

Is Routine Radiography in the Follow-up of Trauma Patients with Ankle Fractures (Cost) Effective?

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Purpose: The clinical consequences of follow-up radiographs in ankle fractures are unclear and indications for these radiographs are seldom well-defined. Routine radiographic imaging in the follow-up of patients with an ankle fracture adds to treatment costs, although recent retrospective studies dispute its usefulness. The aim of this study was to assess whether a protocol with a reduced number of routine radiographs would lead to cost savings, without compromising clinical outcomes.

Methods: A multicenter randomized controlled trial was conducted. Patients were randomly assigned in a 1:1 ratio to the usual-care follow-up protocol (consisting of routine radiography at 1, 2, 6, and 12 weeks) or a reduced-imaging strategy (radiographs only obtained for a clinical indication at 6 and 12 weeks). Functional outcome was assessed using the OMAS (Olerud-Molander Ankle Score) and AAOS (American Academy of Orthopaedic Surgeons) ankle score questionnaires, Quality of life was measured with the EQ-5D-3L (EuroQol 5- Dimensions 3-Level) and Short Form (SF)-36 questionnaires. Other outcome measures included complications, pain, the number of radiographs and the indications to obtain them, health perception, and self-perceived recovery. Costs were measured with self-reported questionnaires and include primary and secondary health-care costs, the cost of radiographic imaging, and costs of lost productivity.

Results: The studied group consisted of 247 participants, of whom 154 (63%) received operative treatment. Patients in the reduced-imaging group received a median 4 radiographs, while patients in the usual care group received a median 5 radiographs ($P < 0.005$). OMAS, AAOS scores, quality of life, pain levels, health perception, and self-perceived recovery did not differ between groups. We observed 32 complications in the reduced imaging group. This did not differ significantly from the usual care group (29 complications, $P = 0.51$). A significant reduction in radiographic imaging costs was observed ($-\text{€}48$ per patient, 95% CI [confidence interval] -72 to -25). Overall costs per patient were comparable between groups ($\text{€}130$, 95% CI -2975 to 3723).

Conclusion: Implementation of a reduced-imaging protocol in the follow-up of ankle fractures leads to cost savings and more importantly does not lead to worse functional outcomes. Given the large number of people who suffer from an ankle fracture annually, this reduction in routine follow-up radiographs could have a substantial economic impact.