The Effect of Surgical Treatment on Mortality After Acetabular Fracture in the Elderly: A Multicenter Study of 454 Patients

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Purpose: Controversy exists regarding the effect of surgical treatment on mortality after acetabular fracture in elderly patients. Our hypothesis was that surgical treatment would confer a mortality benefit compared to nonsurgical treatment even after adjusting for comorbidities associated with death.

Methods: Institutional trauma databases were searched for all patients age 60 years and older who had been treated for acetabular fractures (62-A, B, C) at 3 academic Level-I trauma centers between 2002 and 2009. Medical records were reviewed to determine demographic characteristics, comorbidities, fracture patterns, dates of treatment, and method of treatment as nonsurgical versus surgical. Surgical treatment was further classified into three groups: traditional open reduction and internal fixation, percutaneous fixation, or acute arthroplasty. Our study sample consisted of 454 patients with a average age of 74 years. Mortality was determined using the social security death index. Kaplan-Meier survival curves were created and Cox proportional hazards models were used to calculate unadjusted and adjusted hazard ratios for covariates of interest.

Results: In contrast to previous smaller studies, the overall mortality was relatively low at 16% at 1 year (95% confidence interval [CI] 13%-19%). Unadjusted survivorship curves suggested higher mortality rates for nonsurgically treated patients (P <0.001); however, the treatment decision for nonsurgical treatment was associated with other factors associated with higher mortality. Our final multivariate model of survival demonstrated no significant difference in hazard of death for nonsurgical treatment (P >0.10), nor for any of the surgical treatment subgroups (P >0.10). As expected we did find a significantly increased hazard for factors such as the Charlson comorbidity index (per point), age (hazard ratio was 1.09 [95% CI 1.06-1.12]) per year of age over 70), and length of stay (per day) (all P <0.05). In addition associated fracture patterns (compared to elementary patterns) significantly increased the hazard of death with a ratio of 1.46 (95% CI 1.07-2.00).

Conclusion: In contrast to the rationale for surgical treatment of hip fractures, the surgical treatment of acetabular fractures does not appear to convey a mortality benefit once comorbidities are taken into account. The reason for this is unknown, but might be related to greater limitations in postoperative weight-bearing status compared to those after hip fracture surgery. Regardless of the cause, it does not appear that surgical treatment of geriatric acetabular fractures can be justified based on mortality benefit alone.

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