

# CASE STUDY

## PROSTATE HISTOSCANNING™

### INTRODUCTION

TRUS biopsy schemes generally deploy needle placements in the standard sextant scheme and laterally towards the right and left of the prostate peripheral zone<sup>(1,2)</sup>. Visualisation of differentiated tissue, suspected to be prostate cancer, using Prostate HistoScanning™ may help identify other areas of the prostate, more difficult to biopsy, that may require further investigation.

### PATIENT HISTORY

A 70 year old man presented at Erasmus University Medical Centre, Rotterdam (NL) in July 2000, following GP referral. Prior to referral the patient had had a steadily rising PSA over 12 months (4.6µg/l to 9.5µg/l). DRE was reported as "benign". The patient chose regular monitoring and declined a TRUS biopsy. The patient continued to be monitored for a further 10 years by DRE and PSA (Figure 3). By June 2010 the patient had a prostate volume of 50cc and PSA of 17µg/l. A palpable mass was reported in the midline at DRE, thought to be a calcification. The patient consented to Prostate HistoScanning™ and a TRUS biopsy.

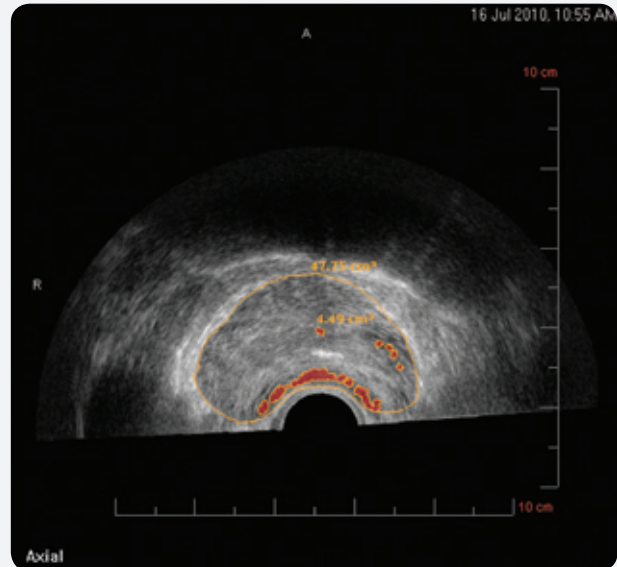


FIGURE 1: Prostate HistoScanning™ Axial View.

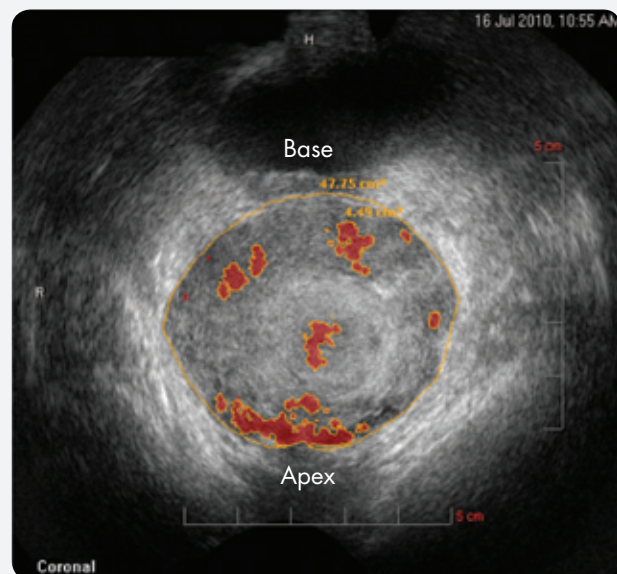


FIGURE 2: Prostate HistoScanning™ Coronal View.

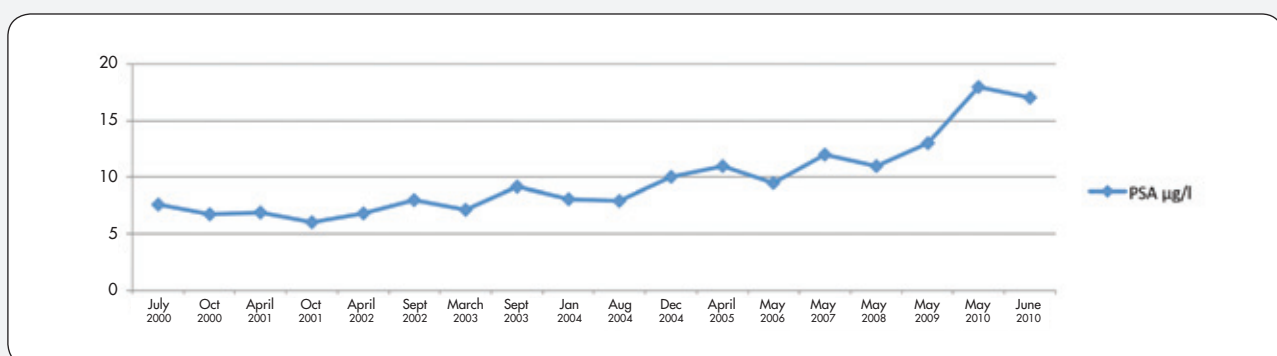


FIGURE 3: Patient PSA Values 2000-2010.

## RESULTS AND DISCUSSION

The Prostate HistoScanning™ analysis showed a suspicious volume of 4.49cc that extended from the base, through the midline to the apex (Figs 1, 2).

The highest density of suspicious tissue (intense red band close to the rectal wall on the axial projection (Figure 1) was in the midline. The DRE had reported a likely calcification in this area. The clinic undertook its standard biopsy scheme (S1-S10) and, using the Prostate HistoScanning™ analysis, planned a further 4 biopsies (H11-H14) directed towards the midline (Figure 4). HistoScanning™ reports and projections (Figures 5, 6A, 6B and 6C), provided further insight and information.

Pathology reported positive cores in S1, S6, S7, H12, H13, H14 (Figures 7A, 7B). All positive cores were >5mm in length. All were Gleason score 3+4=7.

The patient was diagnosed with localised adenocarcinoma of the prostate.

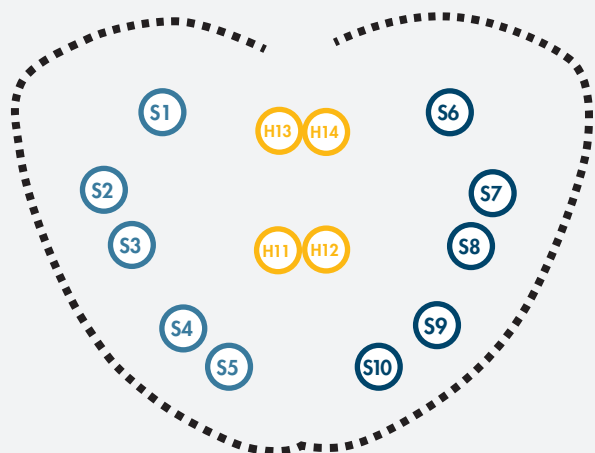


FIGURE 4: Standard Biopsy Scheme Needle Placements for 40 to 60cc prostates (S1: S10). Four Prostate HistoScanning™ directed biopsies (H11: H14) were added.

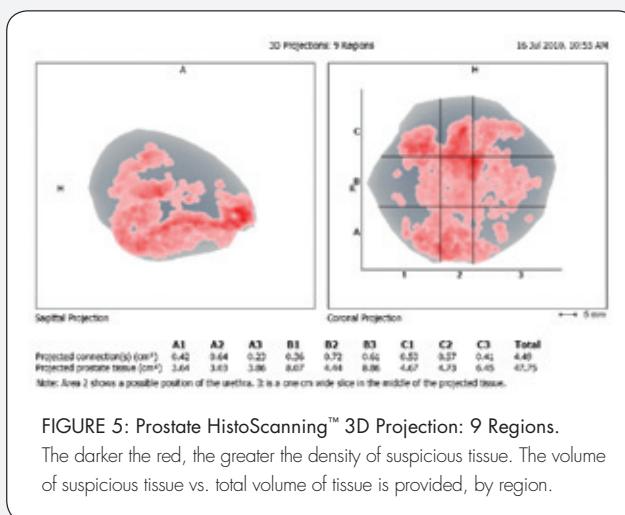


FIGURE 5: Prostate HistoScanning™ 3D Projection: 9 Regions. The darker the red, the greater the density of suspicious tissue. The volume of suspicious tissue vs. total volume of tissue is provided, by region.

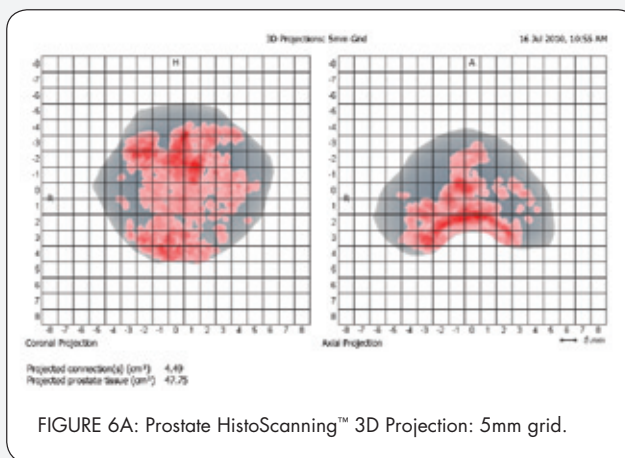


FIGURE 6A: Prostate HistoScanning™ 3D Projection: 5mm grid.

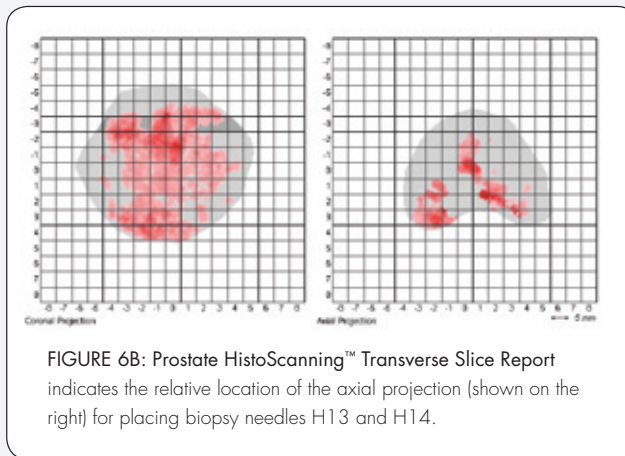


FIGURE 6B: Prostate HistoScanning™ Transverse Slice Report indicates the relative location of the axial projection (shown on the right) for placing biopsy needles H13 and H14.

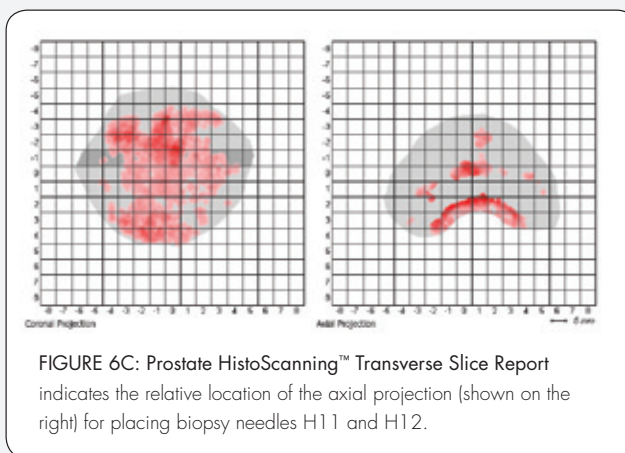


FIGURE 6C: Prostate HistoScanning™ Transverse Slice Report indicates the relative location of the axial projection (shown on the right) for placing biopsy needles H11 and H12.

## BIOPSY RESULTS AND PROSTATE HISTOSCANNING™ IMAGES

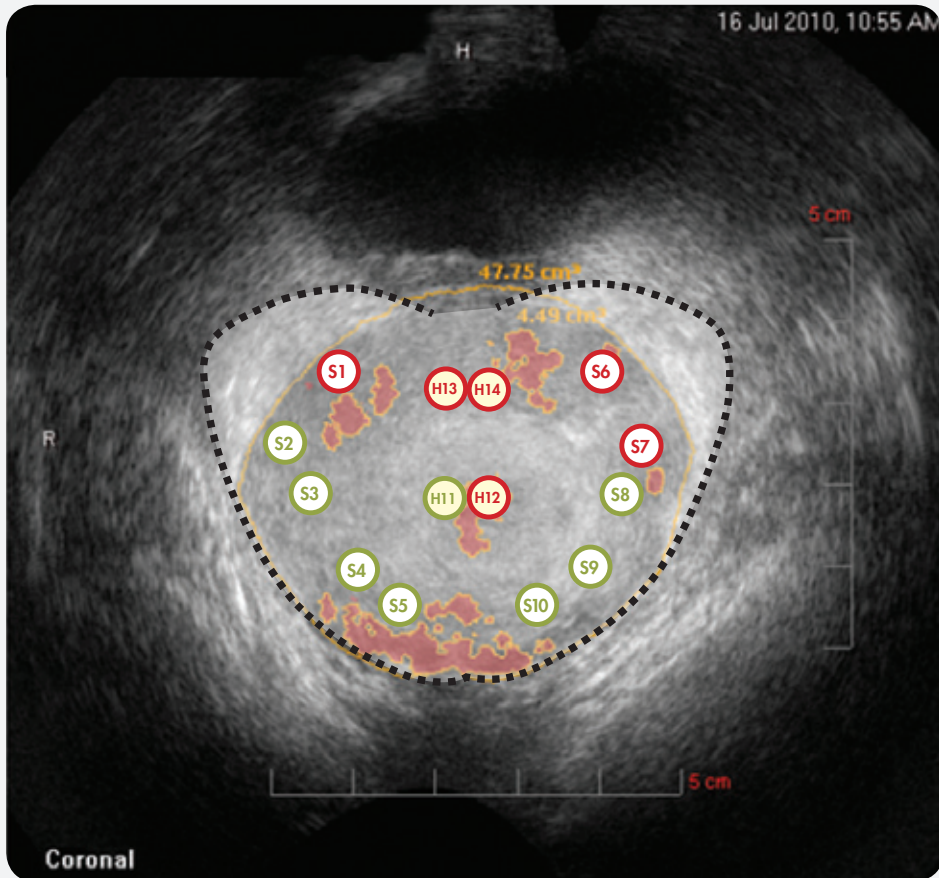


FIGURE 7A: HistoScanning™ Coronal view with an overlay of biopsy results.  
LEGEND: Green = negative biopsy core; red = positive biopsy core.

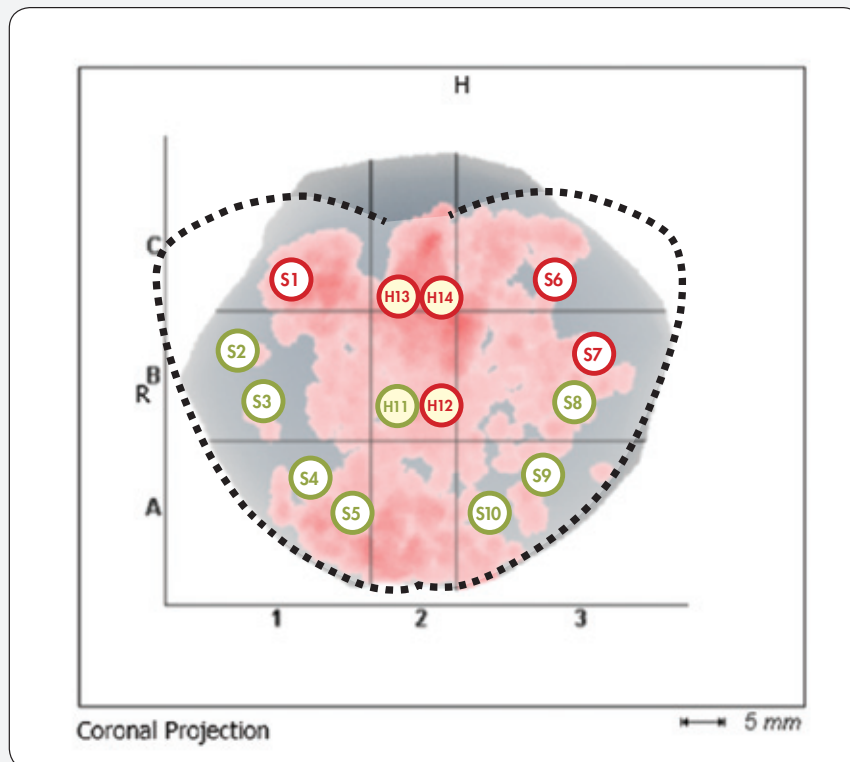


FIGURE 7B: HistoScanning™ 3D Projection: 9 Regions overlaid with biopsy results.

## SUMMARY

Prostate HistoScanning™ visualised suspicious tissue in the midline of the prostate, a zone more difficult to target and not usually sampled in standard TRUS biopsy needle placement schemes and may help increase the positive biopsy yield.

The standard series of HistoScanning™ projections and reports provide information on the localisation and volume of tissue per sector and are helpful in planning biopsy needle placements.

## References

1. EICHLER (K.), HEMPEL (S.), WILBY (J.), MYERS (L.), BACHMANN (L.M.), KLEIJNEN (J.). 2006. Diagnostic value of systematic biopsy methods in the investigation of prostate cancer: a systematic review. Published in the Journal of Urology. Vol. 175, Issue 5 (May), PP.1605-1612.
2. SCATTONI (V.), ZLOTTA (A.R.), NAVA (L.), ROSCIGNO (M.), MONTORSI (F.), RIGATTI (P.). 2002. Prostatic transrectal ultrasound (TRUS): Guided biopsy schemes and TRUS prostatic lesion-guided biopsies. Published in European Urology Supplements. Vol. 1, Issue 6 (September), PP.28-34.

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Prostate HistoScanning™ is an application of HistoScanning™ Tissue Characterisation, an ultrasound based imaging modality.

HistoScanning™ is CE Marked under the European Medical Device Directive (MDD) 93/42/EEC as amended by 2007/47/EC since 2008 and is approved by Health Canada since 2009.

HistoScanning™ is not yet commercially available in the United States of America. A FDA 510(K) submission is in process.



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