Role of mpMRI Structured Report in Preoperative Detection of Men at Risk for Positive Apical Surgical Margins During Radical Prostatectomy

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Disclosures

None
Positive Surgical Margins (PSMs) are an undesirable surgical outcome.

mpMRI has been used for detection and staging, and to a lesser extent, surgical planning.

Apical Lesions are at greater risk for PSMs due to location.
• Inclusion of a ‘flag’ in our structured report to increase awareness

This lesion extends to the apical most aspect of the prostate near the expected location of the vesicourethral anastomosis
67-year-old man, PSA 8, pre-biopsy MRI

Axial T2WI

Coronal T2WI

PIRADS 4 in the apical TZ

Biopsy: Grade Group 2 PCa

Note the lesion location in the apical most prostate, encircling the distal prostatic urethra
67-year-old man, PSA 8, pre-biopsy MRI

FINAL PATHOLOGIC DIAGNOSIS
A. Left pelvic lymph nodes, dissection:
   -Seven lymph nodes, negative for tumor (0/7)
B. Right pelvic lymph nodes, dissection:
   -Fourteen lymph nodes, negative for tumor (0/14)
C. Prostate, robotic-assisted prostatectomy:
   -Prostatic adenocarcinoma, Gleason score 3+4=7 (Grade Group 2)
   -pT2, N0, MX, see attached CAP template
   -No extraprostatic extension or lymphovascular invasion identified
   -Tumor extends to right apical margin

Despite being an organ-confined, not so large lesion, surgical margins were positive
Objective

• To determine and compare the incidence of PSM in men with vs without lesions flagged as at-risk for apical PSM during prospective mpMRI interpretation
Materials and Methods

• **Design**: Single-center, retrospective review of prospectively generated data

• **Eligibility**: Treatment-naïve men with abnormal 3T mpMRI (PIRADS v2 score ≥3) between Jan/2016-Dec/2018 followed by RP within 6mo from MRI

• **Reference standard**: SM status (negative, positive) on whole-mount histopathology

• **Logistic regression with propensity score-weighting to compare the rate of PSM** in the two groups (flagged vs non-flagged men) adjusted for confounding variables
Results

- n = 428 men

- A higher proportion of PSM was noted in flagged (56% [51/91]) compared to non-flagged apical lesions (31%, 41/133; OR: 2.318, 95% CI: 1.571-3.420)

- A higher proportion of PSMs was also noted in flagged apical lesions compared to non-flagged lesions when all margins (oPSM) in the latter group were taken into consideration (31% [105/337]; OR: 1.978, 95% CI: 1.496-2.616)
Results

Significantly higher incidence of PSM in flagged cases

<table>
<thead>
<tr>
<th>Margin</th>
<th>Negative n</th>
<th>Negative %</th>
<th>Non-flagged n</th>
<th>Non-flagged %</th>
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</tbody>
</table>
Results

• Other variables associated with higher PSM rate: PSA, PSA density, lesion size, apical location, PIRADS score, grade group and pT stage
Limitations

• **Retrospective, single-center** study (however used prospective data)

• **Subjective** nature of the flag (need for assessing inter-reader agreement)

• Did not assess if surgeons used flag to modify surgical approach (lack of supporting data at the time of implementation)
Conclusion

• **Standardized language** in the structured reports for mpMRI of the prostate helps the preoperative identification of patients at risk for apical positive surgical margins

• This should facilitate appropriate **patient counseling** and optimize **treatment decisions**