

# Apparent Diffusion Coefficient (ADC) Values as a Complementary Tool in the Prostate Gland Disease: A Prospective Evaluation of Apparent Diffusion Coefficient (ADC) Values with Pathological Data

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## Abstract

**Background:**This prospective study aims to reveal whether the lesion is a benign pathological process or malignant by measuring ADC values under PI-RADSv2.1 guidance on MpMRI examinations. Additionally, the paper evaluates whether there is a correlation between malignant lesions' pathological grade and ADC values, and whether ADC values provide noninvasive information about prostate cancer aggressiveness. **Purpose:**To determine the cut-off ADC values that may exist to identify and distinguish between benign and malignant lesions and also identify cancers with an ISUP score[?]2 and cancers with an ISUP score1 defined as silent disease. **Methods:**This study includes 243 patients and they were diagnosed with TRUS-guided cognitive MRI fusion as tissue diagnosis. MpMRI images were evaluated before biopsy according to PI-RADSv2.1 guideline by a radiologist. Three groups which are benign prostatic tissue, prostatitis, prostate cancer, were obtained according to the histopathological results. **Results:** When the cut-off value for ADC is  $780 \times 10^{-3}$ , sensitivity was 80%. When the cut-off value was taken as  $668 \times 10^{-3}$ , the sensitivity was found to be 72% and specificity 62%. When the cut-off ADC value was taken as  $647 \times 10^{-3}$ , the sensitivity was 83% and the specificity was 48.5%. ADC values varied significantly according to ISUP groups [ $p= 0.003$ ]. It was determined that ISUP 1 group was significantly higher than each of the other groups. ADC group mean values did not show a statistically significant difference between Group 2,3,4 and 5. **Conclusion:**ADC value shows significant potential, and may it improve the diagnostic accuracy.

