

Clinical Efficacy and Cost-effectiveness of Postoperative Radiographs After Total Knee Arthroplasty

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BACKGROUND

- Total knee arthroplasty (TKA) is one of the most performed surgical procedures in the US and cases are expected to grow to as high as 1.2 million procedures per year by 2030 [1]
- The postoperative follow up of TKA represents a significant burden on the U.S. healthcare system and the value postoperative radiography in unknown
- Although there are well-defined preoperative criteria for radiographic imaging for knee pain before TKA [2,3], there are no evidence-based protocols regarding postoperative radiograph utilization.

OBJECTIVES

- The purposes of this study were to determine the clinical utility of postoperative radiographs in guiding clinical management of primary TKA across the entire postoperative period, and what can predict the need for imaging to increase their clinical utility at all postoperative visits.

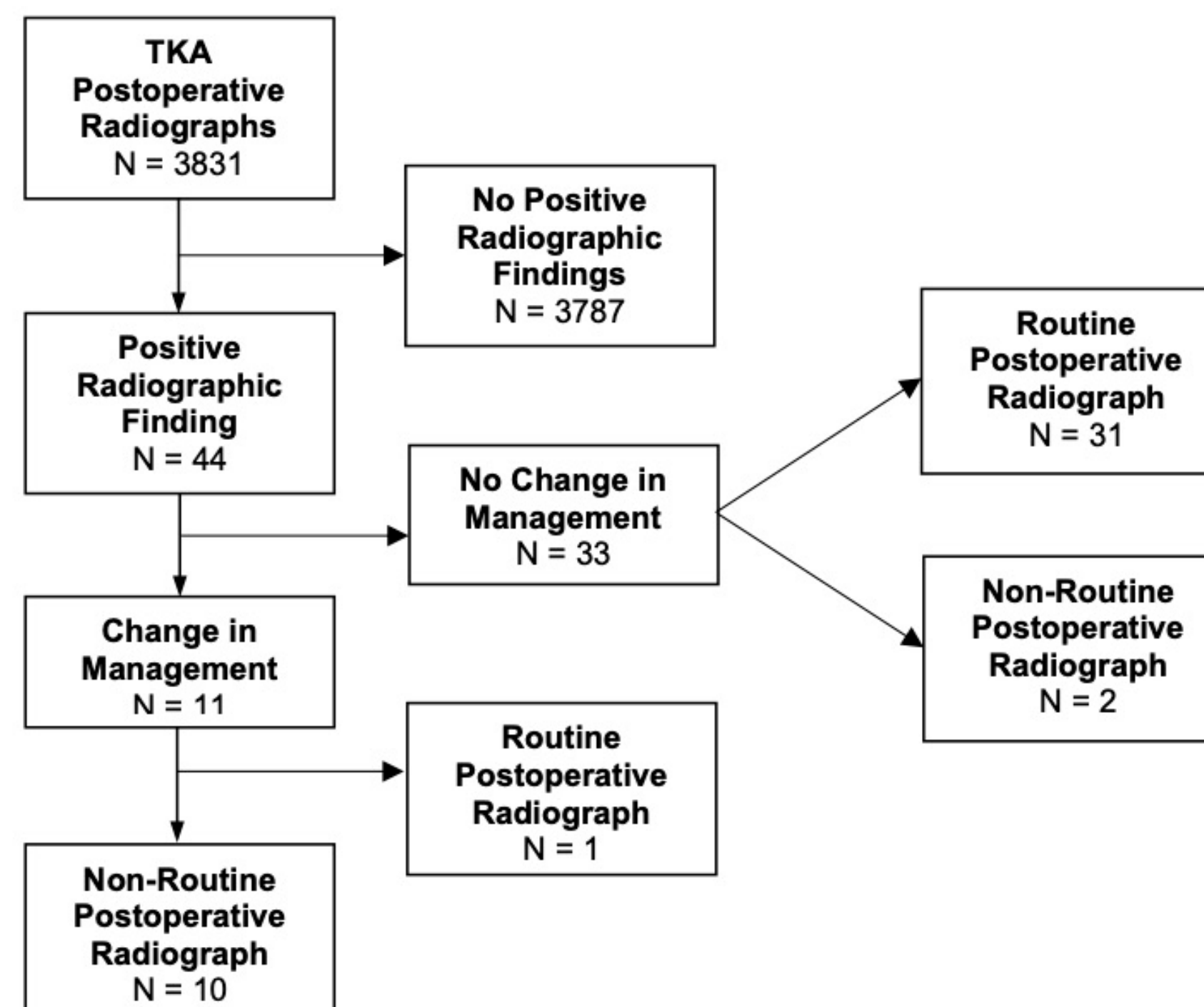
METHODOLOGY

- A retrospective cohort study was conducted of patients ≥ 18 years old who underwent a primary TKA at two level one trauma centers.
- Postoperative data were collected to determine the frequency of postoperative radiograph series, radiograph findings that did not suggest normal healing or alignment to radiologist and orthopedists, and changes in postoperative management. The total cost and radiation exposure values were calculated for all patient radiographs

RESULTS

- From the 1258 patients included, 3831 postoperative radiographs were taken (mean \pm 95% confidence interval [CI]: 3.05 ± 0.11 radiographs per patient)
- Of these 3831 radiographs, 44 (1.1%) contained a positive radiographic finding.
- Only 13 (0.3% of radiographs) of these positive radiographic findings were positive orthopaedic findings, 11 of which led to changes in management.
- For all but 1 of these patients (10/11, 91%), these radiographs were taken during a non-routine postoperative visit.
- Routine postoperative radiographs that did not change management cost \$1,008,480 and administered 22.92 mSV of radiation to patients within this study.

Postoperative Radiograph Flowchart



CONCLUSION

- Postoperative radiography obtained after primary TKA were of low clinical utility yet resulted in considerable healthcare costs and unnecessary radiation burden.
- Radiographs ordered during a non-routine visit, however, were a reliable indicator of when this imaging provided clinical utility.

RECOMMENDATIONS

- Evidence-based guidelines for postoperative radiography after TJA are needed to reduce costs
- Postoperative radiographs ordered during non-routine visits are an accurate indicator for when patients are likely to have a positive radiographic finding
- Further research into predictors of positive radiographic findings after TJA are needed

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