

Early Outcome of 30 Operated Cases of Acetabular Fractures -Old Principles Are Still Gold Today



Medical Science

KEYWORDS : Acetabular fracture, ORIF, Early outcome, Principles

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ABSTRACT

Total 30 patients, who had open reduction and internal fixation of acetabular fractures, were followed for mean 2 years after injury. The fractures were classified according to the classification of Letournel and Judet. Posterior wall fracture was the most common type (11 hips; 35 percent). The clinical results were graded using MERLE d'AUBIGNE SCALE, results were excellent for 12 hips(40 percent), good for 11 hips(36 percent), fair for 3 hips(8 percent), and poor for 6 hips(16 percentage). On final follow up osteoarthritis was the most common complication, Osteonecrosis of the femoral head was noted in 1 hip (3 percent), sciatic nerve palsy noted in one patient which partially recovered, and progressive wear of the femoral head was seen in 1 hip (5 percent). An increase in the rate of anatomical reduction and decrease in the rate of operative complications should be the goal of surgery.

INTRODUCTION

There are advances in every field of orthopaedics as in acetabular fractures management. Still, there are certain principles which are evergreen from the beginning of operative era of acetabulum. In this present study we tried to understand them.

MATERIAL AND METHODS

There were total 30 patients and Open reduction and internal fixation done within 1 week of injury. Following were inclusion criteria: Patients aged between 18 to 65 years, male & female both are included, patient who has completed minimum 6 months after fracture event, unilateral & bilateral fractures are included, and fractures with posterior hip dislocation are included. Following patients were excluded; Patients aged less than 18 or more than 65 years, patients having congenital anomalies, pregnant patients, patients with pathological fractures, patients with uncontrolled diabetes & psychiatric illness.

All patients were operated using single approach (Kocher-Langenbeck, ilioinguinal, or extended ilioinguinal). The goal of the operation was to achieve an anatomical reduction of the articular surface of the acetabulum. Post operatively traction and prophylaxis for heterotopic ossification were not used in any patient. In all patients Ankle mobilization was started in immediate post op period

In all patients' complications at immediate post operative period and at final follow up noted. At follow up anteroposterior and 45-degree oblique (Judet) radiographs made. The clinical results were graded using MERLE d'AUBIGNE SCALE which includes Pain, Walking, and range of motion.

Modified Merle d'Aubigne Scale

Criteria	Points
Pain	
None	6
Slight or intermittent	5
After walking but resolves	4
Moderately severe but patient is able to walk	3
Severe, prevents walking	2
Walking	
Normal	6
No cane but slight limp	5
Long distance with cane or crutch	4
Limited even with support	3
Very limited	2
Unable to walk	1
Range of motion	
95-100%	6
80-94%	5
70-79%	4
60-69%	3
50-59%	2
<50%	1
Clinical grade	
Excellent	18
Good	15, 16, or 17
Fair	13 to 14
Poor	<13

From: Matta JM. JBJS 1996;78A:1632

Merle d'Aubigne Scale

- Matta JM. JBJS 1996;78A:1632 The range of motion is ex-

pressed as the percentage of the value for the normal hip. This is calculated by obtaining a total of the ranges, in degrees, of flexion-extension, abduction, adduction, external rotation, and internal rotation for the injured hip and dividing it by the total for the normal hip.

- The clinical score is determined by adding the points for pain, walking, and range of motion.

RESULTS

The patients' age was a significant variable with regard to accuracy of the reduction. Mean age group in the study was 36 years. It was seen that rate of anatomical reduction decrease after age of forty. There were 57 % (5 patients) with age more than forty had an anatomical reduction as compared to 78 % (16 patients) before the age of forty.

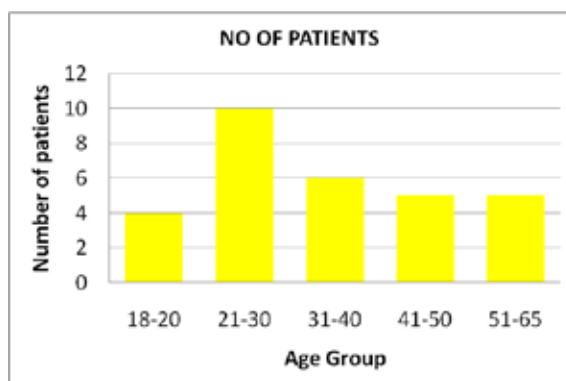


Figure 1: results according to age

In this study most common mode of injury was RTA (road traffic accident). The posterior wall fracture was the most common type (11 hips; 35 percent) of fracture and elementary fractures were more common than associated fractures. Our results are comparable with study by Magu NK et al. In which common fractures were both column and posterior wall fracture.

Figure 2: RESULT ACCORDING TO FRACTURE TYPE

Fracture type	No of patients	Percentage (%)
Elementary		
-posterior wall	11	36.66
-posterior column	03	10

-anterior wall	02	6.66
-anterior column	04	13.33
-transverse	01	3.33
Associated		
-post. Column & post. Wall	03	10
-transverse & post wall	-	-
-ant. Column (or wall) & post. hemi transverse	02	6.66
-T- shaped	-	-
-both column	04	13.33
TOTAL	30	100

The reduction was anatomical in 23(76 %).The rate of anatomical reduction decreased with increase in complexity of fracture, the age of the patient, and the interval between the injury and reduction. For a given fracture degree of anatomical reduction directly associated with excellent or good outcome

Figure 3: RESULTS ACCORDING TO REDUCTION

Fracture type	No of patients	Anatomic reduction	Not anatomically reduced
Elementary			
-posterior wall	11	11	
-posterior column	03	02	01
-anterior wall	02	02	
-anterior column	04	04	
-transverse	01	00	01
Associated			
-post. Column & post. Wall	03	02	01
-transverse & post wall	-		
-ant. Column (or wall) & post. hemi transverse	02	00	02
-T- shaped	-		
-both column	04	02	02
TOTAL	30	23	07

Most common immediate complication was nerve (sciatic) (33 %) palsy while most common complication was arthritis (13%). Infection, bleeding, DVT, heterotopic ossification was not found in any case. Sciatic nerve palsy recovered partially at final follow up.

Figure 4: RESULTS ACCORDING TO COMPLICATIONS

IMMEDIATE	-
• Infection	-
• Bleeding	-
• DVT	-
• Pulmonary embolism	-
• Nerve palsy	01(SCIATIC)
FINAL FOLLOW UP	-
• Arthritis	04
• Osteonecrosis	02
• Non-union	-
• Nerve palsy	01
• Heterotopic ossification	-
• Loss of reduction	-

All except one fracture have either good or fair outcome. It was interesting to note that all post wall fractures were reduced anatomically but total 3 (27.27%) posterior wall fracture have poor outcome, 3 (27.27%) had good outcome, and 5 (45%) had excellent outcome. All anterior column fractures had excellent outcome. Most (2; 66%) posterior column had excellent result. All anterior column (or wall) & post.hemitransverse fractures have either fair (1hip) or poor (1) outcome.

Figure 5:- results according to individual fracture type

Fracture type	Final result				
Elementary	TOTAL	Excellent	Good	Fair	Poor
-posterior wall	11	05	03	-	03
-posterior column	03	02	-	-	01
-anterior wall	02	01	01	-	-
-anterior column	04	03	-	01	-
-transverse	01	-	01	-	-
Associated					
-post. Column & post. Wall	03	-	02	01	-
-transverse & post wall	-	-	-	-	-
-ant. Column (or wall) & post. hemi transverse	02	-	-	01	01
-T- shaped	-	-	-	-	-
-both column	04	01	02	-	01
TOTAL	30	12	09	03	06

Discussion

The primary complication following a fracture of the acetabulum is post traumatic osteoarthritis. The goal of operative treatment is to preserve a functional, mobile, painless joint that continue to function for the rest of the patient's life. If post traumatic osteoarthritis develops in the presence of viable cartilage, it is primarily the result of altered pressure distribution of the femoral head articulating with an inaccurately reduced acetabulum.

One goal of the study was to determine which factors associated with the injury could be used to predict prognosis. As already noted patients who were forty years old or more had significantly worse clinical results. However, when the factor of reduction is controlled for, the differences between the two age groups are no longer significant, indicating that the result is more affected by reduction than age.

Osteonecrosis of femoral head can produce unsatisfactory

clinical results regardless of method of treatment. The clinical results when compared between anatomically reduced and imperfectly reduced, the first group was found to be a highly significant predictor of an excellent or good clinical result. An anatomical reduction was defined as one that resulted in zero to one millimeter of displacement; an imperfect reduction as that resulted in two to three millimeters of displacement. Despite the appearance of an anatomical reduction on radiographs, there may still be imperfections on areas of the articular surface that are invisible on standard plain radiographs.

Conclusion

The acetabular fractures are seen in younger age group following high velocity injuries. Proper radiological assessment of fracture type is necessary to outline proper line of management, which is mandatory for better outcome. The operating surgeon should have thorough knowledge of this region. An appropriate pre operative planning, intra operative execution of it and careful post operative monitoring helps to get good outcome in this set of fractures. An increase in the rate of anatomical reduction and decrease in the rate of operative complications should be the goal of surgeons who treat these fractures. Complications do occur, inform the patient about them. Still full rehabilitation is possible.

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