

AbstractID: 2083 Title: Isocenter Stability of Clinac with On-Board Imager

The On-Board Imager (OBI) system introduced by Varian Medical Systems is comprised of a kV source and an amorphous silicon digital array mounted on robotic arms on either side of the Clinac gantry structure. These components produce dynamic forces during positioning of the robotic arms relative to the isocenter, posing the question: Is the mechanical isocenter stability of the Clinac influenced by these forces? Simple mechanical measurements were made on Clinac s/n 1400 equipped with both PortalVision and an On-Board Imager, which indicated a smaller effective isocenter when the OBI robotic arms were extended. This result is explained by weight and momentum induced by the OBI robotic arms adding a pulling force in the same location in the gantry structure, but in the opposite direction, to forces normally produced by the weight of the gantry, bending magnet, collimator, etc. These opposed forces, relatively small if the OBI robotic arms are retracted but evident if the OBI robotic arms are extended is assumed to be the cause of the improvement of the mechanical isocenter.

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