Magnetic Resonance Imaging - guided focal laser ablation for prostate cancer: Phase I trial
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Introduction: The objective of this study was to determine the safety and feasibility of magnetic resonance (MR) image-guided focal laser ablation of biopsy confirmed and MR visible prostate cancer.

Methods: MR image-guided laser ablation was performed for men with Gleason $\leq 7(3+4)$ when $\leq 3$ cores were positive in a standard 12 core biopsy corresponding to locations of MR lesions, or $\leq 4$ cores positive on MR image-guided biopsy. MR localization of biopsy-positive lesions were targeted via a transperineal approach and treated with a laser thermal ablation system. Validated quality of life questionnaires were completed pre-procedure and at each subsequent followup visit. MR-imaging was performed at 6 and 12 month followup with repeat fusion-guided biopsy performed at 12 months post-procedure.

Results: Fifteen patients were treated with a mean preoperative PSA of 7.04. Fourteen patients had complete 1 year followup of which 6 patients had Gleason 6 and 8 patients had Gleason 6 disease. Mean operative time was 3.8 hours per treatment session for 1 lesion ablated. The mean (±Std Dev) IPSS and SHIM scores were $6.5\pm4.1$ and $18.9\pm6.9$ respectively, with no significant differences noted at 12 month followup. Five Grade 1 adverse events (AEs) were noted in 4 patients, consisting of 4 incidences of hematuria and a pressure blister. Grade 2 AEs consisted of a UTI and epididymitis, one of which was unrelated to the procedure. Gleason 6 prostate cancer was identified in 2 prior treated lesions at repeat biopsy, of which 1 was observed and 1 underwent radical prostatectomy.

Conclusion: MR-image guided focal laser thermal ablation is safe and feasible for men with low risk prostate cancer.