Abstract

OBJECTIVE: To assess the efficacy of Light reflectance spectroscopy (LRS) to detect positive surgical margins (PSM) on ex vivo radical prostatectomy specimens.

MATERIALS AND METHODS: A prospective evaluation of ex vivo prostate specimens using LRS was performed at a single institution from June 2013 to September 2014. LRS measurements were performed on selected sites on prostate capsule, marked with ink, and correlated with pathologic analysis. Significant features on LRS curves differentiating malignant tissue from benign tissue were determined using a forward sequential selection algorithm. A logistic regression model was built and randomized cross-validation was performed. The sensitivity, specificity, accuracy, NPV, PPV, and area under the receiver operating characteristic curve (AUC) for LRS predicting PSM were calculated.

RESULTS: Fifty prostate specimens were evaluated using LRS. LRS sensitivity for Gleason ≥7 PSM was 91.3%, specificity 92.8%, accuracy 92.5%, PPV 73.2%, NPV 99.4%, and AUC = 0.960. LRS sensitivity for Gleason ≥6 PSM was 65.5%, specificity 88.1%, accuracy 83.3%, PPV 66.2%, NPV 90.7%, and AUC = 0.858.

CONCLUSIONS: LRS can reliably detect positive surgical margins for Gleason 7 or above prostate cancer in ex vivo radical prostatectomy specimens. This article is protected by copyright. All rights reserved.

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