Postambulation Radiographs for Stable Pelvic Ring Fractures Are of Low Utility

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Background/Purpose: The standard of care for pelvic ring fractures presumed to be stable and subsequently planned for nonoperative treatment includes obtaining a radiographic series of the pelvic ring following ambulation to confirm stability prior to discharge. We believe that, with rare exception, these films do not change clinical decision making. The additional imaging does, however, contribute additional cost, radiation exposure, and potentially length of stay. The purpose of this study was to determine with what frequency postambulation radiographs led to a change in management of stable-appearing pelvic ring fractures.

Methods: An IRB-approved retrospective review of all patients with acute pelvic ring fractures treated at a single Level I academic trauma center from 2000-2015 was conducted. Subjects with incomplete radiographic or clinical records were excluded. All charts were reviewed for basic demographic information as well as intended treatment versus final treatment. If there was a change in treatment, it was noted whether clinical or radiographic findings prompted the change. Finally, if management converted from nonoperative to operative intervention, time to surgery was recorded. A descriptive statistical analysis was performed.

Results: 1050 patients were included. Based on initial evaluation, 695 pelvic ring fractures were initially determined to be stable and treated in a nonoperative manner. Early surgical intervention was performed on 355 unstable pelvic ring fractures. The mean age of this group was 38.6 years (SD 17.24) and 63% were male. 14 pelvic ring fractures initially thought to be stable and not requiring operative intervention did convert to surgical management (2%). The mean age of this group was 48.74 years (SD 20.19) and 71% were male. Of the 681 that remained nonoperative, the mean age was 48.17 years (SD 23.43) and 58% were female. Of those that converted from nonoperative to operative management, 12 did so within the first week following injury, one converted at 20 days, and one converted at 48 days. Instability as demonstrated on radiographs was observed in three patients that converted from nonoperative to operative management. Pain preventing adequate mobilization was the primary motivation for conversion of the remaining 11 patients. All 14 patients that converted from nonoperative to operative management had pain with attempted mobilization.

Conclusion: This study demonstrates the low-yield nature of postambulation radiographic evaluation to confirm nonoperative management for presumed stable pelvic fractures as only 3 patients out of 695 (2%) demonstrated radiographic changes on radiographs obtained after mobilization. All patients with radiographic changes also reported notable pain with attempted mobilization. The 11 patients requiring conversion to surgical from nonsurgical management without radiographic changes had significant pain preventing adequate mobilization. This may be indicative of dynamic instability that remained undetected with plain radiographic analysis. Each of the nonoperative failures could have been predicted

based on pain and inability to adequately mobilize even in the absence of repeat postambulation radiographs. In this cohort of patients, there was no asymptomatic patient who had a change in management based on radiographic findings alone. These results suggest that pain is a more likely determinant and therefore a more sensitive measure for prediction of conversion to surgical management than radiographic changes.

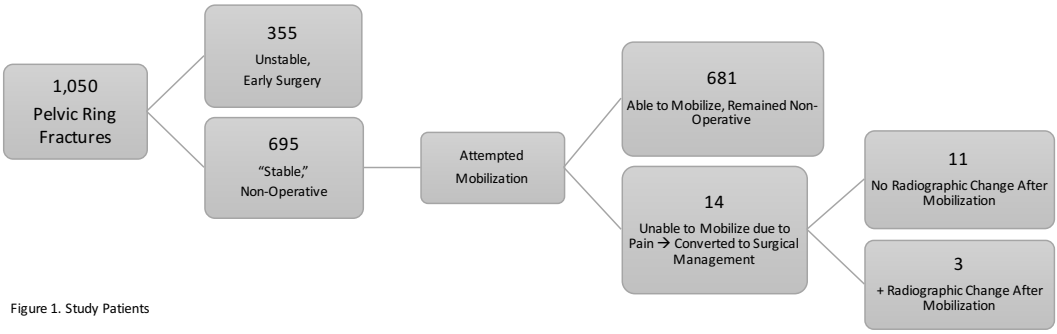

Figure 1. Study Patients

See pages 49 - 106 for financial disclosure information.