AbstractID: 13066 Title: The VERO system, a novel IGRT device for stereotactic body radiation therapy: commissioning and first experience

Purpose: Due to the recent introduction of the VERO system in the field, very little detailed information is available. An overview will be given of the experimental results acquired during commissioning.

Methods and Materials: The VERO system, a novel radiation therapy platform developed for image guided stereotactic body radiotherapy (SBRT), has been installed and commissioned in our hospital. This device is a joint product of BrainLAB and MHI. A newly developed small 6 MV linac with attached MLC is mounted on an O-ring gantry. The MLC consists of 60 5-mm-leafs and produces a maximum field size of 150x150mm. The gantry rotates 360° about the horizontal axis, similar to a C-arm linac platform, but additionally allows rotation about the vertical axis, a so called “skew” of +/- 60°. Orthogonal gimbals hold the linac, which allows pan and tilt motions of the linac and the therapeutic beam. This mechanism offers the possibility to actively compensate for mechanical distortions during gantry rotation and to perform real-time tracking of moving tumors. Beside an EPID for MV portal imaging, the system is equipped with a dual orthogonal kV Imaging systems attached to the O-ring at 45° from the MV beam. This imaging system allows simultaneous acquisition of orthogonal X-rays images and fluoroscopy. Also kV cone-beam CT imaging is available. An automated infra-red marker based patient-positioning device is integrated. The treatment couch provides 5D positional correction (X,Y,Z,pitch,roll). The 6th degree of freedom, the yaw angle correction, is handled by the O-ring skew.

Results: We have conducted full commissioning of this novel SBRT platform, including full mechanical and dosimetric characterization, and report on the performance of this device installed in a clinical environment.

Conclusion: Based on the experimental results, the systems characteristics were considered adequate for SBRT treatments.

Conflict of Interest: Research sponsored by BrainLAB.