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# NEW PROGNOSTIC GRADE GROUP (PGG) PROSTATE CANCER GRADING SYSTEM: CAN MULTIPARAMETRIC MRI (MPMRI) AND TRUS-GUIDED BIOPSY ACCURATELY SEPARATE PATIENTS WITH LOW, INTERMEDIATE AND HIGH GRADE CANCER?

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**Introduction:** The new Prognostic Grade Group (PGG) system reflects the generally indolent nature of Gleason 3+3=6 prostate cancer (PCa) compared to disease with predominant Gleason 4 components. This underscores the need to accurately separate disease into low (Gleason 3+3=6) and high grade (Gleason 4 or 5 predominant), and potentially also into intermediate grade (Gleason 4 present but not predominant) categories. We aim to determine accuracy of mpMRI and transrectal ultrasound-guided (TRUS-G) systematic biopsies in predicting pathologic grade of index lesions after radical prostatectomy (RP) using the new PGG PCa grading criteria.

**Methods:** In this retrospective, HIPAA-compliant, IRB-approved study, 157 patients with PCa who underwent 3T mpMRI with endorectal coil and TRUS-G biopsy before RP were included. MpMRI was used to classify index lesions using a two-tier (low grade/PGG 1 vs. high grade/PGG 2-5 PCa) or a three-tier system (low grade/PGG 1 vs. intermediate/PGG 2 vs. high grade/PGG 3-5 PCa) using a combination of qualitative and quantitative metrics. The accuracy of mpMRI and pre-RP TRUS-G biopsy were compared against RP for each classification system.

**Results:** The predictive accuracy of mpMRI and TRUS-G biopsy using two-tier system is higher (0.78 & 0.83, respectively) than when using three-tier system (0.45 & 0.62, respectively). Using a three-tier system, there were similar rates of undergrading between mpMRI and TRUS-G biopsy compared to RP (16% & 19%; respectively); rate of overgrading of disease was higher for mpMRI versus TRUS-G biopsy compared to RP (39% & 19%, respectively). When mpMRI and TRUS-G biopsy are used in conjunction, rate of undergrading is 6% and overgrading is 11%.

**Conclusion:** The accuracy of TRUS-G biopsy is lower using a three-tier system versus a two-tier system. The same is true for mpMRI but to a greater extent. TRUS-G biopsy tended to undergrade lesions, while mpMRI tended to overgrade lesions. Rates of under- and overgrading decreased when both techniques are combined, suggesting these may be complementary in accurately predicting tumor grade. MpMRI has high accuracy with low vs. high grade PCa but work is needed to define criteria of intermediate grade PCa and to optimize PCa grading using new PGG criteria.