INTRODUCTION

High-resolution micro-ultrasound is a novel 29 MHz ultrasound modality enabling real-time targeted prostate biopsies. This increase in resolution allows visualization of tissue characteristics which can be correlated with clinically-significant indications. Micro-ultrasound technology has been shown to be more sensitive to detect prostate cancer than conventional ultrasound and a viable, cost-effective clinical alternative to MRI for guiding and targeting prostate biopsies.

OBJECTIVE

This work reviews a small case series of subjects who underwent radical prostatectomy (RP) following micro-ultrasound targeted biopsy and seeks to determine whether the micro-ultrasound images were predictive of extra-prostatic extension (EPE).

RESULTS:

- In 15/18 prostate lobes with EPE, interruption of the posterior capsule or a hypoechoic halo surrounding the prostate along anterior and/or apical border was observed in the lobe with EPE.
- In 10/11 lobes with a hypoechoic halo, the halo was either thick, irregular or both.
- Upon examination of prostate lobes with benign findings, suspicious imaging findings were absent in 13/14.

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Specificity</th>
<th>NPV</th>
<th>PPV</th>
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<tbody>
<tr>
<td>15/18 (83%)</td>
<td>13/14 (93%)</td>
<td>13/16 (81%)</td>
<td>15/16 (94%)</td>
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Table 1: Sensitivity and specificity for observed posterior capsule interruption or thick/hypoechoic anterior/apical halo in 32 prostate lobes from subjects who underwent micro-ultrasound-guided prostate biopsy followed by radical prostatectomy. While the amount of data is limited, a high positive predictive value is observed, suggesting that this feature may be useful for presurgical planning.

CONCLUSIONS:

- Micro-ultrasound imaging may be able to predict the presence of EPE.
- A “thick/irregular hypoechoic halo” on the anterior and/or apical prostate capsule appears to be increasingly correlated to the presence of EPE.
- More clinical data is required to corroborate this finding and more detailed examination of pathology specimens will be required to better interpret its meaning.

REFERENCES