ORIGINAL ARTICLE

Traumatic posterior dislocation of the hip: distribution and severity of associated injuries

[*]**Onche I I** *MBBS,FMCSorth;* [**]**Obiano K C** *MBBS,FWACS,FICS*
[*]**Udoh K M** *MBBS, (Deceased)*

[*]*Department of Orthopaedics and Trauma, Jos University Teaching Hospital, Jos, Plateau State. Visiting Consultant to Federal Medical Center, Gombe and Bauchi Specialist Hospital, Bauchi, Bauchi State*
[**]*Federal Medical Center, Gombe, Gombe State*

Abstract

Introduction: *Posterior hip dislocation is a major orthopaedic injury resulting from high-energy trauma. Morbidity and mortality is very high usually resulting from the associated injuries sustained during the trauma. We carried out this study to find out the usual associated injury distribution and severity in our environment.*

Patients and method: *This is a five-year prospective multi-center study. All patients who presented were recruited into the study. Indices noted included source and time of injury, time of presentation at casualty, associated injuries, injury severity score and the treatment. Presentation was classified as early if less or equal to six hours.*

Result: *There were 47 patients comprising 36(76.6%) males and 11(23.4%) females. Forty-six (97.9%) cases resulted from motor vehicular accidents. Mean age was 32.4(±9.7) years with 29 (80.8%) being less than 40. Thirty-one(65.9%) patients sustained 53 serious injuries that merited admission comprising significant cranio-facial laceration 13(24.5%); long bone fractures 12(22.6%); acetabular fractures 9(17.0%); pelvic fractures 9(17.0%); splenic rupture 2(4.3%) and urethral rupture in one (2.1%).These injuries were in combinations. Thirty-two (68.1%) presented early, with twenty-nine (90.7%) presenting within two hours of injury. The mean Injury Severity Score was 20.3 (±7.9). Fifteen patients presented late with a mean of 1141hours (±1021) or 6.8 weeks. Ten (66.7%) had no associated injuries while 5(33.3%) had associated injuries comprising three (20.0%) cranio-facial lacerations and two (13.3) had humeral fractures. The mean injury score was 9.0 (±8.0). No mortality was recorded.*

Conclusion: *This study documented that there was high rate of associated injuries in traumatic posterior hip dislocation each warranting admission on its own merit. These injuries take precedence in the emergency care of patients with posterior dislocation of the hip. The role of public enlightment on road safety measures cannot be over-emphasized and a case is made for training of the populace in essential basic life support.*

Key words: Posterior hip dislocation; associated injuries; injury severity score.

Date accepted for publication 12th June 2008
Nig J Med 2008; 346 - 349

Introduction

The hip joint is a synovial joint of the ball and socket variety. It is a very powerful joint which is further reinforced by ligaments, the joint capsule and very large muscle insertions. Posterior dislocation of the hip therefore occurs from severe trauma and high velocity impacts and usually associated with multiple injuries[1-3].

It is an orthopaedic emergency and though the outcome of treatment is time dependent, the mortality is primarily due to associated injuries of the pelvis, head, thorax and abdomen and these take precedence in the care of these patients[3,4].

The type and hospital rates of associated injuries vary from one study to another depending on the social activities in the locality under review and the mechanism of injury. In Shagamu, Nigeria, Akiode and Oyelekan[5] retrospectively found over a ten year period, fracture of the acetabulum as the commonest injury in 5(27.8%),long bone fracture with cerebral concussion in 3(16.7%),small bone fractures in three (16.7%), significant haemothorax in one(5.6%) and sciatic nerve in one (5.6%). Only five patients (27.8%) had isolated hip dislocation. Fifty (50%) percent of their patient population were drivers. At the University of Michigan, Hak and Goulet[6] found in a retrospective study an incidence of associated injuries to be 95% in 66 patients. Acetabular fractures were seen in 46(70%) patients with femoral head fractures in nine (14%) and other lower limb fractures in 26 patients (39%).Other injuries were craniofacial injuries in 14(21%), Closed head injuries in 16(24%), thoracic injuries in 14(21%) and abdominal injuries in 10(15%). All their patients were as a result of motor vehicular collisions with an average injury severity score of 17.4 (range, 9-59)

Correspondence to ***Dr Icha I. Onche,*** *Email: philipicha2002@yahoo.co.uk, 08033704770; 08055870486*

Suraci[7] in another retrospective study found that 95% of his patients had head, chest and abdominal injuries, severe enough to warrant admissions on their own merit. Significantly, he found that central dislocations were associated with the most morbidity. McKee et al[8] in their study of 25 patients with irreducible fracture-dislocation of the hip that their injuries were even more severe in which 18 had multiple fractures,15 associated systemic injury with only four having isolated hip dislocation. The mean injury severity score in this study was 25 with a range from 9 to 54.

This is a prospective study carried out in three hospitals in North East and Central Nigeria over a five year period. Our specific objectives are to identify the injury distribution pattern, the rate and the severity of these injuries using the injury severity score.

Methodology

Study centre

This is a five year (August 2000- July 2005) prospective study carried out in three hospitals namely, Federal Medical Centre Gombe and Bauchi Specialist Hospital, Bauchi both in North-Eastern Nigeria and Jos University Teaching Hospital in North-Central Nigeria.

Patient selection

All patients with the diagnosis of posterior hip dislocation were recruited into the study. At the emergency casualty, the patients were completely evaluated by the casualty officer and the orthopaedic team. All their findings were diligently documented for the calculation of the injury severity score by the authors. The source of injury, time of accident, initial hospital and first aid given, interval between accident and treatment were all documented in addition to personal data.

Patients were categorized into early presentation, if they presentated in the emergency room within six hours. All those who came in later were classified as late.

Statistics

Data analyses were done using Epi-info 2002 revision 2 statistical software. Variables were presented as means with standard deviations and percentages where applicable. Probability values less than 0.05 were considered significant.

Results

There were 47 patients recruited and analyzed for the study. These included twenty-six (55.3%) from Jos University Teaching Hospital (JUTH); sixteen (34.0%) from Federal Medical Centre Gombe (FMCG) and five (10.6%) from Bauchi Specialist Hospital, Bauchi (BSSH). There were 36 males (76.6%) and 11 females (23.4%).

The commonest source of injury was road traffic accident comprising 40 (85.1%) cases due to car or truck accidents and six (12.8%) cases due to motorcycle mishaps. One (2.1%) from a fall at home.

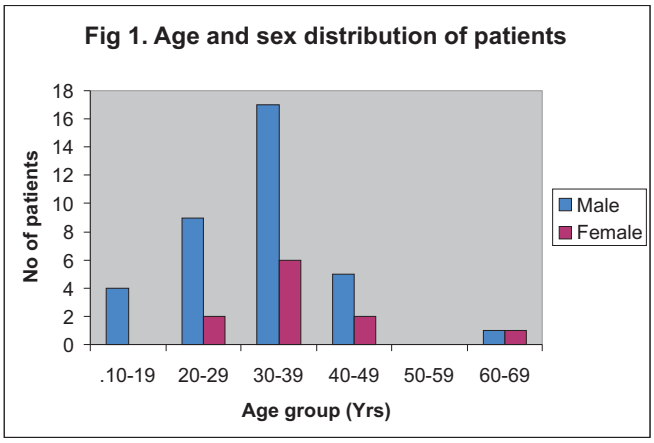
The commonest age group was 30-39 years with 23 (48.9%) patients, 38 (80.8%) were less than 40 years as shown in figure 1. The mean age was 32.4±9.7 (range 17-65) years. The right hip was involved in 29 (61.7%) cases and the left in 18 (38.3%).

Thirty-one patients (65.9%) sustained 53 associated injuries as shown in table I. Facial lacerations were the most common occurring in 13 (24.5%) patients. The commonest bony injuries were acetabular and pelvic fractures each with nine (17.0%) patients. The injuries were in combinations in 14 patients and isolated in 17 patients as depicted in table II. Significant splenic ruptures with emergency splenectomy were the main intra-abdominal injuries in two patients(4.3%).Urethral injury was observed in one patient (2.1%) who also sustained acetabular, pelvic and tibial fractures.

The mean Injury Severity Score (ISS) was 16.7±9.6 (range 3-34) with 32 patients (68.1%) scoring less than 25. Fifteen patients scored above 25 but less than 70. Thirty-two patients (68.1%) presented early and the average ISS was 20.3±8, (range 9-34, mode 27). Fifteen patients (31.9%) presented late and had an average score of 9±8, (range 3-27, mode 3), This is depicted in figure 2. The associated injuries sustained between the early and late presenters are shown in table III.

Of the 32 early presenters, 11 (34.4%) presented within one hour of their injury while 18 (56.3%) presented between one and two hours of their injuries. The mean duration before presentation was 1.8 hours (±0.8 range 1-5,).The associated injuries were in combinations, 16 patients (50.0%) had at least two other major injuries comprising splenic rupture in two (6.3%), urethral rupture in one (3.1%), chest trauma in two (6.3%).Six (18.8%) had isolated hip dislocations (Table III, IV).

Fifteen patients presented late with the mean interval before presentation of 1141 hours (±1244, range 7-2880). Ten (66.7%) of these had no associated injuries while five (33.3%) distributed as three (20.0%) facial lacerations and two (13.3%) fractures of the humerus (Table III).



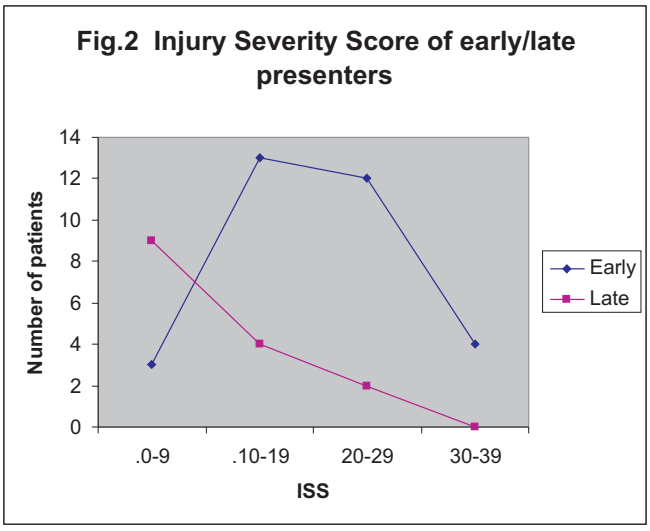


Table I. Distribution of associated injuries

Associated injuries	No of injuries n=53	% of total injuries
Facial lacerations	13	24.5
Acetabular fractures	9	17.0
Pelvic fractures	9	17.0
Head injuries	5	9.4
Femoral fractures	5	9.4
Humeral fractures	4	7.5
Tibial fractures	3	5.7
Splenic injury	2	3.8
Chest trauma	2	3.8
Urethral injury	1	1.9

Table II. Combinations of injuries associated with posterior dislocation

Injury combinations	No of patients n=31	%
Acetabular #;Pelvic #;Lacerations	3	6.4
Acetabular #;Pelvic#;Tibia#;Urethral injury	1	2.1
Femoral #;splenic injury	2	4.3
Femoral #; Tibial #; Lacerations	2	4.3
Humeral #; Acetabular #.	3	6.4
Humeral #;Acetabular #;Lacerations.	1	2.1
Pelvic #;Chest trauma.	2	4.3
Acetabular #	1	2.1
Pelvic #	3	6.4
Femoral #	1	2.1
Facial laceration	7	14.9
Head injury	5	10.6

Legend: # Fracture

Table III. Distribution of associated injuries between early and late presenters

Injury type	Early (n-48)	Late (n-5)
Pelvic fractures	9	0
Long bone fractures	10	2
Acetabular fractures	9	0
Significant lacerations	10	3
Head injuries	5	0
Intraabdominal injuries (splenic)	2	0
Chest trauma	2	0
Urethral injuries	1	0

Table IV. Comparative data summary between early and late presenters

Index	Early	Late
Number of patients	32	15
Mean interval before presentation	1.8(±0.8)hrs	1141(±1244)hrs
No of pts with associated injuries	26	5
Injury severity score	20.3(±8)	9(±8)
No with isolated dislocation	6	10

Discussion

In this study, the rate of associated injuries was 65.9% with each of these deserving admissions on its own merit. This is comparable to the study by Akiode et al[5] in which 72.2% sustained significant injuries. This comparism is significant because the study is in the same country even though our study was multi-center,

prospective and with higher number of patients (47 versus 18). Another significant difference is that the associated injuries were in combinations in our study while it would seem only one of their patients' sustained more than two injuries.

On the other hand Suraci[7] found a rate of 95% of associated injuries in a retrospective study of 38 patients in which head, chest and abdominal injuries were seen most frequently. Similarly Hak DJ and Goulet JA[6] in their study found that 63 of 66 (95%) patients were found to have associated injuries the most common were orthopaedic injuries in 33% (22 patients) and others sustaining other injuries mainly 24% (16 patients); thoracic in 21% (14 patients) and craniofacial injuries 21% (14 patients) and abdominal injuries in 15% (10 patients) with an average injury severity score of 17.4.
In our series, acetabular (17.0%) and pelvic (17.0%) fractures were the commonest orthopaedic injuries and long bone fractures in 12 (22.6%). Intra-abdominal injuries (splenic rupture 2(3.8%); chest trauma 2(3.8%) and urethral in one (1.9%) patient) were similarly common. The average ISS was 20.3. This is comparable to the studies by Hak and Goulet[6] except that our series was prospective and multi-centered. The commonest orthopaedic injury in most series[4-8] was acetabular fractures which was four times higher than our series (70% versus 17%). Suffice to say however that significant cranio-facial laceration was the commonest associated injury overall.

In summary, associated injuries are very common in traumatic dislocation of the hip in our environment. The treatment of these injuries is even more important than the treatment of the primary lesion and determines to a large extent the morbidity and mortality.

References

1. Bulstrode CJK, Kinninmonth A. Lower limb trauma in: Russel RCG, Williams NS, Bulstrode CJK (eds), Bailey and Love's short practice of surgery, 24th edn; London, Arnold; 2004, 397-401.
2. Thompson JC. Thigh and hip in: Netter's Concise atlas of orthopaedic anatomy, New Jersey; Icon learning system,2004. 170-173.
3. Kum CK, Tan SK. Traumatic posterior dislocation of the hip-a local experience and review of literature. Singapore Med. J. 1990, 31:22-28.
4. Moehring HD. Hip dislocations and femoral fractures in: Chapman MW, Bray TJ, Spiegel PG, Green SA (eds). Operative Orthopaedics, 2nd edn Philadelphia: Lippincott; 1993, 571-582.
5. Akiode O, Oyelekan AAA. Posterior dislocation of the hip: Need for prompt care. Nig J Orth Trauma, 2003; 2(1) 18-21.
6. Hak DJ, Goulet JA. Severity of injuries associated with traumatic hip dislocation as a result of motor vehicular collision. J Trauma, 1999; 47(1): 60-63.
7. Suraci AJ. Distribution and severity of injuries associated with hip dislocation secondary to motor vehicular collisions. J Trauma, 1986; 26(5): 458-460.
8. McKee MD,Garay ME, Schemitsch EH, Kreder HJ, Stephen DJ. Irreducible fracture dislocation of the hip: a severe injury with a poor prognosis. J Orth Trauma, 1998; 12(4): 223-229.
9. Omolulu B, Ogunlade SO, Alonge TA. The complications seen from treatment by traditional bone setters. West Afri. J. Med. 2002; 21:335-337.
10. Thani IAO. Factors affecting patronage of traditional bone setters. West Afri. J. Med. 2000; 19:220-224.
11. Onuminya JE. The role of the traditional bonesetter in primary fracture care in Nigeria. South African Med J. 2004, 94:652-658.
12. Onuminya JE. Misadventure in traditional medicine practice: an unusual indication for limb amputation. J Natl med assosc. 2005; 97 (6): 824-825.