**Presenter:** Deepa Sheth  
**Title of Abstract:** Evaluation of the sequential changes in the prostate gland after MR-guided laser ablation therapy  
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**Modality:** MR  
**Organ System:** GU  

**Purpose:** To describe the sequential changes in the prostate gland after MR-guided laser ablation therapy via the use of three different imaging sequences: triplanar T2 weighted imaging, ADC imaging and DCE imaging.

**Methods Used:** Nine patients who underwent MR-guided laser ablation therapy with Visualase laser ablation system and 1.5 T Philips Achieva MR scanner, were prospectively enrolled in the study. All patients met the following criteria: Gleason score ≤ 7 cancer, ≤ 3 positive cores on transrectal US-guided biopsy and identifiable correlate on MRI Prostate. Patients were subsequently followed with immediate post-procedure, 90 days and 180 days post-therapy MR imaging. MR protocol included: triplanar T2 weighted imaging, apparent diffusion coefficient (ADC) imaging and dynamic contrast enhanced (DCE) imaging. In addition, an MR-guided biopsy of the laser ablation zone was performed 180 days post-laser ablation therapy to evaluate for efficacy of therapy.

**Results of Abstract:** After analysis of all the MR exams for all nine patients, several over-arching themes were noted. In the T2-weighted imaging sequences, there was an overall decrease in the size of the laser ablative zone over a time period of 180 days post-therapy. In the ADC imaging sequence, the laser ablative zone was always hypo-intense or iso-intense to the surrounding prostate gland. In the DCE imaging sequence, the immediate post-procedural MR imaging always revealed a focal defect. This defect was then noted to disappear at the 3-6 month follow-up MR imaging.

**Discussion:** MR imaging can be used to monitor changes after focal therapy. T2-weighted imaging is the most helpful sequence for the follow-up. Larger series are needed to better understand MR imaging features of successful and incomplete ablation.

**Scientific and/or Clinical Significance?** As a relatively new modality for targeted biopsies in patients with prostate cancer, MR-guided laser ablative therapy is the subject of multiple studies investigating it's therapeutic applications. The use of MR-guided laser ablative therapy in low-risk prostate cancer has been deemed feasible and safe in several studies. However, little has been described in the literature about the sequential changes in the prostate gland after focal therapy. In our prospective study, we describe the changes in the prostate gland immediately, 90 days and 180 days post-ablative therapy. Three MR sequences proved to be most useful in describing general features of the changing prostate gland, including: triplanar T2 weighted imaging, ADC imaging and DCE imaging. Although larger series are needed to better understand MR imaging features of successful and incomplete ablation, this paper describes the expected changes in the prostate gland after therapy. With a larger series set, potential criteria can be extrapolated as to the expected and unexpected changes in the prostate gland in an attempt to identify those with successful or incomplete ablative therapies.

**Relationship to existing work** please see above question