Postoperative Ankle Radiography: An Assessment of Patient Benefit and Burden

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Purpose: Postoperative radiographs in the postoperative ambulatory care unit (PACU) are commonplace after open reduction and internal fixation (ORIF) to assess fracture/joint reduction and implant placement. Recently this has been called into question as images are frequently poor quality and rarely alter treatment plans. This study aims to determine quality of PACU radiographs following ankle ORIF and whether the increased cost/radiation leads improved care as well as comparing PACU radiograph quality to those taken intraoperatively (IO).

Methods: This retrospective review identified patients who underwent ORIF of ankle fractures at a Level I trauma center from January 2021-January 2022. Data collected included patient demographics, radiation exposure, number of radiographs, and secondary procedures. Postoperative mortise and lateral ankle radiographs were assessed for quality and graded as acceptable, poor, or unusable based on our grading criteria. Mortise grading evaluated referencing medial/lateral joint lines and lateral grading assessed the talar dome tibiotalar joint. These data were separated into 2 groups: PACU and IO radiographs.

Results: 292 patients met inclusion criteria with 217 in the PACU group and 65 in the IO group. In the PACU group, acceptable mortise views (72%) were more likely than acceptable lateral views (33.2%) (P = 0.001). A poor or unusable lateral image was significantly more likely to require additional radiographs (P = 0.03), which occurred in 26 patients (11.5%) incurring an estimated total excess cost of $15,390 over the study period. One patient (0.4%) required a secondary procedure after PACU radiographs for joint subluxation. In the IO group, acceptable mortise and lateral radiographs were obtained 93.8% and 63.1%, respectively. No patients in this group required secondary procedures or additional radiographs. Intraoperative radiographs produced significantly more acceptable mortise and lateral radiographs compared to the PACU group (P = 0.001). For both groups, additional radiation exposure was minimal.

Conclusion: Immediate postoperative PACU radiographs rarely change treatment plans and frequently produce poor quality images. This practice leads to excess cost with minimal patient benefit. Alternatively, if concern exists postoperatively, intraoperative radiographs lead to improved quality radiographs requiring less need for repeat images with the added benefit of immediate intervention should the need arise.