard radiograph are cheap, easily available, and all that is required in simple dislocations. Frick S.L et al was able to show that CT scanning was not useful after concentric reduction by plain radiography of simple posterior dislocations⁽³¹⁾. Another study showed that MRI can effectively identify and quantify the muscle injury and joint effusion that invariably accompany traumatic hip dislocations⁽³²⁾. It is also useful for demonstrating trabecular bone contusion and iliofemoral ligament injury, which occur commonly with acute hip dislocations. However in our setup the cost for imaging by CT or MRI are prohibitive.

80 patients (89.9%) underwent closed reduction (Fig.8, table 8). This is in keeping with the study shown elsewhere indicating that closed reduction is the main method of treatment^(6,7,23,29).

9 patients had open reduction (Fig.9, table9) and out of these 2 were operated within 6 – 12 hours and 7 were operated after 24 hours. Of the 7 some were referrals from neighbouring district hospitals where closed reduction had failed. One study indicated 6% of the 86 patients entered had open reduction ⁽²³⁾

72 patients (80.9%), did not have any complications (Table10). The main complications were osteoarthritis (10.1%), unreduced dislocation (3.4%) and failed reduction (2.2%). The good results were probably due to early reduction.

Schwarzkopf et. al. reported 47% (i.e.14/30) excellent results, according to Thompson and Epstein Classification ⁽²⁹⁾. However their follow-up was based on MRI findings ⁽²⁹⁾.

70 patients (78.7%) were not followed up at all (Fig 10, table 11). This happened despite all the patients having been given appointments for review. Probably the patients felt better and did not see any justification for follow up. More over due to financial constraints some may have decided to be followed up in their local hospitals. In comparison follow up in western countries is more prolonged and up to 7 year follow up has been recorded ⁽²⁹⁾.

CONCLUSIONS

1. Traumatic posterior dislocation of the hip is a common injury and many more cases per year will be seen in the coming years.
2. The young adults between 21 – 30 years are the most commonly injured.
3. There is a male preponderance of about 4:1.
4. Road traffic accidents are the leading cause of the injury
5. Most patients presented to hospital between ½ hrs to 6 hours.
6. 51% of patients presented with posterior dislocation of the hip with other injuries.
7. The majority of the hip dislocations are classified as Epstein type I. (80.9%).
8. Standard radiographs were the only mode of imaging.
9. Closed reduction done early is associated with good results.
10. Majority of the patients studied had no complications.
11. Most patients were not followed up.

PART II – PROSPECTIVE STUDY.

Nine cases were recruited in the study.
The results are as follows

1. Age distribution.

Age	Frequency	Percent
13-20	0	0
21-30	5	55.6
31-40	3	33.3
41-50	0	0
51-60	1	11.1
Total	9	100

Table 12

2. Sex distribution

Sex	Frequency	Percent
Male	8	88.9
Female	1	11.1
Total	9	100

Table 13

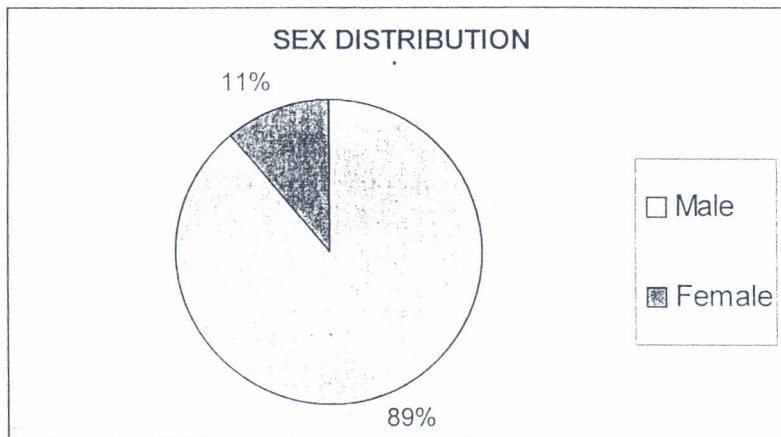


Figure 11

Presentation	Frequency	Percent
Posterior dislocation	4	44.4
Posterior dislocation and other injuries	5	55.6
Total	9	100

Table 16.

6. Posterior dislocation type.

Type	Frequency	Percent
Epstein type I	4	44.4
Epstein type II	3	33.3
Epstein type III	2	22.2
Total	9	100

Table 17

7. Posterior dislocation with other injuries.

Injuries	Frequency	Percent
Associated fractures	2	40
Soft tissue injury	3	60
Total	5	100

Table 18.

8. Imaging

All the 9 patients had radiographs as the only form of Imaging.

9. Mode of treatment.

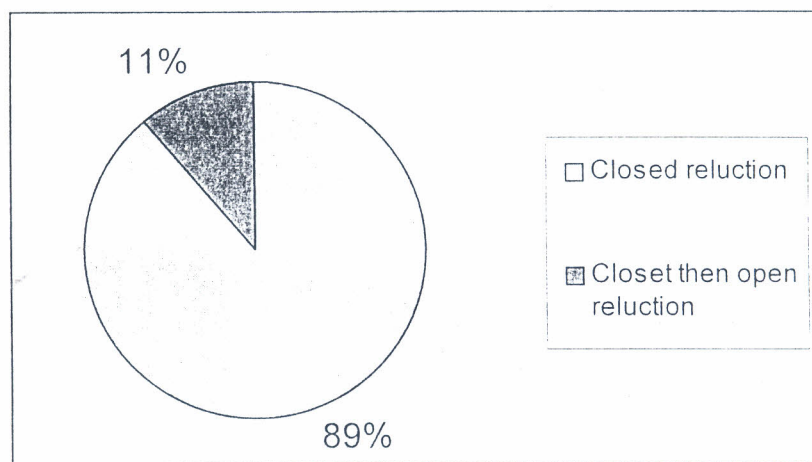


Fig 14.

Mode of treatment	Frequency	Percent
Closed reduction	8	88.9
Closet then open reduction	1	11.1

Table 19.

10. Time before surgery.

One patient underwent operation more than 24 hrs after admission.

11. Complications.

Complications	Frequency	Percent
Nil/none	7	77.8
Osteocuthritis	1	11.1
Death	1	11.1

Table 20.

12. Follow up period.

Follow up period (months)	Frequency	Percent
No following	1	11.1
< 6 months	8	88.9
Total	9	100

Table 21

Mode of treatment	Frequency	Percent
Closed reduction	8	88.9
Closed then open reduction	1	11.1

Table 19.

10. Time before surgery.

One patient underwent operation more than 24 hrs after admission.

11. Complications.

Complications	Frequency	Percent
Nil/none	7	77.8
Osteoarthritis	1	11.1
Death	1	11.1

Table 20.

12. Follow up period.

Follow up period (months)	Frequency	Percent
No follow up	1	11.1
< 6 months	8	88.9
Total	9	100 ^a

Table 21

DISCUSSION - PART II PROSPECTIVE STUDY

9 cases were recruited in the study. If this is extrapolated then for one year 18 cases will have been seen. This falls within the average seen per year for the retrospective study. 55.6% of those seen were in the age group 21 – 30 (Table 12). This correlated well with the retrospective study.

There was also predominance of males over females (Fig 11, Table 13) with M:F ratio of 8:1 . This is a very high M:F ratio and is probably due to a small number of patients entered in the study.

The causes correlate well with what was seen in the retrospective study (Fig 12 and Table 14). Thus 77.8% were due to RTA. One interesting cause for the “others” group was a situation where the subject was entangled in a rope that was tied to the cow. He was then pulled by the cow thus sustaining dislocation of the hip. There is thus increasing though isolated other causes of posterior dislocation of the hip other than R.T.A. and falls from heights. ^(10,11,23)

In our study a higher number presented within 6 – 24 hrs (Table 15). In studies done elsewhere ^(23,29) nearly all patients presented to hospital within 3 hours. In the retrospective study most patients presented within ½ hours to 6 hrs.

5 patients (55.6%) had other injuries. Majority of the injuries were soft tissue injuries (Fig 13 table 16, Table 18). Only 2 out of the 5 patients had associated fractures.

Types of posterior dislocation (Table I7) were distributed between I, II and III with type I predominating by 44.4%. This is low compared to 80.9% in the retrospective study. As indicated earlier, the different patterns of presentation depend on the speed, direction of the forces and the position of the femur at the moment of impact ⁽³⁰⁾.

All the patients had radiographs as the only mode of imaging. This correlates well with the retrospective study.

8 patients (88.9%) were treated by closed methods. This is in keeping with the retrospective study and other studies done elsewhere (6, 7, 23, 29).

One patient was operated more than 24 hours after presentation. This problem is already solved with opening of trauma theatre for 24 hrs in Kenyatta National Hospital

77.8% of patients did not have complications. This compared very well with the retrospective study (Table 10, Table 18). One patient died two weeks after admission. Apart from dislocation he sustained compound tibiofibular fracture with crushed foot and was discovered to be diabetic. He died of complications of diabetes. In our study many complications detected in western countries were not seen probably because of use of radiography as the only mode of imaging.

I followed up the 8 patients and only one had developed arthritis of the hip and is on nonsteroidal anti-inflammatory drugs.

CONCLUSIONS

1. More males sustained posterior dislocations of the hip than females.
2. RTA accounts for the majority of the causes.
3. There were more patients presenting within 6-24hours bracket.
4. Type I posterior dislocation is more common.
5. Standard radiograph is almost always the only method of imaging performed at KNH for this injury.
6. The majority of the patients were treated by closed methods.
7. There is delay in operative management.
8. Majority of the patients had no complications.

RECOMMENDATIONS

1. A patient presenting with posterior dislocation should be thoroughly examined to exclude associated injuries.
2. All patients presenting with posterior hip dislocation should be treated within the first 6hours of injury.
3. Type I dislocation is the most common. So where x-ray facilities are not available closed methods of treatment will give good results.
4. Other forms of imaging (CT & MRI) should be performed in failed reduction.
5. Patients should be followed up for at least 2years in order to get the pattern of complications.
6. Further research is needed especially multi-center study in order to get the true picture of the injury.

APPENDIX

DATA COLLECTION FORM

A. DEMOGRAPHIC

- 1. Hospital No.
- 2. Study No.

- 3. Age (years)
- 3. 4. Sex Male 1, Female 2

B HISTORY

CAUSES (Code 0= No 1 + YES)

- 1. Road traffic accident
- 2. Fall from height
- 3. Others

C. TIME OF PRESENTING TO HOSPITAL

- 1. Less than half an hour
- 2. ½ hour - 6hours
- 3. 6hours - 24hours
- 4. > 24hours

D. PRESENTION

- 1. Posterior dislocation
- 2. Posterior dislocation with other injuries

E. POSTERIOR DISLOCATION TYPE

- 1. Epstein type 1
- 2. Epstein type 2
- 3. Epstein type 3
- 4. Epstein type 4
- 5. Epstein type 5

F. IF POSTERIOR DISLOCATION WITH OTHER INJURIES.

- 1. Sciatic nerve palsy
- 2. Shock
- 3. Associated fractures
- 4. Abdominal injuries
-

5. Others

G. IMAGING

1. Radiographs
2. CT Scan

E. MODE OF TREATMENT

1. Closed reduction
2. Closed reduction followed by open reduction
3. Open reduction

H. TIME BEFORE SURGERY

1. ½ hours 06hours
2. 6hours –12hours
3. 12hours –24hours
4. >24hours

J. COMPLICATIONS

1. Avascular necrosis
2. Myositis ossificans
3. Unreduced dislocation
4. Osteoarthritis
5. Others
6. No complications

K. AVERAGE FOLLOW UP PERIOD

- (1) No follow up
- (2) < 6months
- (3) 6months to year
- (4) 1year to 2years
- (5) > 2years

INFORMED CONSENT

I _____ subject's name having full capacity to consent for myself and having sustained my _____ birthday, do hereby consent to my participation in the prospective research study of traumatic posterior dislocation of the hip.

The implication of my participation, the nature, the dimension and purpose, the methods and means by which it will be conducted and the inconveniences and hazards which may reasonably expected have been explained to me by _____

I have been given the opportunity to ask any questions concerning this study and any such questions have to be answered to my full and complete satisfaction. Should any questions arise, you may contact DR. PETER ASEYO SORE, PO.O.BOX 19676 NAIROBI, KENYA OR TEL: 726300 EXT. 43649.

I understand that I may at any time withdraw from the study. However I may be required to undergo further examination if in the opinion of the doctor such examinations are necessary for my well being.

Subject's name _____
Subject's Sign _____
Study Number _____
Date _____

REFERENCES

1. **Watson – Jones(ed).**
Fracture and joint injuries 5th edition. *Churchil Livingstone, Edinburgh, 1876: 855-888.*
2. **Armstrong JR.**
Traumatic dislocation of the hip: A review of 101 dislocations. *Journal of Bone and Joint surgery 1952; 34-B: 503-11.*
3. **Nicoll EA.**
Traumatic dislocation of the hip – review of 144cases. *Journal of Bone and Joint surgery 1952;34-B: 430-8*
4. **Pause B.**
Traumatic dislocations of the hip – results in 76 cases. *Acta Orthopaedica Scandinavica, 1951;21:99*
5. **Yue JJ; Wilber JH; Lipuma JP; et al**
Posterior hip dislocation: A cadavaric angiographic study. *Journal of Orthopaedic Trauma 1976; 10(7):447-54*
6. **Crenshaw AH(ed).**
Campbell operative orthopaedics 9th ed. The CV Mosby Company, 1995: 2224-2234
7. **Apley AG; Solomon L(eds)**
Apley's system of orthopaedics and fractures. 7th edition. *Buterworth Heinemann Oxford, 1993: 651-657..*
8. **Stueland D; Rothefusz RR.**
Posterior hip dislocation in a rural emergency department.

Wis Medical Journal May 1992; 91(5): 211-3

9. Depalma AF.

The management of fractures and dislocations.

2nd ed: Philadelphia Saunder, 1970: 1142-53

10. Wolfe. MW.; Brinker MR; Cary GR; Cook SD.

Posterior fracture dislocation in a jogger.

Journal of Trauma, April 1995; 38 (4): 658-9

11. Tennet TD; Chambler AF; Rossouw DJ.

Posterior dislocation of the hip while playing basketball.

British Journal of Sports Medicine, Dec. 1998; 32 (4): 342 – 3.

12. Kaleli T; Alyuz N;

Bilateral Traumatic dislocation of the hip:

Simultaneous one anterior and the other posterior.

Archives of Orthopaedic and Trauma Surgery, 1998; 117 (8): 479-80.

13. Thompson VP; Epstein HC

Traumatic dislocation of the hip: A survey of 204 cases covering a period of 21 years.

Journal of Bone and Joint Surgery, 1951; 33-A: 1079-86.

14. Epstein HC.

Posterior fracture dislocation of the Hip

Journal of Bone and Joint Surgery, 1961; 43 – A: 1079 – 86.

15. **Mahara A.K.; Das Ramchandani G; Sharma C. S; et al.**
Unusual dislocation with ipsilateral fracture of femoral neck and head
Journal of Trauma, April 1995; 38 (4): 658 – 9.
16. **Stimson L.A.**
A treatise on fractures and dislocations
New York: Lea & Febiger; 1908; 743.
17. **Stefanich RJ.**
Closed reduction of posterior dislocation: The Rockeater method
American Journal of Orthopaedic, Jan 1999; 28 (1): 64-5.
18. **Conale ST, Manugian AH.**
Irreducible traumatic dislocations of the hip
Journal of Bone and Joint Surgery, 1979, 61-A: 7-10.
19. **Brumback RJ, Hoh ES, Mcbride MS; et al.**
Acetabular depression fracture accompanying posterior fracture
Dislocation of the hip
Journal of Orthopaedic Trauma, 1990; 4: 42 – 8
20. **Epstein HC.**
Posterior fracture dislocation of the hip;
Long term follow up.
Journal of Bone and Joint Surgery 1974; 56-A: 1103.
21. **Epstein HC; Wiss DA; Cozen L.**
Posterior fracture dislocation of the hip with fracture of femoral head.
Clinical Orthop. 1985; 201: 9-12.

MEDICAL LIBRARY
UNIVERSITY OF NAIROBI

22. **Upadhyay SS; Moulton A.**
The long result of traumatic posterior dislocation of the hip.
Journal of Bone and Joint Surgery 1981; 63-B: 548-52.
23. **Holzach P; Weymann A; Perren T; et al.**
Traumatic hip dislocations.
Epidemiological data at Davos Hospital and Multicenter study in Graubunden Canton. *Zeitschrift für Unfallchirurgie and Versicherungsmedizin* (SWITZERLAND) 1993; 1:187 – 93.
24. **Gennari JM; Merrot T; Bergoin V; et al.**
X-ray Transparency Interpositions after reduction of traumatic dislocations of the hip in children.
European Journal of Paediatric Surgery Oct. 1996; 6: 288-93.
25. **Petrie SG; Harris MB; Willis RB.**
Traumatic posterior dislocation during childhood. A case report and review of literature.
American Journal of Orthopaedic (UNITED STATES)
Sept. 1996; 25(9): 645 – 9.
26. **Kuttys; Thornes B; Curtin WA et. al.**
Traumatic posterior dislocation of hip in children.
Paediatrics emergency care (United States).: Feb 2001; 17 (1): 32-5.
27. **Yang EC; Cornwall R.**
Initial treatment of traumatic hip dislocations in adults.
Clinical orthopaedics and related research (UNITED STATES) Aug 2000; (377): 24-31.

28. **Cornwall R; Radomislite**
Nerve injury in traumatic dislocation of the hip.
Clinical orthopadics and related research (UNITED STATES).
Aug 2000; (377): 84 – 91.
29. **Schwarzkopf SR, Dreinhofer KE et al.**
Isolated hip dislocation of traumatic origin
Der Unfallchirurg (Germany), March 1996; 99 (3): 168 – 74
30. **Bauer GJ; Sarkar MR**
Injury classification and Surgical approach in hip dislocations and fractures
Der Orthopade (GERMANY) April 1997; 26 (4): 304 – 16.
31. **Frick SL; Sims SH.**
Is computed tomography useful after simple posterior hip dislocation?
Journal of Orthopaedic Trauma (UNITED STATES) 1995; 9: 388 – 99.
32. **Laorr A; Greenspan et al.**
Traumatic hip dislocation: Early MRI findings
McKinley Skeletal radiology (GERMANY). May 1995; 24(4):239 – 45.