SUMMARY

Objectives: A mobile C-arm for cone-beam CT (CBCT) guidance system and validation with tissue mimic in head and neck surgery. Performance and translation to vital trials are described, along with integration of a novel high precision position system featuring full scale 5mm head/neck range motion.

Methods: Image quality was assessed using cone-beam, sectional, functional, and endoscopic methods, with protocols identified for periceptual dose after CBCT scans. The C-arm was translated to its 15 positions under the control of an image guiding platform and a novel, compact, wireless fluoroscopy system. CBCT plates were obtained in a number of applications, to include vibration and motion, using the new system.

Results: The C-arm prototype represents a significant advance over previous 3D imaging systems. The work provides a foundation for a clinical prototype, currently underway. The C-arm is designed for appropriate, high-precision image-guidance and navigation.

Conclusions: The work provides a foundation for a clinical prototype, currently underway. The C-arm is designed for appropriate, high-precision image-guidance and navigation.