ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue – 1, January - 2020, Page No. : 160 - 163

To study the Demographic profile of fracture acetabulum

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Citation this Article: Manish Sharma , Ramesh Kumar Sen , Sameer Aggarwal, Mahesh Prakash , "To study the Demographic profile of fracture acetabulum", ijmsir- January - 2020, Vol – 5, Issue -1, P. No. 160 – 163.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Epidemiological studies of acetabular fractures (AFs) are scarce. Road safety efforts have decreased the incidence of high-energy AFs, whereas low-energy AFs are becoming increasingly common due to life expectancy gains.

Methods: The study was carried as a retrospective study, from February 2013 to July 2014. After getting the approval from the Ethics Committee of the Institute (Annexure I) and the consent from the patients the study was conducted on 49 patients who underwent Total Hip Arthroplasty after fracture acetabulum.

Results: The mean age of the patients was 48.6 years with a standard deviation of 15.9 years with range between 25 and 83 years. Among the various age groups there were 8 patients under 35 years, 19 patients in the age group 35 to 48, 14 patients in the age group of 48 to 60 and 8 patients were above 60 years. There were 43 males and 6 females.

Conclusion: In our study most of patients were older age male.

Keywords: Radiological, Arthroplasty, Reconstruction

Introduction

Epidemiological studies of acetabular fractures (AFs) are scarce. Road safety efforts have decreased the incidence of high-energy AFs, whereas low-energy AFs are becoming increasingly common due to life expectancy gains[1].

Recent studies suggested changes in AF epidemiology in terms of age distribution, fracture patterns, mechanisms of injury, and management strategies (non-operative vs. operative treatment) [2-3]

Many factors make classification of acetabular fractures complicated. Such injuries are uncommon, making mastery of their diagnosis difficult. They are more commonly seen in level 1 trauma centers, where many radiologists do not practice or have not completed their training. The pelvis is a complex three-dimensional (3D) bone that, because of overlap with itself and with the femur, has surfaces that are not easily visible on standard frontal and lateral projections. Last and possibly most important, fracture nomenclature is complicated and not intuitive. Fractures are described relative to the orientation of the acetabulum viewed en face from the lateral side, whereas, in the anatomic position, the acetabulum is tilted inferiorly and anteriorly, making its appearance at radiography and planar computed tomography (CT) nonintuitive relative to the nomenclature [4]. For example, although the superior pubic ramus is superior, when viewing the

acetabulum en face it is anterior. Furthermore, transverse fractures of the acetabulum are predominantly transverse in the acetabular plane but are actually sagittal oblique (with the medial aspect superior to the lateral aspect) in the anatomic plane. Fracture nomenclature is also not intuitive. For example, transverse acetabular fractures traverse both columns but are not classified as "associated both column" fractures; the term associated both column fracture is reserved for a fracture pattern in which the acetabular articular surface is no longer continuous with the intact ilium and is completely separate from the sciatic buttress.

Materials and Methods

Patient Selection

The study was carried as a retrospective study, from February 2013 to July 2014. After getting the approval from the Ethics Committee of the Institute (Annexure I) and the consent from the patients the study was conducted on 49 patients who underwent Total Hip Arthroplasty after fracture acetabulum.

Inclusion Criteria

Patients who had undergone total hip arthroplasty in the past 7 years following fracture of the acetabulum, by a single surgeon.

Exclusion Criteria

1. Debilitating medical or surgical illness or generalized illness or co morbidities leading to restriction of physical activities.
2. Any associated foot, ankle, knee injury or disease likely to affect the overall functional outcome.
3. Associated spine injury.
4. Any neurological or psychiatric ailments interfering with the assessment of general health of the case.
5. THA done more than 7 years ago.

Groups

Patients were divided into

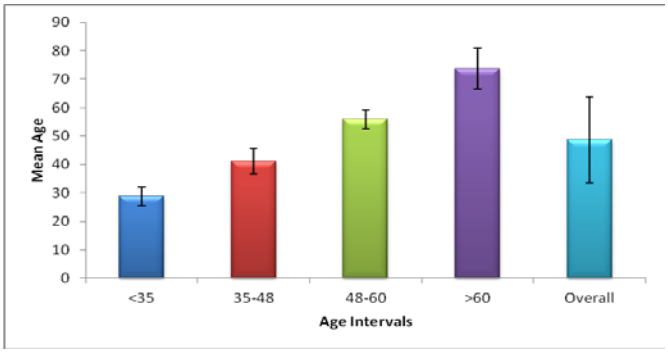
1. Four groups based on the diagnosis.
2. Two groups on the basis of treatment received after fracture acetabulum
3. Three groups based on the indication of THA
4. Two groups based on the surgical intervention.

Detailed history of the patients was taken for the aetiology of the primary disease. All the patients included in the study underwent complete clinical and radiological evaluation.

Results

A total of 49 patients with 49 hips with Total hip Arthroplasty were followed as per the predefined inclusion and exclusion. All the patients were included in the study after informed consent. The patients were recruited through the outpatient department of orthopaedics, PGIMER. An independent observer, other than the surgeon who operated, evaluated all these patients at the follow up. The patients were divided into various groups depending on the type of fracture, the indication for the THA and the type hip replacement done.

The mean age of the patients was 48.6 years with a standard deviation of 15.9 years with range between 25 and 83 years. Among the various age groups there were 8 patients under 35 years, 19 patients in the age group 35 to 48, 14 patients in the age group of 48 to 60 and 8 patients were above 60 years. In our study, young adults in the age group 35-48 years form the largest group.



In our study group, out of 49 patients, there were 43 males and 6 females.

	Gender	Frequency
1	Male	43
2	Female	6

The study group was divided into 5 groups depending on the fracture pattern of the acetabulum who underwent THA later. 8 patients had posterior wall fracture alone, 6 had posterior column fracture with or without posterior wall involvement, 5 had transverse fracture, 11 patients had fracture bi columnar and 19 had posterior wall fracture with posterior dislocation.

	Fracture pattern	Frequency
1	Posterior wall	8
2	Posterior column + posterior wall	6
3	Transverse	5
4	Bi columnar	11
5	Posterior wall with posterior dislocation	19

The study group consisted of 49 patients at the follow up after THA. Details regarding the treatment they received after fracture acetabulum was available for all the 49 patients. Out of these, 18 patients were initially managed non-operatively and 31 had undergone ORIF for fracture acetabulum.

Frequency

Total	Valid	49
	Missing	0

	Frequency	Percent (%)
Non Operative	18	36.7
Operative	31	63.3
Total	49	100.0

Discussion

In the present study, there were 49 patients who underwent THA after acetabulum fracture between 2007 and 2014. All the replacements were done by a single surgeon. The mean age of the patients was 48.6 years (range, 25-83 years). The mean follow up period was 2.5 years (range, 6 months to 7 years). We had a relatively younger age group when compared to the other studies. The reason for this could be the fact that all the patients in our study sustained the fracture acetabulum as a result of motor vehicle accidents, which are highly prone in the younger, actively travelling population. Also, the focus of our study was to have a short to intermediate term follow up of the functional and radiological outcome of THA after acetabulum fracture.

In terms of the number of patients, our study group was comparable to the studies by Romness and Lewallen (53 patients) and Mears and Velyvis (57 patients). The mean age of our patients was comparable to the studies by Weber et al (52 years) and Huo et al (52 years) whereas the range of age limit was similar to the study by Oujjie et al. The mean follow up period of the present study was comparable to the Herscovici et al study (2.5 years). Though there is no Indian study available for comparison, our study group matches

some important international studies regarded as the bench mark on the subject of THA following acetabulum fracture.

Romness and Lewallen studied 32 (58%) men and 23(42%) women in their study[9]. Mears and Velyvis study had 30 (53%) males and 27 (47%) females[5]. The Weber et al study had 52 (79%) males and 14 (21%) females in their study[21]. In the study by Huo et al, out of 21 patients, there were 19 (90%) males and 2 (10%) females[40]. Sarkar et al had 24 (69%) males and 11(31%) females whereas Herscovici et al evaluated 12 (55%) males and 10 (45%) females in their study[5,6].

In our study on 49 patients, there were 43 (88%) males and only 6 (12%) females who underwent THA after acetabulum fracture in the past 7 years. The present study has similar male dominant distribution as seen by Huo et al[7] in their study. Our gender distribution is a lot different than most of the studies which deal with the western population and lifestyle. The predominant male population in our study could be due to the fact that in India men still constitute the main earners for the family and depend on travelling and are prone to MVAs.

Conclusion

In our study most of patients were older age male.

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