Purpose:

Clinical experience for configuration, commission and implementation of SmartArc with MOSAIQ R&V system.

Methods:

SmartArc is Pinnacle's solution for VMAT. On July 2011 we updated to Pinnacle 9.0 and purchased SmartArc. A standalone Eclipse workstation has been used 3 years for VMAT planning. Our clinical setting: Mosaiq 2.2; Varian Trilogy driven by 4DiTC and Varian 21ex driven by sequencer.

Some key physics parameters have been studied: machine dose rate; MLC leaf speed; Leaf motion per gantry rotation. Tabletop was created by user to improve the dose accuracy for planning.

In-house sandwich phantom was used with MapCheck for planner dose verification. A PTW 0.6cc ion chamber was included for absolute dose comparison.

Results:

A copy of current machine data with default highest dose rate is recommended. It is due to after 10th iteration of optimization, the default dose rate will kick in.

2.5cm/s is the constraint for Varian Millennium 120 MLC; a buffer zone of 10% is suggested to reduce the MLC error on treatment. 2.25cm/s is used in our configuration. This results in MLC interlock if not configured correct.

Maximum leaf motion per gantry rotation of 0.46cm/degree has to be checked for planning with Mosaiq R&V. Otherwise, undeliverable plan will show up sometimes on 4DiTC.

Tabletop was exported as a DICOM structure from Eclipse to Pinnacle; we created a ROI template based on the matched tabletop.

QA using in-house phantom for different sites were tested. Results for both planner dose and absolute chamber measurement are satisfactory.

Conclusions:

Special attentions need to be paid for dose rate, MLC leaf speed, leaf motion per gantry rotation when configuring SmartArc. Varian 21ex is supported but is slow for clinical delivery. Users need to create your own tabletop to improve planning accuracy. Conventional commission procedures for RapidArc also apply for SmartArc.