EARLY ONCOLOGICAL AND FUNCTIONAL OUTCOMES FOLLOWING MR GUIDED FOCAL LASER ABLATION (MRgFLA)

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INTRODUCTION: Focal therapy (FT) for prostate cancer (PC) reduces functional complications with promising oncological results. Magnetic resonance image (MRI)-guided Focal Laser Ablation (MRgFLA) with MR-thermometry allows real-time temperature and energy monitoring and therefore potentially maximizes precision compared to ultrasound-guided FT. This study aims to determine the oncologic and functional outcomes of MRgFLA in low-intermediate-risk localized PC in the single-center series of patients treated with the 1064nm diode laser fibers.

MATERIALS AND METHODS: Interim data from an ongoing trial of 25 patients receiving MRgFLA are reported in patients with MRI visible grade group (GG) 1, 2 or 3, PSA ≤ 20 ng/mL, and ≤cT2a). Treatment is delivered via interstitial cylindrically-diffusing laser fibres (wavelength 1064 nm) inserted through a multi-directional mechatronic needle-tracking device, which allows to approach the tumor along it's long axis. Patients are followed for 2 years with scheduled early (6-months) and intermediate (24-months) oncologic follow-up. At 6 months following treatment, oncologic outcomes are evaluated with multiparametric MRI, PSA and 4-8 targeted biopsies from the ablation site (Artemis, Eigen). Functional parameters are evaluated using the International Prostate Symptom Score (IPSS) and International Index of Erectile Function (IIEF-15) questionnaires at baseline and follow-up.

RESULTS: At time of reporting, 14 patients with 15 lesions completed their 6 month follow up. The mean age was 65 years (range 49-77), mean prostate volume 49cc (range 19-175cc) and the mean PSA at baseline and 6 months were 6.75 ng/mL (range 2-19.4) and 3.78 ng/mL (range 0.45-12.69) respectively. At 6 months there was an 80% (12/15) complete pathologic tumor control rate. There were 3 patients with GG2 disease at the ablation site or margin on biopsy and all 3 patients were retreated with laser FT (repeat biopsy pending). The IPSS showed +27% increase between mean baseline values and at day 30, while it showed -21% decrease between baseline and at 6-months. The sexual function domains recorded from -31% at day 30 to -21% difference at 6-month compared to mean baseline values.

CONCLUSION: MRgFLA shows encouraging short-term oncologic and functional outcomes for the treatment of low-intermediate-risk prostate cancer. However, the long-term efficacy will be determined in the coming years.