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BxChip™ Clinical Tissue Array Increases Cancer Detection Rate & Amount of Tissue Available for Pathologist Review

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Introduction: Due to significant cuts in reimbursement, more efficient histology techniques are needed to maintain the economic viability of the histology laboratory. There is also an increasing need to maximize tissue preservation for ancillary testing.

The BxChip™ (Leavitt Medical Inc. Patent Pending) is a clinical tissue array made of an artificial tissue-like material which easily receives and holds multiple tissue cores. Encasing numerous needle cores, enables the arrayed samples to be processed, embedded and sectioned as though they were a single standard tissue. Colored dividers between each core allows the pathologist to distinguish different anatomic sites, which providing orientation of each core.

The purpose of this study is to compare the overall prostate cancer detection rates and the average amount of tissue present (average area and core-length) on normal slides versus those made with BxChip clinical tissue arrays.

Materials and Methods: 267 consecutive twelve pack prostate needle biopsies were analyzed during a 5-week period. Approximately half of the cases were processed and embedded using the BxChip clinical tissue array and the other cases were done with conventional blocks and slides. The cases were matched according to the urologist performing the procedure in order to account for biopsy technique. Slide tissue measurements were performed using a Leica SCN 400 scanner, and images were stored, sorted and measured using DIH software (Leica).

Results: Comparing traditional sectioning to CHIP based sectioning the cross-sectional surface area of tissue on the glass slide available for review and length of biopsy tissue on the slide increased from an average of 4.8 mm² and 10.7 mm to 5.5 mm² and 14.1 mm respectively. This was significant at a level of $p < 0.0001$. The cancer detection rate increased from 49.5% to 58.8% comparing traditional sectioning to Chip based sectioning $p < 0.0001$. Current diagnostic molecular techniques have been validated on this platform.

Conclusions: Superior prostate biopsy performance is achieved by utilizing the BxChip clinical tissue arrays. Additionally, this comes with tremendous cost savings to the laboratory.

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