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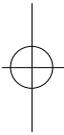
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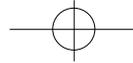
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: 1993 1 1998 12
 1 가 36
 Harris hip scoring system, Matta
 grading system
 : Letournel 25 (69%), 11 (31%)
 17 (47%) 가 5 (11%) 가
 Kocher-Langenbeck 22, extended iliofemoral 8, ilioinguinal 3
 , triradiate transtrochanteric 3 2.2 (1-7) . 1
 가 36 27 (75%), 26 (71%)
 20 7, 4
 : 가

가 가 가
가

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1,32) , 17 , 19

3. (Associated injury)
가 35 ,
10 가

Judet 12) 가 1,4,19,20,22,32)

Matta 22) 가 3mm (obturator foramen view), (iliac wing view)

Letournel¹²⁾
1 가 36 (elementary fracture) 25 (69%), (associated fracture) 11 (31%) (posterior wall fracture) 17 가 (both column fracture) 5 가 (Table 1). 17 (posterior dislocation)가 13 , (central dislocation)가 3 , (anterior dislocation)가 1

1993 1 1998 12

가 36 1

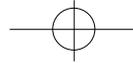
1. 20 68 38.4 가 30 (83%), 가 6 (17%) 가 20 50 가 29 (81%)

2. (Cause of injury) 가 32 (89%) 4 (11%)

Table 1. Classification of acetabular fractures(By Letournel)

Type of Fracture	No. of cases(%)
Elementary fracture	25(69%)
Posterior wall	17(47%)
Anterior column	4(11%)
Anterior wall	2(5%)
Posterior column	1(3%)
Transverse	1(3%)
Associated fracture	11(31%)
Both column	5(14%)
Posterior column & wall	3(8%)
T-shaped	1(3%)
Transverse & posterior wall	1(3%)
Anterior column & posterior hemitransverse	1(3%)





5. 가 17 (47%) , (iliac bone fracture)
 13 (76%) 가 .
 8 가 .
 4 1 가 13
 가 가 , 가 가
 7.4 (: , 가 . 가 13
 : 30) 가 3mm 7.
 , Matta ²¹⁾ 1
 , 가 2-4
 25,31) 가 3 .
 6. ,
 ,
 approach Kocher- Langenbeck
 ilioinguinal approach . 26.2 (12 ,
 85) ,
 triradiate transtrochanteric Matta ²²⁾
 approach extended iliofemoral approach Harris⁸⁾
 , hip scoring system (Table 2, 3).

Table 2. Roentgenographic grade(By Matta)

Criteria	X-ray finding	No. of patients(%)
Excellent	Essentially normal roentgenogram	6(17%)
Good	Mild spur formation on femoral head or acetabulum	20(55%)
	Mild joint narrowing	
	Mild sclerosis	
Fair	Mild mottling of femoral head	5(14%)
	Moderate spur formation on femoral head or acetabulum	
	Moderate joint narrowing	
	Moderate sclerosis	
Poor	Any collapse of femoral head	5(14%)
	Any subchondral cyst	
	Moderate-severe mottling of femoral head	
	Moderate-severe subluxation of femoral head	
	Severe spur formation on femoral head or acetabulum	
	Severe sclerosis	

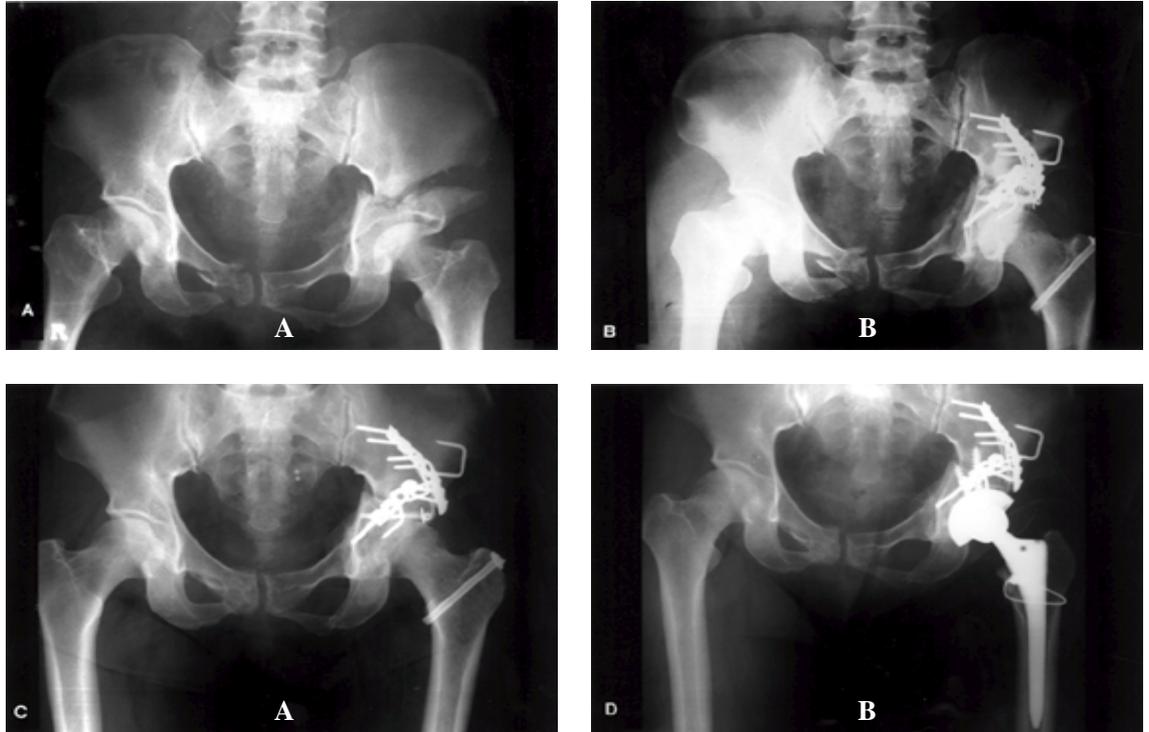
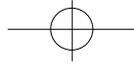
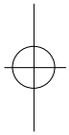
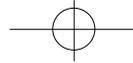


Fig 1. A 56-year-old woman with both column fracture of acetabulum was treated by open reduction and internal fixation using pelvic reconstruction plate, cannulated screw and staples. Radiologic evaluation revealed unsatisfactory reduction(A, B). After 12 months of follow-up, the patient shows limitation of motion and pain on ambulation. Radiologic evaluation revealed that cannulated screw and washer is contact with femoral head(C). Total hip arthroplasty was performed 13 month postoperatively(D).



7 , 4 ,
 가 2
 1
 1
 2
 가
 13
 (Fig. 1A-D). 2
 가
 Brooker 3) 4
 1 가 가 가

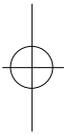


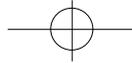


. Pennel 28,29)
가

14,22)

2,12,28,33) Letournel Judet 12)
가가 . Letournel Ridder 31)
Judet
(44%), (56%) 가 3mm ,
26.8% 가 ,
(20.2%), 가
. Matta 22) 105 .
44 (41.9%), T 19 (18.1%) , , 5,26)
13) 가 (5,26)
Kocher-
, , , Kocher-
Langenbeck approach, Judet and Letournel approach,
12,15) iliofemoral approach, Smith-Peterson
approach, extended iliofemoral
approach, triradiate extensile approach
Letournel Judet 11
36 (31%) , 25 (69%), 17 가 Kocher-
5 Langenbeck approach ,
가가 . ilioinguinal approach, extended
Matta 가 iliofemoral approach triradiate extensile approach
3 가 approach
Pennel 28)
가 가 3 , ,
11) 가 3 7.4 가 72% 30%
3 가 Matta 21)
1 가
1 28) 1 가
1912 Vaughan 34) .
1943 Levine 18) 가 1mm
Matta , 가 3mm
22,23) , 3mm





3mm 가

90%

14%

1 , 1

가 Harris hip 가2

scoring system 가2

Matta ²²⁾ grading system

1 가 36

Harris hip scoring system 27 가

(75%) 4 (11%) 7 4 ,

(72%) 26 가1

5 (14%) grade

18

9,16,24,27 4 3

가 Mears ²⁶⁾

Harris hip scoring system

Matta grading

system

10,11,24,28,30,31) Letoumel¹⁵⁾

가 8.6%, 5.6%

Mears ²⁶⁾

가 가

Letoumel Judet¹⁷⁾

가

0.9% Ebraheim ⁶⁾

가

45 12,15)

1

Ridder ³¹⁾ 1 가

1

Epstein⁷⁾ 가

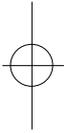
REFERENCES

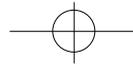
1) **Ahn BH, Cha SG, Choo KH** : Clinical study of traumatic fracture-dislocation of the hip. *J Korean Orthop*, 7:293-302, 1972.

2) **Brav EA** : Traumatic dislocation of the hip joint. Review of one dislocations. *J Bone Joint Surg*, 30-B:430-445, 1948.

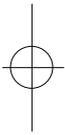
3) **Brooker AF, Bowerman JW, Robinson RA, Riley LH** : Ectopic ossification following total hip replacement. Incidence and a method of classification. *J Bone Joint Surg*, 55-A:1629-1632, 1973.

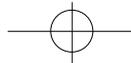
4) **Carnsale PG, Stewart MJ and Barnes SN** :





- Acetabular disruption and central fracture-dislocation of the hip. *J Bone Joint Surg*, 57-A:1054-1059,1975.
- 5) **Chip rount Jr. ML and Swiotkowski MF** : Operative treatment of complex acetabular fracture. *J Bone Joint Surg.*, 72-A:897-904,1990.
 - 6) **Ebraheim NA et al** : Radiological diagnosis of screw penetration of the hip joint in acetabular fracture reconstruction. *J Orthop Trauma*, 3:196-201, 1989.
 - 7) **Epstein HC** : Open management of fractures of the acetabulum. Proceedings of the Seventh Open Scientific Meeting of the Hip Society, pp. 17-41, St. Louis, *The CV Mosby Co*,1979
 - 8) **Harris WH** : Traumatic arthritis of the hip after dislocation and acetabular fractures, treatment by mold arthroplasty. An end result study using a new method of result evaluation. *J Bone Joint Surg*, 51-A:737-755,1969.
 - 9) **Heeg M, Klasen H and Visser JD** : Operative treatment for acetabular fractures. *J Bone Joint Surg*, 72B:383, 1990.
 - 10) **Helfet DL and Schmeling GJ** : Management of the complex acetabular fractures through single non-extensile exposures. *Clin Orthop*, 305:58-68, 1994.
 - 11) **Johnson EE, Matta JM, Mast JW and Letournel E** : Delayed reconstruction of acetabular fractures 21-120 days following injury. *Clin Orthop*, 305:20-30,1994.
 - 12) **Judet R, Judet J and Letournel E** : Fractures of the acetabulum : Classification & surgical approaches for open reduction. *J Bone Joint Surg*, 46-A:1615-1646,1964.
 - 13) **Kang CS, Pyun YS, Sohn SW, Kim YG** : Clinical study of acetabular fractures. *J Korean Orthop*, 16:834-845,1981.
 - 14) **Kim WY, Sung JH, Park CH, Chung JW, Kim JY** : Open reduction and internal fixation of fractures of the acetabulum. *J Korean Orthop*, 31:110-118,1996.
 - 15) **Letournel E** : Acetabulum fractures. *Clin Orthop*, 151:81-106,1980.
 - 16) **Letournel E** : Diagnosis and treatment of nonunions and malunions of acetabular fractures. *Orthop Clin North Am* 21:769, 1990.
 - 17) **Letournel E and Judet R** : Fractures of the Acetabulum. 2nd ed. Berlin, *Springer-Verlag Co*:363-397,1993.
 - 18) **Levine MA** : A treatment of central fractures of the acetabulum. *J Bone Joint Surg.*, 46-A:1615-1646,1964.
 - 19) **Lipscomb PR** : Closed management of fractures of the acetabulum. *J Bone Joint Surg*, 25-B:902-912,1943.
 - 20) **Lipscomb PR** : Closed management of the fractures of the acetabulum. *The Hip*(Proceeding of the seventh open scientific meeting of the hip society) 1-16,1979.
 - 21) **Matta JM : Fractures of the acetabulum** : Accuracy of reduction and clinical results in patients managed operatively within three weeks after the injury. *J Bone Joint Surg*, 78-A:1632-1645,1996.
 - 22) **Matta JM, Anderson LM, Epstein HC and Hendricks P** : Fractures of the acetabulum : A retrospective analysis. *Clin Orthop*, 205:230-240,1986.
 - 23) **Matta JM, Letournel E and Browner BD** : Surgical management of acetabular fracture, *Instructional Course Lecture*, Vol. 35:382-391,1986.
 - 24) **Matta MM and Merrit PO** : Displaced acetabular fractures. *Clin Orthop*, 230:83, 1988.
 - 25) **Mayo KA** : Open reduction and internal fixation of fractures of the acetabulum. *Clin Orthop*,305:31-37,1994.
 - 26) **Mears DC and Rubash HE** : Extensile exposure of the pelvis. *Contemp Orthop*, 6:21-31, 1983.
 - 27) **Pantazopoulos T and Mousafiris C** : Surgical treatment of central acetabular fractures. *Clin Orthop*, 246:57, 1989.
 - 28) **Pennal GF, Davidson J, Garside H, and Plewes J** : Result of treatment of acetabular fractures. *Clin Orthop*, 151:115-122,1980.
 - 29) **Pennal GF, Plewes JL and Garside H** : Acetabular fractures, *J Bone Joint Surg*, 57-B:535-545,1975.





- 30) **Reinert CM, Bosse MJ, Poka A, Schacherer T, Brumback RJ and Burgess AR** : A modified extensile exposure for the treatment of complex or malunited acetabular fractures. *J Bone Joint Surg*, 70-A:329-337, 1988.
- 31) **Ridder VA, Lange S, Kingma L and Hongervorst M** : Results of 75 consecutive patients with an acetabular fracture. *Clin Orthop*, 305:53-57,1994.
- 32) **Shin ES** : A clinical study of 50 cases of fracture of the pelvis. *J Korean Orthop*, 4:33-39,1969.
- 33) **Tile M** : Fractures of the pelvis and acetabulum, 2nd ed. pp. 259-304, Philadelphia, *Williams & Wilkins*, 1994.
- 34) **Vaughan GT** : Central dislocation of the femur. *Surg, Gynecol and Obstet*, 15:249-251, 1912.

Abstract

The Surgical Treatment of displaced Acetabular Fracture

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Purpose : To analysis clinical and radiological results of operative treatment of displaced acetabular fractures and establish the guideline for the operative treatment of displaced acetabular fracture with the analysis of the clinical and radiological results.

Materials and Methods : A clinical analysis was performed on 36 patients with displaced acetabular fractures who had been operated on and followed for minimum 1 year period from January 1993 to December 1998. Clinical outcome was analyzed clinically by Harris hip scoring system and radiologically by Matta 's roentgenographic grading system.

Results : According to Letournel 's classification, we had 25 elementary fractures(69%) and 12 associated fracture(31%). Among the elementary fractures, the posterior wall fracture was the most common type(17 cases, 47%) and both column fracture was the most common type among associated fractures(5 cases, 11%). Surgical approaches were 22 Kocher-Langenbeck, 8 extended iliofemoral, 3 triradiate transtrochanteric, 3 ilioinguinal. The mean duration of follow up after the operation was 2.2 years (range, 1 to 7 years). Among thirty six patients who had followed up more than one year, the satisfactory results were achieved in 27 cases (75%) on clinical grade and 26 cases (72%) on radiographic grade. The complications were developed in 20 cases out of 36 cases including posttraumatic arthritis 7 cases, heterotopic ossification 4 cases.

Conclusion : In the majority of the displaced acetabular fractures, accurate open reduction and internal fixation was recommended. It seems that the satisfactory operative reduction of the fracture is the factor that correlates with a satisfactory clinical result according to our study. Therefore in the surgical treatment of the acetabular fractures, it is essential to achieve an anatomical reduction and firm fixation by fully understanding the pathologic anatomy and by choosing an appropriate approach and fixation device.

Key words : Displaced acetabular fracture, Surgical treatment, Anatomical reduction

