Geriatric Acetabulum Fractures



Operative Fixation of Acetabular Fractures: What Outcomes Should be Expected?

Steven A. Olson, MD Goldner- Jones Distinguished Professor Department of Orthopaedic Surgery Duke University Health System

Disclosures



No Disclosures relevant to this presentation

Geriatric Acetabulum Fractures



An increasingly common injury

Can occur with low energy or high energy mechanism

Most common fracture patterns are Associated Both Column and Anterior + Posterior Hemi Transverse



Evaluation of The Fracture is the Same as Younger Patients



Plane Film Evaluation CT Scan Imaging Fracture Classification

Evaluation of The Fracture is the Same as Younger Patients









ii Posterior column

i Posterior wall

A

iiiAnterior wall



ii Transverse posterior wall

i Posterior wall posterior column

в



iii T-shaped

Geriatric Acetabulum Fractures



Treatment with ORIF - 1 year mortality reported 5-15%

Glogovac et al JOT 2020 Firoozabadi et al Arch Bone Jt Surgery 2017

Delay to ORIF > 48 hr does not increase risk of mortality

Glogovac et al JOT 2020

The addition of geriatric assessment decreases medical complications

Maintaining Congruent Relationship Between Head and Acetabulum is Key!

Criteria to be Met to Treat Non-Operatively:

 CT Arc intact through the superior 10mm of the acetabulum



- Femoral head remains congruent with the acetabulum on all three plain radiographic views taken out of traction
- No associated posterior instability of the hip

Olson & Matta JOT 1993

No displacement with EUA

Tornetta JBJS(Br) 1999



Treatment for Acute Acetabular Fracture In Geriatric Patient



Non-Operative Treatment

Non-Displaced Injury Stable with EUA Patient able to mobilize comfortably

Potentially viable strategy

Unable to mobilize Traction required to reduce hip Unfit for Surgery

High risk of M&M

Treatment for Acute Acetabular Fracture In Geriatric Patient





Reduction and Stable Fixation



ORIF without ability to maintain reduction



THA +/- ORIF



Contra-Indications for ORIF (Indications for Arthroplasty)



1. Posterior wall morphology

Severe Impaction



Significant Comminution



Contra-Indications for ORIF (Indications for Arthroplasty)



- 1. Posterior wall morphology
- 2. Impaction injury to the femoral head



Contra-Indications for ORIF (Indications for Arthroplasty)



- 1. Posterior wall morphology
- 2. Impaction injury to the femoral head
- 3. Impaction of the superior acetabulum



Outcomes Following ORIF



Survivorship of Hip Function following Acetabulum Fx ORIF

TABLE II Accuracy of Reduction According to Fracture Type and Other Characteristics							
	Anatomical, 0-1 mm	Imperfect, 2-3 mm	Poor	Surgical Secondary Congruence			
Age							
<40 yr (n = 386)	316 (82%)*	50 (13%)†	15 (4%)	5 (1%)			
40-65 yr (n = 318)	234 (74%)	63 (20%)	13 (4%)	8 (3%)			
>65 yr (n = 112)	66 (59%)†	35 (31%)*	8 (7%)	3 (3%)			

TABLE III Survivorship According to Fracture Type and Other Characteristics								
	Surv	Survivorship (95% Confidence Interval)* (%)						
	Two Years	Five Years	Ten Years	Twenty Years	to Failure†			
Age								
<40 yr (n = 386)	96 (95-97)§	95 (94-96)§	92 (91-94)§	87 (84-89)§	2.3			
40-65 yr (n = 318)	88 (86-90)†	83 (81-86)†	81 (79-83)†	74 (71-77)†	1.3			
>65 yr (n = 112)	83 (79-87)†	79 (75-83)†	70 (65-76)‡	51 (38-64)†	0.8			
>75 yr (n = 42)	80 (73-87)†	74 (66-83)†	65 (54-76)†	-	0.6			

Tannast & Matta JBJS (Am) 2012

Outcomes Following ORIF



German Trauma Registry Data

TABLE 5. Follow-up Data of Acetabular Fracture Patients at Least 60 Years of Age Treated at the Senior Author's Level I Trauma Center (Minimum Follow-up 12 Months)

Variable	≥60 y ORIF (n = 77)	≥60 y Nonoperative (n = 19)	Р
Age (y) (mean ± SD)	70.0 ± 7.2	76.3 ± 7.7	0.002
Male sex (%)	89.6	68.4	0.03
Follow-up (m) (mean ± SD)	57.2 ± 43.9	54.5 ± 30.5	0.80
Rate of secondary THR (%)	24.7	15.8	0.55
EQ-5D TM score*	0.60 ± 0.33	0.47 ± 0.38	0.17

*Patients of whom only a score after a secondary THR was available were excluded (n = 14 for the ORIF group and n = 2 for the nonoperative group).

Herath et al JOT 2019

Case 1 A 65 yo female – MVC – Left hip fracture dislocation





A Transverse with posterior wall pattern A very comminuted posterior wall Mild pre-existing OA Contra-lateral Leg Injuries

A relative indication for Acute ORIF and Primary THR



Post-Op Images





One Year Follow Up





Jase 2



Vigorous 66 yo falls while riding bicycle No other health issues Patient is seen at outside hospital Patient is told – "Will need a total hip anyway" Non-operative management Patient presents several days post injury







Transverse Pattern + Ant Wall



T-Shape Anterior Variant vs Anterior + Posterior Hemi-Transverse

Primary displacement anterior

Begin with Ilioinguinal approach









2 year Follow up

9 year Follow up







ORIF of Displaced Acetabulum Fractures in geriatric patients can have a good clinical outcomes

Appropriate – Fracture patient Surgeon and Surgical team Favorable patient factors

There is a limited role for ORIF in the setting of acute THR



