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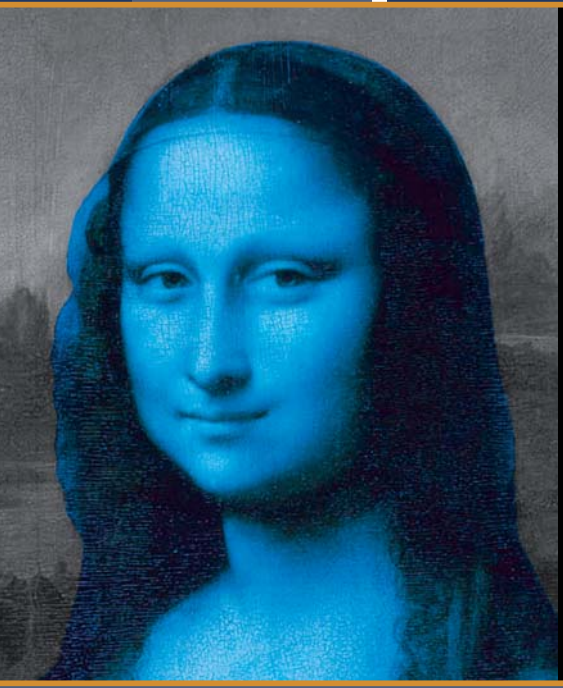

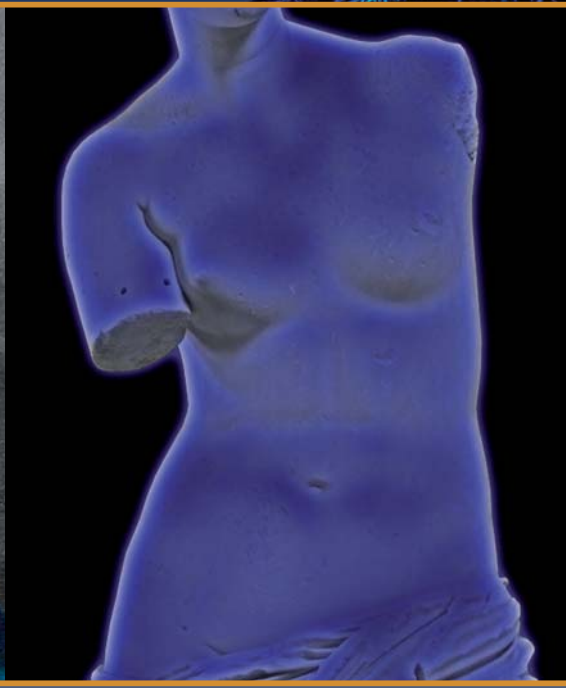

10TH INTERNATIONAL STEREOTACTIC RADIOSURGERY SOCIETY CONGRESS

Brain & Body Radiosurgery

ABSTRACTS BOOK

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SET-UP ACCURACY WITH FRAMELESS RADIOSURGERY OF INTRACRANIAL LESIONS USING EXAC TRAC 6-D ROBOTIC COUCH ON NOVALIS TX LINEAR ACCRELERATOR

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Objective: To determine set-up accuracy in patients undergoing frameless radiosurgery of intracranial lesions using Exac Trac 6 degree- of-freedom robotic couch on Novalis Tx linear accelerator.
Methods: Ten patients with intracranial lesions planned for single or fractionated (3 to 5 fractions) frameless radiosurgery on Novalis Tx linear accelerator were the study population. Planning CT images were transferred to the Brain Lab Exac Trac X-ray verification system and digitally radiographs (DRRs) were generated for all the treatment couch positions. All patients were planned for stereotactic radiosurgery using 6 to 9 beams. Isocentre and X-ray caliberation of Exac Trac system using X-ray calibration phantom with infrared markers was performed along with Winston Lutz test for Novalis Tx machine. Patients were positioned using infrared localizer attached to the couch and infrared cameras mounted in the room. A pair of oblique X-rays was obtained and fused with the DRRs on Exac Trac system. The shifting parameters (transverse and rotational) for the couch were noted and position was corrected using Exac Trac 6 degree-of-freedom robotic couch. Subsequently couch was rotated in different positions according to treatment parameters and a pair of verification X-rays was obtained for residual error. Snap verification was performed after correction of couch position and randomly during treatment. An analysis of the interfration set-up variation and intrafraction variation in different couch positions is performed.
Results: The mean variations in the lateral, longitudinal and vertical directions were 0.47 +/- 0.39mm, 0.76 +/-0.52mm and 0.53 +/-0.34 mm, respectively. The mean angular variations of roll, yaw and pitch were 0.6 +/-0.3, 0.7 +/- 0.3 and 0.6 +/- 0.4 degrees of rotation, respectively.
Conclusions: Exac Trac X ray verification with 6 degree-of-freedom robotic couch is a robust system to perform frameless radiosurgery of intracranial lesions with high accuracy. This is more applicable for fractionated radiosurgery patients to reduce the daily set-up time.

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THE STUDY OF OFF-AXIS RATIO (OAR) IN THE FASTPLAN SRS PLANNING SYSTEM

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Objectives: Off-Axis Ratio (OAR) is defined as the ratio of absorbed dose at any point to the absorbed dose on the beam axis at the same depth when a photon beam irradiates in a water phantom. The OARTOOL of FASTPLAN Planning System accepts the measured OAR data and applied a curve fit algorithm using the modified Cunningham model. However, the curve fitted Results are not ideal. Small discrepancy was observed between the curve fitted OAR and the measured OAR.