COMMENTARY
Using MRI to predict post prostatectomy outcomes

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MRI continues to play an increasingly important role in the detection and management of prostate cancer. Studies such as PROMIS and PRECISION suggest that MRI can be used to improve the detection of clinically significant prostate cancer while minimizing the number of cores needed for detection and may spare some men the need for biopsy.[1,2] Current AUA/ASTRO/SUO guidelines for localized prostate cancer state mpMRI of the prostate should be considered by clinicians as it is a promising diagnostic test that may improve both selection of patients for and monitoring of patients on active surveillance.[3] MRI has also been shown to be the best imaging modality to date to determine the local extent of prostate cancer.

MRI has been shown to be useful in predicting numerous postoperative radical prostatectomy (RP) parameters such as continence, potency, and positive margins. A greater preoperative membranous urethral length as measured by MRI is significantly and positively associated with a return to continence in men following RP.[4] The neurovascular bundle area measured by MRI in the posterolateral region of the prostate is an independent factor for predicting potency recovery.[5] Park et al developed an MRI-based scoring system to estimate the risk of positive surgical margin after RP. Tumor with contact to the apex or posterolateral aspect, tumor contact length to capsule, and higher PI-RADS category were independent predictors for the presence of a positive margin as well as margin length and higher Gleason grade at the margin.[6]

In this study,[7] anteroposterior pelvic outlet and pelvic depth as measured by MRI were shown to correlate with positive surgical margins. As one would expect, tumor stage was also significantly correlated. Some well recognized variables associated with positive margins, such as PSA and Grade Group, did not correlate. This may be due to the multivariate nature of the analysis.

It is reasonable to believe that certain anatomical factors may affect the ease of surgical exposure during prostatectomy and impact margin rates. It is easy to envision that anteroposterior pelvic outlet and pelvic depth as measured by MRI may be associated with access to the prostate, particularly at the apex, which many series have shown to be a common site for positive margins. The apex of the prostate contains the least amount of capsule, and both benign and cancerous tissue can become admixed with skeletal muscle at this location. The posterolateral margin of the prostate is the second most common location of positive margins, likely due to nerve sparing attempts.[8]

The ability to accurately predict positive surgical margins at prostatectomy might affect the treatment choice for some men with localized prostate cancer. As positive margins are associated with biochemical recurrence, the ability to predict positive margins preoperatively could potentially be added to algorithms to predict postoperative biochemical recurrence. Clearly the days of simply utilizing PSA, Gleason score, and a DRE for clinical staging to predict surgical outcomes are well behind us as advanced imaging modalities (MRI, PSMA PET scans, etc.) and genomic profiling play an increasingly important, and constantly evolving, role. □

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