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Introduction & Objectives: Accurate International Society of Urological Pathology (ISUP) grade group (GG) prediction based on prostate biopsies is important for clinical decision making in prostate cancer (PCa) patients; incorrect ISUP grading can lead to either over- or undertreatment. This study aims to assess the correlation of the ISUP GGs on biopsy and the final pathology after radical prostatectomy (RP) over a 12-year timeframe.

Materials & Methods: Patients who underwent RP at a single tertiary high-volume surgical PCa center between January 2010 to December 2021 were retrospectively included. Prostate needle biopsies were performed in one of six regional higher-volume diagnostic PCa centers. To determine the presence of either up-, down- or equal grading, ISUP GGs from needle biopsy specimens were compared to ISUP GGs from radical prostatectomy specimens. To assess the extent to which either up, down, or equal grading was present over a 12-year time frame, statistical process control was used. In addition, the degree of up-, down- and equal grading within the first and last 6 years of this time frame was evaluated.

Results: In total, 1228 men were included in the analysis. In general, up-, down- and equal grading was observed in 363/1228 (29.6%), 239/1228 (19.5%) and 626/1228 (51.0%), respectively. Over time, a trend was observed towards more downgrading and less upgrading. The degree of equal grading remained constant (Figure 1). When comparing two groups (2010-2015 and 2015-2021), significantly more downgrading (21.3% vs 14.1%,

$p=0.006$) and less upgrading (27.9% vs 34.6%, $p=0.030$) was seen from 2015 onwards.

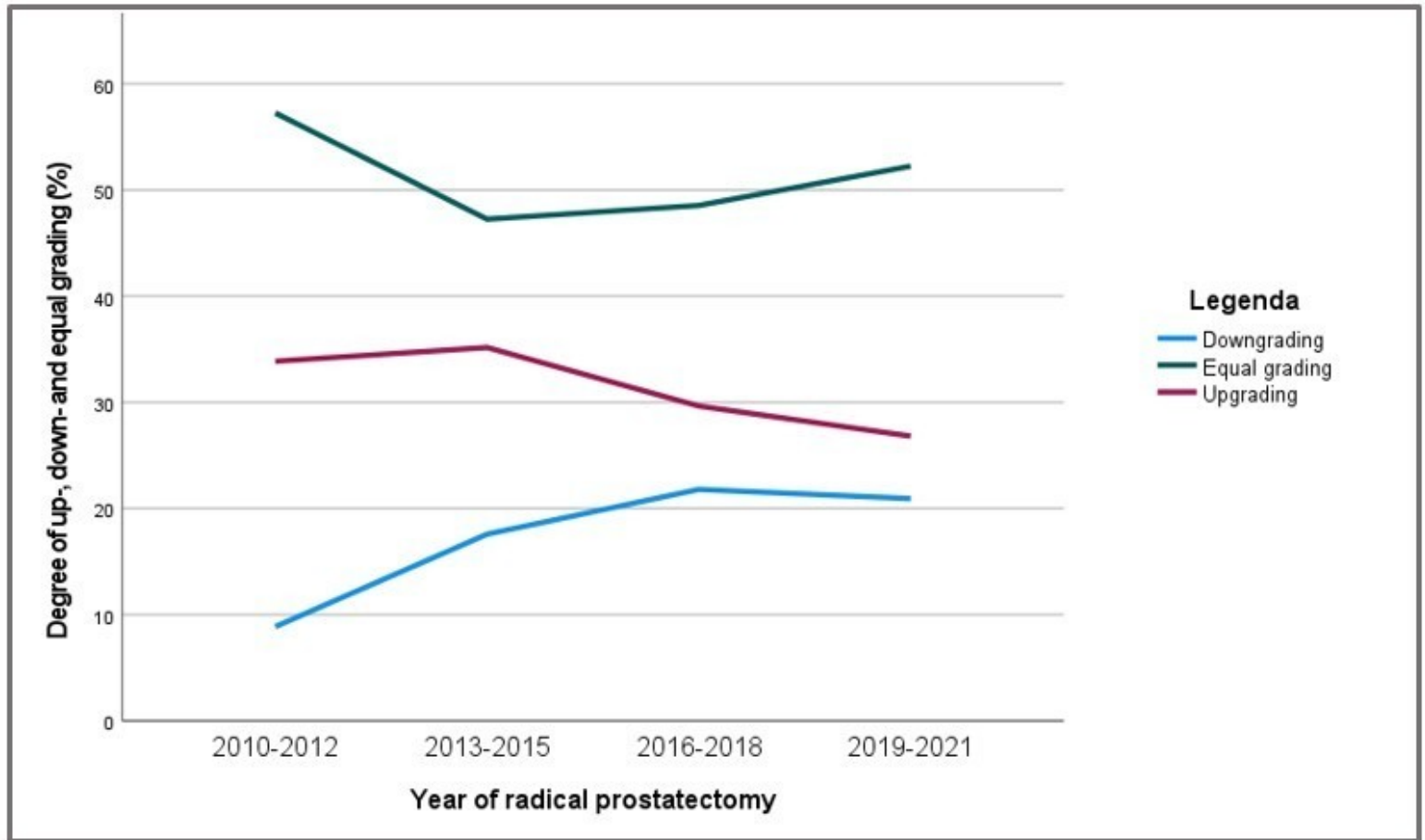


Figure 1. Graphical representation of the degree of up-, down- and equal grading of needle biopsy specimens over a 12-year timeframe.

Conclusions: The percentages of up- and downgraded needle biopsy specimens differ over time, with a trend being observed in which significantly more tumors are being downgraded and fewer being upgraded. This clear trend toward higher ISUP GG in needle biopsy may be partially explained by the introduction of pre-biopsy magnetic resonance imaging (MRI) and targeted needle biopsies in the diagnostic process. Given the importance of the ISUP GG, this trend should be taken into account to avoid future overdiagnosis and overtreatment.