

Traumatic Hip Dislocations in an Orthopedic Center in Lagos

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Abstract

Background: Hip dislocations are one of the orthopedic emergencies. They may result from a high-energy transfer as in a road traffic crash. Prompt recognition and treatment can reduce the long-term morbidity associated with delayed reduction. The goal of this study was to evaluate the epidemiology and outcome of treatment. **Patients and Methods:** This was a retrospective study that involved cases of traumatic hip dislocations seen at the National Orthopaedic Hospital, Lagos, Nigeria, between January 1, 2010 and June 30, 2014. Biodemographic characteristics, mechanism of injury, and type of dislocations were retrieved from case files. Thompson and Epstein type of the dislocated hips as well as the presence of pre- and post-reduction complications was noted. **Results:** Forty-five patients had hip dislocations in the study period. Only 27 had the relevant information to be included in the study. All cases were posterior hip dislocations. The median follow-up was 9 months (range 6–30 months). More dislocations occurred on the left [18 (67.0%)] than on the right [9 (33.0%)]. The median age of patients was 37 years (range 21–73 years). Twenty-six dislocations (96.3%) were due to road traffic crash and a case (3.7%) was due to an industrial accident. Grade IV Epstein was the most common injury recorded. Twenty-four (89.0%) cases were managed with closed reduction, whereas the remaining 3 (11.0%) cases had open reduction. The associated complications observed were sciatic nerve injury, avascular necrosis of the head of the femur, and protrusio acetabuli. **Conclusion:** Road traffic crash remains a leading cause of traumatic hip dislocation. Severity of injury and delay in reduction contributes to the complications of treatment.

Keywords: Epidemiology, outcome, traumatic hip dislocation

INTRODUCTION

The hip joint is a ball-and-socket joint. It's inherent stability is as a result of it's bony articulation which is further strengthened by the surrounding capsule and ligaments. For the hip to dislocate, the ligamentum teres and at least a portion of the capsule must be disrupted.¹ Isolated hip dislocations or dislocations with femoral head fracture generally result from high-energy trauma and are often accompanied by associated injuries. It may result from a passenger-motor vehicular crash, a pedestrian-motor vehicular injury, or industrial accidents.²⁻⁶ It is also associated with certain sporting activities such as rugby, basketball, water skiing, gymnastics, race car driving, and equestrian sports.⁶⁻¹² The hip is the most commonly dislocated joint in the lower extremity with an incidence of 5.2%.¹³ Traumatic dislocation or fracture dislocation of the hip is an orthopedic emergency. Prompt recognition with stable reduction is crucial to successful functional outcome.¹⁴

The initial management of hip dislocations is an attempt at a closed reduction using any one of the methods of Stimpson (gravity), Allis (traction-countertraction), or the East-Baltimore lift

techniques. In general, no more than two attempts at closed reduction are advised. Excellent results are usual in hips reduced within 12 h.¹⁵ Delay in reduction has been associated with increased complication rates.¹⁶ Irreducible dislocations, those with incongruent reductions, and those with associated fractures may require subsequent operative management.

The goal of this study was to review the common causes of traumatic hip dislocations in a large trauma and orthopedic center. The pattern of associated injuries, the interval between presentation and reduction, and the complications of treatment were also evaluated.

PATIENTS AND METHODS

This was a retrospective study in which case files of consecutive

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Access this article online

Quick Response Code:



Website:
www.nigeriamedj.com

DOI:
10.4103/nmj.NMJ_139_18

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How to cite this article: Babalola RO, Laiyemo EA, Audu SS, Alatishe KA, Ijezie CN. Traumatic hip dislocations in an orthopedic center in Lagos. Niger Med J 2018;59:20-3.

patients managed for traumatic dislocation of the hip between January 1, 2010 and June 30, 2014, at the National Orthopaedic Hospital, Lagos were reviewed. The hospital is one of three regional Orthopaedic Hospitals in the country. It is a 450-bedded hospital that treats orthopedic and trauma patients from all parts of the country and neighboring West African countries.

Using a structured questionnaire, biodemographic characteristics, mechanism of injury, type and grade of dislocation, the interval between injury and successful reduction were retrieved from the case files. By definition, a chronic hip dislocation is defined as a hip that has remained unreduced for >6 weeks.¹⁷ Furthermore, the method of reduction and presence of associated injuries at the time of presentation were noted. The duration of follow-up and existence of pre- and postreduction complications were also noted. Thompson and Epstein's classification was used to grade the severity of the hip injury.¹⁸

Data extracted from case files were analyzed using SPSS (SPSS Inc., Chicago, Illinois, USA) software version 16. Descriptive statistics were used to determine the frequency and percentage for categorical variables and mean and standard deviation for continuous variables.

RESULTS

A total of 6080 patients presented in the hospital during the study period. Of the 45 cases of hip dislocations, five were excluded from the study for lack of adequate information. Only 40 had adequate information to be included in the study. Of these 40, 13 were cases of chronic or neglected dislocations and they were excluded from the study. Only 27 cases met the inclusion criteria for the study. All these cases (100%) were posterior hip dislocations. No cases of anterior or central dislocation were recorded during the period of the study.

Seventeen (63.0%) of the patients were male and 10 (37.0%) were female. More dislocations occurred on the left [18 (67.0%)] than the right 9 (33.0%). The median age at presentation was 37 years (range 21–73 years). The median follow-up period was 9.0 months (range 6.0–30.0 months). Twenty-six dislocations (96.3%) were due to road traffic crash and 1 (3.7%) due to an industrial accident.

The protocol for reduction of hip dislocation in the hospital was to attempt closed reduction either in the emergency room or in the operating room (following failed attempt at closed reduction in the emergency room) using the Bigelow or Allis method. Patients with two unsuccessful attempts at closed reduction in the emergency room had only a single attempt at closed reduction again in theater under general anesthesia, failure of which an open reduction was performed. Twenty-four (89.0%) cases were managed by closed reduction and 3 (11.0%) by open reduction. Open reduction was done through a posterior approach in all the three cases for reasons of soft-tissue interposition following initial failed attempt at closed reduction.

The median time between injury and hip reduction was 24 h (range 4–360 h). The 360-h delay between injury and presentation was in a patient who following injury initially presented in a private hospital where he was resuscitated. However, the team at the hospital could not successfully reduce the dislocated hip. The hospital subsequently referred the patient to our facility. However, the patient delayed in presenting at our center. There were 22 (81.5%) isolated injuries (cases of hip dislocation or fracture dislocation occurring alone), while the remaining 5 (18.5%) had concomitant injuries in the musculoskeletal system. The grades of hip injury are displayed in Table 1. The associated injuries observed included three cases of femoral fractures, a case of tibia fracture, and a case of pelvic fracture. The femoral and tibia fractures were managed with locked intramedullary nailing, and the pelvic fracture was managed nonoperatively.

Following hip reduction, patients were admitted on the bed, and the injured lower limb was splinted for 3–6 weeks. Full-weight bearing was generally commenced 6–9 weeks postreduction in patients with isolated injury and those with concomitant long bone fractures that had been fixed. There were four cases (14.8%) of primary sciatic nerve injury with foot drop. Each had Epstein type IV injury which was managed with closed reduction. The nerve injuries were all cases of neuropraxia that resolved with nonoperative treatment over 2–3 months. The other complications observed were avascular necrosis of the femoral head and protrusio acetabuli. Avascular necrosis of the femoral head was the most common long-term complication of treatment observed. This may be related to the severity of the hip injury, as 4 (57%) of the seven patients with avascular necrosis of the head of the femur had at least an Epstein type III hip injury [Table 2].

DISCUSSION

Road traffic injuries remain a leading cause of posterior hip dislocations.¹⁹ This may not be unrelated to the increasing use of motor vehicular transport, increasing the incidence of road traffic crash and consequently, a rise in the incidence of traumatic hip dislocations.^{20–22} Our literature search did not reveal any documented local or regional prevalence rate for traumatic hip dislocations. However, this study revealed a hospital incidence rate of 0.75%, with the most common injury type being Thompson and Epstein Type IV. This contrasts with other studies in which the most common type of injury was Thompson and Epstein type I injury^{20,22–24} and may be related

Table 1: Frequency of each grade of injury in hip dislocation

Epstein grade	Frequency (%)
I	10 (37.0)
II	2 (7.4)
III	2 (7.4)
IV	13 (48.2)
Total	27 (100.0)

Table 2: Hip injury grade and reduction times in patients noted to have developed avascular necrosis of the head of femur following closed reduction

Associated injury	Thompson–Epstein type	Time before reduction (h)	Mode of reduction
None	III	32	Closed
None	I	72	Closed
None	IV	24	Open
None	I	72	Closed
None	I	72	Closed
None	III	180	Closed
None	IV	72	Closed

to the low seat-belt usage in our environment that makes for a greater impact of the lower limb on the dashboard at the time of a road traffic crash. It could also be that the more difficult cases were referred to our hospital, being a tertiary referral center and that simpler injuries had been reduced at the emergency rooms of most peripheral hospitals.²⁵

In this study, the left hip was predominantly involved. This is similar to earlier reports by Upadhyay and Moulton,²⁶ and Yang *et al.*²⁷ However, Dwyer *et al.*²⁸ reported higher predominance of the right hip. There is no consensus in the literature regarding the side of the hip more commonly dislocated. Levin²⁹ argued that there is correlation between the side of the dislocated hip and the side of the car steering. In contrast to a conclusion reached by Levin *et al.*, local studies conducted by Alonge *et al.*²⁴ and Edomwonyi and Enemudo³⁰ reported a higher frequency of right hip involvement despite the predominance of left-sided car steering in our region. Although we recorded predominance of left hip dislocations and most cars in our region are left-sided steering, we still cannot make assertions that there exists a relationship. Dreinhöfer *et al.*³¹ also found no correlation with placement of the steering wheel.

The associated injuries observed in our study were all in the lower limbs. It may also be related to the frequent modification of commercial minibuses to accommodate an extra row of seats to make more profit.³² The modification results in more passengers occupying a very limited space in the bus.

The time interval between injury and reduction of the dislocation has been found to be one of the important factors that determine long-term prognosis following adequate reduction. Avascular necrosis of the femoral head is a known complication of traumatic hip dislocation and reduction within 12 h has been recommended by clinical studies as the golden time for reduction.³¹ In a more recent study by Hougaard and Thomsen,³³ avascular necrosis of the femoral head was reported in 4.8% of hips reduced within 6 h and 52.9% in hips reduced after 6 h within a minimum follow-up of 5 years. However, Reigstad³⁴ found a zero incidence of osteoarthritis or avascular necrosis in simple dislocations reduced within 6 h. Good results have been reported in patients with early, stable, and accurate reductions by either closed or open methods.^{19,34} In our report, there was no occurrence of avascular necrosis of the

femoral head in the cases reduced within the first 6 h. However, longer follow-up would be required to monitor the incidence of osteonecrosis in these patients. The cases of avascular necrosis of the femoral head seen in our study [Table 2] all had their dislocated hips reduced after 12 h. Most of them had an injury grade of at least Epstein type III. The delay in reduction, as well as the injury severity, may have contributed to this complication in these cases.

Most authors believe that no more than two closed reduction attempts should be made, to avoid further damage to the femoral head. The cases that had to be reduced open in our study were due to soft-tissue interposition and ipsilateral femoral shaft fractures. The most common associated injury observed was a sciatic nerve injury. Early intervention has been recommended in all dislocations with sciatic or peroneal nerve paralysis.³⁵

The patients with ipsilateral femoral shaft fractures had fixation done at the time of open reduction of the hip injury. Only one case of multiply injured patient was recorded in our study. The delay in reduction (32 h) resulted from the need to attend to more life-threatening injuries and may explain the avascular necrosis of the femoral head that occurred in this case. The actual incidence of avascular necrosis of the femoral head and posttraumatic arthritis of the hip could not be ascertained in this study because of the short follow-up period.

Limitations

(a) The retrospective nature of the study makes room for the possibility of missing data and injury details, (b) the small sample size, (c) the lack of details of the motor vehicle collision which would further help understand the mechanism of injury, (d) most of these patients defaulted on follow-up care making the follow-up period a relatively short one, and (e) cases of chronic hip dislocations were left out of the study.

CONCLUSION

Road traffic crash remains a leading cause of traumatic hip dislocation. The severity of injury and delay in reduction contribute to complications of treatment observed in our environment.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Laorr A, Greenspan A, Anderson MW, Moehring HD, McKinley T. Traumatic hip dislocation: Early MRI findings. *Skeletal Radiol* 1995;24:239-45.
- Mitchell JC, Giannoudis PV, Millner PA, Smith RM. A rare fracture-dislocation of the hip in a gymnast and review of the literature. *Br J Sports Med* 1999;33:283-4.
- Rockwood CA, Green DP, Bucholz PW, Heckman JD, editors. *Fractures and dislocations of the hip. Fractures in Adults*. 4th ed., Vol. 2. Philadelphia, Pa: Lippincott-Raven; 1996. p. 1756-803.

4. Yates C, Bandy WD, Blasier RD. Traumatic dislocation of the hip in a high school football player. *Phys Ther* 2008;88:780-8.
5. Liporace FA, Dasti UR, Raiszadeh K. Ipsilateral anterior then irreducible posterior hip dislocation without fracture: A case report. *J Orthop Trauma* 2008;22:363-7.
6. Tennent TD, Chamblor AF, Rossouw DJ. Posterior dislocation of the hip while playing basketball. *Br J Sports Med* 1998;32:342-3.
7. Pallia CS, Scott RE, Chao DJ. Traumatic hip dislocation in athletes. *Curr Sports Med Rep* 2002;1:338-45.
8. Matsumoto K, Sumi H, Sumi Y, Shimizu K. An analysis of hip dislocations among snowboarders and skiers: A 10-year prospective study from 1992 to 2002. *J Trauma* 2003;55:946-8.
9. Collins J, Trulock S, Chao D. Field management and rehabilitation of an acute posterior hip dislocation in a professional football player. *Prof Football Athl Train* 2001;19:1-3.
10. Schmidt GL, Sciulli R, Altman GT. Knee injury in patients experiencing a high-energy traumatic ipsilateral hip dislocation. *J Bone Joint Surg Am* 2005;87:1200-4.
11. Kovacevic D, Mariscalco M, Goodwin RC. Injuries about the hip in the adolescent athlete. *Sports Med Arthrosc Rev* 2011;19:64-74.
12. Blankenbaker DG, De Smet AA. Hip injuries in athletes. *Radiol Clin North Am* 2010;48:1155-78.
13. Yang NP, Chen HC, Phan DV, Yu IL, Lee YH, Chan CL, *et al.* Epidemiological survey of orthopedic joint dislocations based on nationwide insurance data in Taiwan, 2000-2005. *BMC Musculoskelet Disord* 2011;12:253.
14. Olson SA, Bay BK, Pollak AN, Sharkey NA, Lee T. The effect of variable size posterior wall acetabular fractures on contact characteristics of the hip joint. *J Orthop Trauma* 1996;10:395-402.
15. Morton KS. Traumatic dislocation of the hip: A follow-up study. *Cancer J Surg* 1959;3:67-74.
16. Hillyard RF, Fox J. Sciatic nerve injuries associated with traumatic posterior hip dislocations. *Am J Emerg Med* 2003;21:545-8.
17. Selimi V, Heang O, Kim Y, Woelber E, Gollogly J. Chronic hip dislocations: A rarity. How should we treat them? *J Orthop* 2016;13:431-6.
18. Canale ST, Beaty JH. Fractures and dislocations of the hip In: *Campbell Operative Orthopaedics*. 11th ed.. Mosby: Elsevier; 2007.
19. Sahin V, Karakaş ES, Aksu S, Atlihan D, Turk CY, Halici M. Traumatic dislocation and fracture-dislocation of the hip: A long-term follow-up study. *J Trauma* 2003;54:520-9.
20. Onyemaechi NO, Eyichukwu GO. Traumatic hip dislocation at a regional trauma centre in Nigeria. *Niger J Med* 2011;20:124-30.
21. Jacobs G, Aaron-Thomas A, Astrop A. Estimating Global Road Fatalities. TRL Report 445. London: Transport Research Laboratory; 2000.
22. Epstein HC. Posterior fracture-dislocations of the hip; long-term follow-up. *J Bone Joint Surg Am* 1974;56:1103-27.
23. Upadhyay SS, Moulton A. The long-term results of traumatic posterior dislocation of the hip. *J Bone Joint Surg Br* 1981;63B: 548-51.
24. Alonge TO, Ogunlade SO, Idowu OE. Traumatic dislocation of the hip joint-pattern and management in a tropical African population. *West Afr J Med* 2002;21:288-90.
25. Hougaard K, Thomsen PB. Traumatic posterior dislocation of the hip-prognostic factors influencing the incidence of avascular necrosis of the femoral head. *Arch Orthop Trauma Surg* 1986;106:32-5.
26. Upadhyay SS, Moulton A, Burwell RG. Biological factors predisposing to traumatic posterior dislocation of the hip. A selection process in the mechanism of injury. *J Bone Joint Surg Br* 1985;67:232-6.
27. Yang RS, Tsuang YH, Hang YS, Liu TK. Traumatic dislocation of the hip. *Clin Orthop Relat Res* 1991;(265):218-27.
28. Dwyer AJ, John B, Singh SA, Mam MK. Complications after posterior dislocation of the hip. *Int Orthop* 2006;30:224-7.
29. Levin P. Hip dislocations. In: Browner BD, Jupiter JB, Levine AM, Trafton PG, editors. *Skeletal Trauma*. Philadelphia: W.B. Saunders; 1992. p. 1329-67.
30. Edomwonyi EO, Enemudo RE. An update on traumatic joint dislocations in Nigeria. *Open J Orthop* 2015;5:217-28.
31. Dreinhöfer KE, Schwarzkopf SR, Haas NP, Tscherne H. Isolated traumatic dislocation of the hip. Long-term results in 50 patients. *J Bone Joint Surg Br* 1994;76:6-12.
32. Ranti BO, Saheed Y, Adebayo OO, Kehinde O. Injury pattern among patients with road traffic crash presenting at a tertiary health facility. *IOSR J Dent Med Sci* 2015;14:71-5.
33. Olakulehin OA, Oluwadiya KS. Case study: Report of nine cases of posterior hip dislocations in a single accident involving a modified minibus. *Traffic Inj Prev* 2009;10:95-7.
34. Reigstad A. Traumatic dislocation of the hip. *J Trauma* 1980;20:603-6.
35. Epstein HC, Wiss DA, Cozen L. Posterior fracture dislocation of the hip with fractures of the femoral head. *Clin Orthop Relat Res* 1985;(201):9-17.