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Development of a Phone App for Daily Robotic Radiosurgery Quality Assurance

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Abstract

Objectives: Daily QA of a robotic radiosurgery linac can be tedious due to the time consuming scanning of radiochromic films and consequent analysis. We developped a phone app to scan and analyze the radiochromic film and analyze the results, maximizing convenience while minimizing the time required to process and analyze the daily QA films.

Methods: A phone app was written in React Native, Javascript, and HTML. It was compiled for both Android and Apple iOS platforms. Tests were run on a M6 CyberKnife robotic radiosurgery linac, and films analyzed using a Google Pixel 6 and a Samsung Galaxy S10. The results were analyzed and compated to the existing manufacturer's software.

Results: The app produced results consistent with the manufacturer's software within 0.35 mm for all 3 collimators. The variance was similar to the manufacturer's software (0.35 mm).

Conclusion(s): The use of a phone app in lieu of a professional scanner was shown to produce similar results. Inter-phone variability is being analyzed to see how much of an impact different phones and platforms can have on results.