# Comparison of Outcomes Compared Across Acute vs. Delayed Total Hip Arthroplasty (THA) and Open Reduction Internal Fixation (ORIF) of the Acetabulum

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INTRODUCTION: Acetabular fracture incidence is rising exponentially amongst elderly patients. Treatment options for patients depend on patient and fracture characteristics, and the understanding of optimal management of these injuries continues to evolve. Acute ORIF and THA has emerged as a treatment option; however, there remains a limited understanding of which patients are ideal candidates for this procedure.

METHODS: Retrospective review was conducted for all patients that had undergone ORIF acetabulum + THA in one procedure (Acute) and for patients that had undergone conversion THA (Delayed) subsequent to ORIF acetabulum from 2014 – 2024 at one academic institution. Variables analyzed included patient demographic information, fracture patterns, associated injuries, surgery characteristics, complications, reoperations and Patient Reported Outcome Measures (PROMs).

RESULTS: Acute THA patients reported a higher overall satisfaction with their hip and had significantly fewer complications. Delayed THA was identified as the factor most correlated with increased complications. Hip dislocation or medialization were significant predictors of higher Oxford hip scores subsequent to completion of THA. Additionally, treatment of patients with posterior moieties with delayed THA—as compared to patients with anterior moieties treated with acute THA—was also a significant predictor higher Oxford scores.

DISCUSSION AND CONCLUSION:

ORIF acetabulum with acute THA is associated with higher patient reported satisfaction and fewer complications. Hip dislocation or medialization correlated with higher Oxford hip scores, and when controlling for all other factors, posterior moieties treated with delayed THA predicted higher Oxford hip scores.

| | **ORIF Acetabulum + Acute THA** *N = 22* | **ORIF Acetabulum + Delayed THA[2]** *N = 60* | **p-value[1]** * *<0.05* |
|---|---|---|---|
| **Patient Characteristics** | | | |
| **Age** *(years)* | 75.2 ± 8.1 | 51.8 ± 15.8 | **<0.001*** |
| **Sex** | | | 0.726 |
| Male | 59.1% (13) | 63.3% (38) | |
| Female | 40.9% (9) | 36.7% (22) | |
| **BMI** *(kg/m²)* | 28.9 ± 5.5 | 32.2 ± 8.5 | 0.172 |
| **# Comorbidities** | 7.1 ± 3.6 | 5.4 ± 4.5 | 0.018 |
| **Pre-existing Osteoarthritis** | 13.6% (3) | 6.2% (3) | 0.305 |
| **Injury Characteristics** | | | |
| Fracture Patterns[3] | | | 0.403 |
| | AC: 4.5% (1)<br>AW: 4.5% (1)<br>PC: 9.1% (2)<br>PW: 22.7% (5)<br>T: 4.5% (1)<br>ACPH: 22.7% (5)<br>PCPW: 18.2% (4)<br>TT: 0.0% (0)<br>TPW: 13.6% (3)<br>ABC: 0.0% (0) | AC: 4.2% (2)<br>AW: 2.1% (1)<br>PC: 0.0% (0)<br>PW: 18.8% (9)<br>T: 4.2% (2)<br>ACPH: 22.9% (11)<br>PCPW: 10.4% (5)<br>TT: 8.3% (4)<br>TPW: 22.9% (11)<br>ABC: 6.2% (3) | |
| **Hip Dislocation or Medialization** | 59.1% (13) | 60.0% (36) | 0.941 |
| **Surgery Characteristics** | | | |
| **Surgery Duration** *(minutes)* | 211.0 ± 41.5 | 237.3 ± 69.0 | 0.211 |
| **Estimated Blood Loss (mL)** | 695.5 ± 385.4 | 725.4 ± 351.6 | 0.526 |
| **Required Transfusions** | 45.5% (10) | 26.2% (11) | 0.119 |
| **SICU Days** | 2.7 ± 6.7 | 2.1 ± 5.1 | 0.767 |
| **Patient Outcomes** | | | |
| **Complications** | 18.2% (4) | 48.3% (29) | **0.014*** |
| **Reoperation** | 4.5% (1) | 20.7% (12) | 0.081 |
| **Satisfaction** *(Very Unsatisfied: 1 – Very Satisfied: 5)* | 4.9 ± 0.3 | 4.1 ± 1.2 | **0.040*** |
| **HOOS Jr.** *(0 – 24)* | 22.1 ± 3.7 | 18.5 ± 6.1 | 0.068 |
| **Oxford Hip Score** *(0 – 48)* | 42.3 ± 7.2 | 33.7 ± 14.3 | 0.166 |
| **Regression Results** | | | |
| **Factors Correlated with Complications** | ORIF Acetabulum + Delayed THA<br>Odds Ratio: 26.5 (3.059 – 566.393) | | **0.011*** |
| **Factors Correlated with Oxford Hip Score** | Hip Dislocation or Medialization:<br>Estimate of Effect: 31.231 | | **0.022*** |
| | Posterior Moiety Treated with ORIF Acetabulum + Delayed THA<br>Estimate of Effect: 100.266 | | **0.040*** |

[1] p-values calculated using Kruskal-Wallis test for numeric variables, chi-square test for categorical variables, and chi square test of proportions for outcome rates. Logistic and linear regressions used for correlations.
[2] Data at time of Acetabulum ORIF used for Delayed THA group.
[3] Anterior Column (AC), Anterior Wall (AW), Posterior Column (PC), Posterior Wall (PW), Transverse (T), Anterior Column Posterior Hemitransverse (ACPH), Transverse &Posterior Wall (PCPW), T-Type (TT), Transverse Posterior Wall (TPW), Associated Both Column (ABC)