

Outcome Following Reduction of Superomedial Dome Impaction (Gull Sign) in the Elderly Acetabular Fracture

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Purpose: Superomedial dome impaction (gull sign) was known as a negative predictive factor of acetabular fracture. Thus, there has been a debate on which treatment is the most appropriate treatment in elderly acetabular fracture when gull sign is present. The purpose of the present study is to investigate the outcome of elderly acetabular fracture according to reduction of the superomedial dome fragment.

Methods: A retrospective comparative study was performed in 2 institutions from 2001 to 2020. Patients aged ≥ 60 years with acute acetabular fracture involving anterior column were enrolled. Data for demographics, fracture patterns, negative predictive factors including presence of gull sign, and complications were collected. Patients were divided into reduction group (displacement ≤ 3 mm) or displacement group (displacement >3 mm) according to postoperative reduction state in CT scan. Outcome was assessed as poor outcome (patients with radiographic osteoarthritis and Harris hip score <80 and those who required subsequent total hip arthroplasty) and good outcome. We compared the outcomes and complications between reduction and displacement groups, and subgroup analysis was performed with patients with gull sign.

Results: Among the included 54 patients, 9 patients were in the displacement group and 45 were in the reduction group. There was no between-group difference of demographics, fracture pattern, and presence of negative predictive factors. The reduction group presented higher proportion of good outcome than displacement group (89% vs 22%, $P < 0.001$). In a subgroup analysis, reduction group presented higher proportion of good outcome than displacement group (80% vs 20%, $P = 0.031$) despite presence of gull sign.

Conclusion: Elderly acetabular fractures presented favorable outcome when adequate reduction was achieved even if gull sign was present. We believe that fracture reduction should be addressed in the elderly acetabular fracture with gull sign.