# Quality assurance of RapidArc treatments with portal dosimetry: multicentric clinical practice experience.

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## Introduction
Quality assurance data from five centers were analysed to assess reliability of RapidArc delivery method in terms of machine and dosimetric performances.

## Material and Methods
i) General treatment data were reported to describe the RapidArc delivery features on a large collective of patients. ii) machine quality assurance was performed according to C. Ling et al [IJROBP. 2008;72:575-81]. In addition, single arcs, representing a typical clinical case, was delivered with biweekly frequency. iii) Pretreatment dosimetric validation of plan delivery is performed for each patient. All measurements and computations were performed at the depth of maximum dose in water (~15 mm for 6MV beams) according to the GLAaS method [Nicolini et al Radiat Oncol 2008;3:24] using EPID measurements; $\gamma$ evaluation with $\Delta d$ =3% and DTA=3mm scoring the gamma agreement index (GAI, % of field area passing the test).

## Results
:i) 275 patients (395 arcs) were included in the study. Averages for main delivery parameters were: collimator angle: 35.2±17.2°; gantry speed: 46.8±0.3 cm/s; dose rate: 361±169 MU/min; beam on time: 1.5±0,4 min for a prescription ranging from 1.8 to 16.7 Gy/fraction. ii) mean deviations from baseline for reproducibility of dose rate and gantry speed variation ranged from -0.61 to 1.75%, the same value for leaf speed variation ranged from -0.73 to 0.41%. Mean GAI of repeated (8 months) clinical field was 99.2±0.2%. iii) mean GAI was 96.3±2.3% ranging from 84.7 to 100%.

## Discussion
RapidArc delivery was analysed in a variety of clinical conditions and proved to be reliable and dosimetrically accurate.

## References
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