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Total Hip Replacement after Acetabular Fracture: A Review Article

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ABSTRACT

Bachground: Total hip replacement (THR) after acetabular fracture is a complex procedure and presents the surgeon with unique challenges. THR maybe indicated in two distinct clinical scenarios; firstly, if an acute acetabular fracture would result in a predictably poor outcome if treated with open reduction and internal fixation (ORIF), and secondly (and most commonly) after a patient develops post-traumatic arthritis after either non-operative or operative treatment of an acetabular fracture.

Purpose: Purpose of this article wad to assess the outcome of total hip replacement in the management of selected acetabular fractures among adult with traumatic hip arthritis.

Methods: Prospective and retrospective studies of 494 patients who underwent primary total hip arthroplasty for acute Acetabular fractures. The study was done in different places. Collected during the period from 1990 to Jan 2015. **Results:** in our series of primary total hip replacement for acute acetabular fractures
we had excellent/good results. Mean Harris Hip Score = 82.5.

Conclusion: primary total hip replacement is a reasonable method of treatment of selected acetabular fractures and good method for treatment neglected acetabular fracture. Outcomes may not be as good as total hip replacement done for other conditions.

Keywords: Acetabular fracture, Post traumatic arthritis, Harris hip score, total hip replacement after acetabular fracture.

INTRODUCTION

The hip is a weight bearing joint and is involved approximately in all movements of the body.

In the past, acetabular surgery and its fixation was not as common as today. Many patients were treated with long time skeletal traction (about 3 months), this type of treatment has some complications as malunion, nonunion in some region of acetabulum, bed sores, muscle atrophy and weakness around hip and knee joint, kidney stones, GIT malfunction and the most serious complication from long standing bed set is deep venous thrombosis[(1)]. With Open reduction and internal fixation of acetabular fracture, patient can mobilize earlier, that's why fixation of acetabular fracture is getting popularity in recent years.

Associated complications of these surgeries could be infection, sciatic nerve injury, avascular necrosis, Some of these complications have no definitive treatment like sciatic nerve injury.

Other complications as degenerative joint disease and avascular necrosis can be managed by total hip replacement[(2)]. Total hip replacement after pervious operations for internal fixation of fractured acetabulum is not a simple and straight forward operation[(3)]. Many authors have reported highly diverse clinical and radiographic outcomes after a total hip arthroplasty was performed to manage an acetabular fracture. The diversity of the results is not surprising in the view of the heterogeneity of the fracture patterns and the diverse methods of primary fracture management. In most studies the primary problem was the premature loosening of cups[(4)].

A lot of complications could be found also after total hip arthroplasty as infection, recurrent dislocation, sciatic nerve palsy and Heterotopic ossification[(5)].

Sciatic nerve palsy can occur iatrogenically from total hip arthroplasty, regardless of the operative approach used ; reported one sciatic nerve palsy in a study involving 21 acetabular fractures treated with a delayed cementless total hip arthroplasty using a modified anterior approach. However, the authors did not specify whether this nerve palsy was present pre- or postoperatively[(6)].

That's why good planning for total hip replacement is needed and that depends on patient, implant, approach and muscle status[(7)].

AIM OF THE WORK

The aim of this review is to collect and analyze the existing evidence related to results of total hip arthroplasty after acetabular fracture surgery and its prerequirments and possible complications published in literature in English from 1990 to 2015,

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and to recommend treatment algorithms that could be valuable in everyday clinical practice.

The study was approved by the Ethics Board of Ain Shams University.

METHODS

Prospective and retrospective studies on 11 articles of 494 patients who underwent primary total hip arthroplasty for acetabular fractures. The study was done during the period from 1990 to Jan 2015.

The inclusion criteria: were traumatic acetabulum fractures in human being.

The mean age: was 48 years .

Mean follow up: duration was 54 month.

Table (1): Analysis of studies (type of study, number of patients, follow-up)

	Type of study	Numbers of patients	Mean Age Years (Range)	Mean Follow up Months (range)
Zachary *et al* . 2015 [8]	Retrospective	74	51 (25-75)	8 (2 – 23)
O.Chemaly *et al* .2012[9]	Retrospective	40	60(28-89)	30 (9-72)
Giriraj *et al* . 2015[10]	Prospective	20	61 (50-71)	Not stated
Mears *et al* .2002[11]	Retrospective	57	69 (26-89)	8 (2-12)
Anil *et al* . 2008 [12]	Retrospective	32	51.5 (17-86)	48 (2-9.7y)
Romness *et al* . 1990 [13]	Retrospective	55	56 (19-91)	88 (1-199)
Berry *et al* . 2002 [14]	Retrospective	34	50 (19-78)	143 (120-192)
Lizaur *et al* .2012 [15]	Prospective	24	56 (28-77)	101 (60-180)
Khurana *et al* . 2015 [16]	Prospective	62	58 (31-90)	32 of 62 had long follow up 48 m
Bellabarba *et al* .2001 [17]	Retrospective	30	51 (26-86)	63(24-140)
weber *et al* . 1998 [18]	Retrospective	66	52(19-80)	112(24-240)
Results		494	48 Y	54 M

Table (2): Harris hip score pre & post THR after acetabular fracture

Study (year)	THA	Preoperative HHS	Postoperative HHS
Zachary *et al* . 2015 [8]	74	Not stated	Not stated
O.Chemaly *et al* .2012 [9]	40	Not stated	80.1
Giriraj *et al* . 2015 [10]	20	Not stated	81
Mears *et al* . 2002 [11]	57	Not stated	89
Anil *et al* . 2008 [12]	32	28	82
Romness *et al* . 1990 [13]	55	Not stated	Not stated
Berry *et al* . 2002 [14]	34	Not stated	Not stated
Lizaur *et al* .2012 [15]	24	35	77
Khurana *et al* . 2015 [16]	62	Not stated	81
Bellabarba *et al* .2001 [17]	30	41	88 (47-100)
weber *et al* . 1998 [18]	66	Not stated	Not stated

Mean HHS = 82.5

COMPLICATIONS

Table (3): complications of THR after acetabular fracture

Study (year)	THR NO.	HO	Dis.	Inf.	Neu.	Rev.	SL.	TE.	Death
Zachary *et al* . 2015[8]	74	32	1	2	1	11	13	-	-
O.chemaly *et al* .2012[9]	40	15	-	-	-	-	-	-	-
Giriraj *et al* . 2015[10]	20	2	0	1	1	-	-	-	-
Mears *et al* . 2002[11]	57	6	1	-	-	1	0	-	-
Anil *et al* . 2008[12]	32	14	1	1	8	6	3	0	-
Romness *et al* . 1990[13]	55	-	-	1	-	7	7	-	4
Berry *et al* . 2002[14]	34	-	3	1	-	9	2	0	0
Lizaur *et al* .2012[15]	24	0	1	-	1	4	-	0	0
Khurana *et al* . 2015[16]	62	-	1	2	1	1	1	0	0
Bellabarba *et al* .2001[17]	30	13	-	0	-	1	1	0	0
weber *et al* . 1998[18]	66	26	3	0	1	10	9	1	-
Results	494	108 (21%)	11 (4%)	8 (1.6%)	13 (2.6%)	50 (10%)	36 (7%)	1 (0.2%)	4 (0.8%)

Dis: dislocation … HO:heterotropic ossification … Inf:infection … Neu:neurologic lesion … Rev: revision … SL: symptomatic loosening … TE:thrombo-embolic

DISCUSSION

Total hip arthroplasty in the setting of an acetabular fracture remains a difficult reconstructive dilemma. Historically, this population has inferior outcomes when compared with patients with primary osteoarthritis. We hypothesized thatpreoperative factors including infection and nonanatomic restoration of hip center would predict a poor outcome of THA after acetabular fracture. Our results suggest that a history of infection is prognostic for the need for revision surgery. Thus, ruling out preexisting infection before THA with a low threshold for staged primary THA is essential. In addition, optimizing the anatomy of thereconstructed hip center at reconstruction is paramount. We identify the true acetabulum using our preoperative template and standard intraoperative [3].

CONCLUSION

Primary total hip replacement is a reasonable method of treatment of selected acetabular fractures. Outcomes may not be as good as total hip replacement done for other conditions.

After reviewing the 11th articles and comparing the result of each .. we get our net result as in generally harris hip score increased pre and post total hip replacement after acetabular fracture . We

now more oriented with the most common complication which is heterotropic ossification in our cases and discion of acute and delay total hip replacement after acetabular fracture is detected upon age , medical state , fracrure of femoral head , Avascular necrosis of femoral head and degree of arthritis occurred.

Total hip arthroplasty in the setting of an acetabular fracture remains a difficult reconstructive dilemma. Historically, this population has inferior outcomes when compared with patients with primary osteoarthritis.

Primary total hip replacement is a reasonable method of treatment of selected acetabular fractures in the acute phase in specific cases. Outcomes may not be as good as total hip replacement done for other conditions.

REFERENCES

1. **Eddie S Wu , Berger RA (2015)** . Outcomes of delayed totalhip arthroplasty in patientswith a previous ipsilateral acetabular fracture . Expert Rev. Med. Devices ,12(3): 297–306 .
2. **Carroll EA , Zelken J (2010).** Treatment of acetabular fractures in an older population. J Orthop Trauma , 24(10):637 – 642 .
3. **Boraiah S , McNiece GM (2009) .** Open reduction internal fixation and primary total hip arthroplasty of selected acetabular fractures. J Orthop Trauma ,23:243–248 **.**
4. **Mears , Ranawat A (2009)** . Total hip arthroplasty for posttraumatic arthritis after acetabular fracture. J Arthroplasty ,24:759–767.
5. **Pavelka T, Linhart M, Houcek P (2006)** . Hip joint arthroplasty following surgical treatment of acetabular fracture. Acta Chir Orthop Traumatol Cech. ,73(4):268 – 274 .
6. **Zhang L, Zhou Y, Li Y *et al.* (2011)** . Total hip arthroplasty for failed treatment of acetabular fractures: a 5-year follow-up study. J Arthroplasty ,26(8):1189 -1192.
7. **Michael A. M , Randa K. Elmallah (2016) .** Total Hip Arthroplasty After Acetabular Fracture Is Associated With Lower Survivorship and More Complications . Clin Orthop Relat Res. ,474(2):399–401.
8. **Zachary Morison MSc, Dirk Jan F (2015).** Total Hip Arthroplasty After Acetabular Fracture Is Associated With Lower Survivorship and More Complications . Clin Orthopedic Related Resesrch ,4509-4511.
9. **Chémaly O, Hebert-Davies J, Rouleau DM (2013) .** Heterotopic ossification following total hip replacement for acetabular fractures . Bone Joint J.,95-B:95–100.
10. **Giriraj Harshavardhan J, Ganesan Ram Ganesan *et al* . (2015) .**Total hip replacement in the acute management of acetabular fractures . Progress in Orthopedic Science ,54-57.
11. **Mears A, Dana C , Velyvis B(2002) .** Acute Total Hip Arthroplasty for Selected Displaced Acetabular Fractures: Two to Twelve-Year Results . Journal of Bone & Joint Surgery – American, 84 :1–9 .
12. **Anil Ranawat , Jonathan Zelken, David Helfet *et al* . (2009) .** Total Hip Arthroplasty for Posttraumatic Arthritis after Acetabular Fracture . The Journal of Arthroplasty , 24 (5) : 759-767 .
13. **Romness DW, Lewallen DG (1990) .** Total hip arthroplasty after fracture of the acetabulum. Long-term results. J Bone Joint Surg Br. ,72(5):761-769.
14. **Daniel J, Michael H (2002) .** Uncemented Acetabular Components for Arthritis After Acetabular Fracture. Mayo Clinic, Rochester , 405: 164–167
15. **Lizaur-Utrilla A, Sanz-Reig J, Serna-Berna R(2012) :** Cementless acetabular reconstruction after acetabular fracture: a prospective, matched-cohort study. J Trauma Acute Care Surg .,73(1):232-240.
16. **Sonya Khurana, Tamar B. Nobel, Justin S. Merkow *et al.* (2015) .** Total Hip Arthroplasty for Posttraumatic Osteoarthritis of the Hip Fares Worse Than THA for Primary Osteoarthritis . Am J Orthop. ,44(7):321-325 .
17. **Bellabarba C, Berger RA, Bentley CD *et al*. (2001):** Cementless acetabular reconstruction after acetabular fracture. J Bone Joint Surg Am. ,44:83-86.
18. **Weber M, Berry DJ, Harmsen WS (1998) .** Total hip arthroplasty after operative treatment of an acetabular fracture. J Bone Joint Surg Am. ,80(9):1295-1299.