Original Article

Frequency of posterior wall acetabular fracture in patients presenting with posterior hip dislocations

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Objective: To determine the frequency of posterior wall acetabular fracture in patients presenting with posterior hip dislocations.

Methodology: This descriptive cross sectional study was conducted from June 2017 to June 2018 at Jinnah Postgraduate Medical Center, United Medical and Dental College, and Kulsoom Bai Valika Social Security Site Hospital, Karachi. Non-probability consecutive sampling technique was used and 100 patients with posterior hip dislocation were included in the study.

Results: Out of 100 patients, 61% were male and 39% were female patients. The mean age was 48.53±9.8 years. The duration of fracture from injury to report in study centers was 1.08±0.307 days. The most common cause was road traffic accidents accounting for 89% of cases; bike v/s four wheel 37% followed by bike v/s bike (30%). The right side fracture was four times more common than its counter-part. The posterior wall acetabular fracture, however, was found in 67 (67%) patients involving 41(61.20%) males and 26(38.80%) females.

Conclusion: Posterior hip dislocation is the most common type of dislocation and most of the times is associated with posterior wall acetabulum fractures. Being one of the most complex injuries, it is mandatory to look into the way they present in our population. These injuries are on the rise as a result of high velocity injuries. (Rawal Med J 202;45:347-349).

Keywords: Epidemiology, Frequency, posterior hip dislocation, posterior wall acetabulum fracture, RTA.

INTRODUCTION

The hip is an exceptionally stable ball and socket joint with robust anatomy and ligament to withstand substantial physical stress.[1] Road traffic accidents and fall from a height are the most causes of acetabular fractures.[2,3] Acetabulum fractures generally result following high-speed trauma, for example, fall from height and road accidents and usually associated with posterior hip dislocation.[4] Classification of acetabular fractures provided a better understanding to surgeons about these injuries. [5] The most prevalent types of fractures linked with posterior hip dislocation are post wall acetabular fractures.[6-8]

A conventional radiograph of pelvis anteroposterior (AP) view, is sufficient to diagnose a dislocation of the hip.[9] The acetabular fractures are best evaluated by an anterio-posterior (AP) view and Oblique (Judet) views,[10] however, they are more accurately outlined and classified for pre-operative planning by CT-Scan pelvis.[11.] Evaluation of the acetabular fracture is made easier by both 2Dimensional and 3Dimensional CT scan. Currently, no national data is available on these fractures. Therefore, we set out to analyze the frequency of posterior wall acetabular fracture in patients presenting with posterior hip dislocations.

METHODOLOGY

This observational descriptive cross sectional study was conducted from June 2017 to June 2018 at three major tertiary care hospital namely Jinnah Postgraduate Medical Center, United Medical and Dental College, and Kulsoom Bai Valika Social Security Site Hospital, Karachi. The ethical approval was obtained from ethical review committee and an informed consent was obtained from all patients.

Using non-probability consecutive sampling technique, 100 patients who presented in emergency department/out-patient department with posterior hip dislocation were enrolled. The eligibility criteria

included either gender, age range of 25-70 years, with clinical and radiologic (conventional X-rays) findings of posterior hip dislocation. A CT scan was obtained at the level of the sacroiliac joints. Outcome variable i.e. posterior acetabular fracture was accorded as positive.

Statistical Analysis: Data were analyzed using SPSS version 20. Data was stratified for age, gender, side of fracture, mode of trauma and duration of trauma. Post stratification chi square test was applied. $p \leq 0.05$ was considered statistically significant.

RESULTS

Out of 100 patients, 61(61%) were male and 39(39%) female. Mean age was 48.53±9.8 years. The duration of fracture from injury to report in study centers was 1.08±0.307 days. The most common of injury was road traffic accidents accounting for 89% of cases and posterior wall acetabular fracture was found in 67(67%) patients (Table).

Table. Descriptive statistics.

Variable		Frequency
Age (years)		48.53 ±9.798
Gender	Male	61 (61%)
	Female	39 (39%)
Duration of injury (days)		1.08 ±0.37
Side of injury	Right	82 (82%)
	Left	18 (18%)
Mode of Injury	RTA (bike vs bike)	30 (30%)
	RTA (bike vs four wheel)	37 (37%)
	RTA (four wheel passenger)	14(14%)
	RTA (four wheel vs pedestrian)	8 (8%)
	Fall	11 (11%)
Posterior wall acetabular fracture	Yes	67 (67%)
	no	33 (33%)

DISCUSSION

Previously, acetabular fracture being intra-articular was an Orthopedic mystery for surgeons.[13] With the advancement in imaging techniques, the classification as outlined by Judet,[5] and surgical management by Letournel, has dramatically changed the attitude towards this injury.[14] Significant morbidity and even death can occur in these rare acetabular fractures. Moreover, the key instant and intermediate complications of any acetabular injury include sciatic nerve injury (13%), avascular necrosis (11.1%), DVT (3%), and infections (5%).[15,16]

Approximately 35–40 instances of pelvic fractures per 100 000 inhabitants are reported annually, out of which only 10% are with acetabular fractures.[17,18] The average age was of 47.3 years and 78% patients were male in a German study.[19] Our study is almost similar to this study in terms of age and gender distribution. Ochs et al conducted an analysis on 1266 cases, discovered the majority of acetabular fractures were the posterior wall (19.4%).[19] In contrast to that, our study had about 67% patient victims of this injury.

Mauffrey et al found a comparable pattern with the preponderance of the posterior wall, 32% in the United States and 30% in China.[18]As far as we are aware, the very first French epidemiological study of fracture osteosynthesis of the acetabulum is the sequence of 75 cases which Letournel reported in 1994.[20] A Mexican study reported that most of the patients were men (75%) and most common types of fractures were posterior wall (22.3%).[21]

The most important finding in our study is the mode of injury leading to posterior wall fracture dislocation. The most common causes of posterior wall acetabular fracture we found was injury with RTA =bike vs four wheel (49%) followed by bike vs bike (36%) while the known four-wheel passenger accounting for 14%.

The importance of this study lies in the fact that overall economic, social and psychological impact of these injuries and their dreaded complications. Developing countries like Pakistan, where road traffic accidents are more prevalent owing to disorganized, chaotic, movements of high and low speed vehicles with little respect to traffic rules.

This study was although a three tertiary-care, hospital-based study from a metropolitan city of Pakistan, but the figures do not reflect the true frequency and severity of the disease to confine its

generalization to this country. The use of objective definitions for the determinant and result variable decreases, however, the bias in our research.

CONCLUSION

Posterior wall acetabular fractures are more commonly associated with posterior hip dislocation and are more prevalent than other developed countries.

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Conception and design: Mukesh Kumar
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