Subsequent Radiographs of Mason I and II Radial Head Fractures Do Not Alter Management

Connor Thomas Wright, Kameron Ali Shams, William Reuben Aibinder[1]
[1]Orthopedic Surgery

INTRODUCTION:
Nondisplaced or minimally displaced (Mason I) and partial articular radial head fractures with >2 mm displacement or angulation (Mason II) are typically treated non-operatively; however, patients often undergo further imaging at subsequent office visits to assess bony healing and alignment. Prior studies have demonstrated limited clinical utility of serial radiographs to evaluate interval fracture displacement or change in management of Mason I and II fractures, but there has been no association with patient-reported outcomes. The purpose of this study is to assess whether additional post-injury imaging of Mason I and II radial head fractures altered initial management and corresponding subjective and objective patient outcomes.
METHODS:
conducted using DataDirect, a patient search tool. Patients were identified using ICD-10 codes S52.12, S52.121-6 from 10/1/2015 to 10/1/2024. All patients aged 18 or older with a Mason I or II fracture of the radial head who were treated by one of seven orthopaedic surgeons from the trauma, hand, or shoulder/elbow surgery departments were included. Patients with fractures initially treated surgically, non-isolated bony injuries in the ipsilateral extremity, known prior elbow fracture or surgery, fractures treated by providers outside of the study group, Mason III or IV fractures, or those with incomplete records were excluded. The primary outcomes were subjective patient reports (pain, stiffness, functional impairment, numbness, or mechanical symptoms) and objective range of motion of the elbow (extension, flexion, pronation, supination), at six or more weeks following injury in patients who underwent additional radiographic imaging and those who did not. The secondary outcomes included change from non-operative to operative management following additional radiographic imaging, and the number of additional elbow radiographs per fracture. The Fisher's exact test was used in the primary analysis.
RESULTS:
There were 308 fractures from 300 patients included in our analysis. Of these fractures, 215 (69.8%) underwent additional radiographic imaging with an average of 1.8 additional elbow series per fracture. There was one (0.5%) fracture which required operative management following imaging due to malunion. A total of 164 fractures had at least six weeks of follow-up after injury, with 141 undergoing additional radiographic imaging and 23 without. When comparing these groups, there was no difference in outcomes of persistent pain (p=1.000), stiffness (p=0.3599), deficits in extension (p=0.6364), flexion (p=0.4444), pronation (p=1.000), or supination (p=1.000).
DISCUSSION AND CONCLUSION:
Additional radiographic imaging for Mason I and II radial head fractures is extremely unlikely to alter initial clinical management. Patients have similar pain and range of motion measurements in the early post-injury period whether they undergo additional radiographic imaging or not. Persistent deficits in forearm rotation, mechanical block, or increase in pain in the post-injury period may be clinical signs to obtain additional imaging to guide management. However, radiographic imaging in patients with stable to improving symptoms has low clinical utility and results in a large cost to the healthcare system.