ROBOTIC ASSISTED SIMPLE PROSTATECTOMY IS EFFECTIVE FOR MANAGING SEVERE LUTS IN PATIENTS WITH LARGE PROSTATES
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(Presentation to be made by Dr. Auge)

Introduction: Open simple prostatectomy is known to be safe and effective for managing severe lower urinary tracts symptoms (LUTS) or urinary retention in men with very large obstructive prostates. The robotic-assisted laparoscopic approach has been demonstrated in several small series. We sought to assess feasibility of performing robotic simple prostatectomies in the community setting.

Methods: A retrospective review of all patients undergoing robotic-assisted laparoscopic simple prostatectomy from June 2012 to November 2013 was performed. Patients identified with severe LUTS or urinary retention found to have prostate size estimated to be greater than 80cc by digital rectal exam or transrectal ultrasound and have failed maximal medical management were offered surgical therapy. Patient demographics, type of procedure, operative times, EBL and changes in Hb were recorded. Early return to normal urination was assessed.

Results: Twenty-one men with an average age of 72 years underwent either robotic simple retropubic (1) or suprapubic prostatectomy (20). 11 men were in complete retention (2 presenting with gross hematuria), while the average AUA symptom score for the remaining 5 men was 21. Two had concomitant bladder stones and one was found to have a 5cm bladder diverticulum. Mean preop prostate size was 95 gm as estimated by DRE or TRUS volume. Average operative time was 145 minutes, with an EBL of 214cc (50-500cc). No transfusions were required despite 2 patients returning within the first week with clot retention. Continuous bladder irrigation was performed in all patients immediately postop with the exception of 1 patient early in the series, and CBI was discontinued on POD#1 in all. Catheters were maintained for 10 days. 11/11 men were voiding spontaneously upon foley removal, with PVRs less than 50cc. Average hospital stay was 3.7 days (1.9 days if the patient with bowel injury is eliminated). Complications included one small bowel injury requiring reoperation and 2 patients with clot retention (one found to have a discrete arterial bleed from the 7 o’clock position on endoscopy).

Conclusions: Robotic-assisted laparoscopic simple prostatectomy is safe, effective, and mimics the open approach with less blood loss and shorter hospital stays compared to historical series.
TRENDS IN PSA UTILIZATION BY PRIMARY CARE PHYSICIANS: IMPACT OF THE USPSTF RECOMMENDATION
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(Presentation to be made by Dr. Amling)

Introduction and Objectives: The controversy surrounding the value of PSA screening for early detection of prostate cancer was stirred further by the USPSTF recommendation against PSA testing in May 2012. This recommendation was based in large part upon an analysis by the Pacific Northwest Evidence-based Practice Center at our institution, an academic medical center with a strong primary care focus. We assess trends in PSA utilization by primary care providers at our institution before and after the USPSTF recommendation against PSA screening.

Methods: Patients were identified utilizing our institutional electronic data warehouse. All were men over age 40 years seen as new patients at OSHU’s Family Medicine or Internal Medicine clinics over a six year period (1/2008 to 12/2013). Men with a history of prostate cancer were excluded from the analysis. PSA testing frequencies were compared before and after the 5/2012 USPSTF recommendation, and stratified according to patient age groups by decade (40-49, 50-59, 60-69 and ≥70 years). Differences in PSA testing frequencies before and after 5/2012 were tested for significance using the Pearson chi-squared test.

Results: A total of 12,345 men were seen as a new patient appointment over this period. A PSA test was ordered in conjunction with this visit in 1,464 (14%) men. Overall, 1241 (14%) received a PSA test before 5/2012 and 223 (7%) after this time (p<0.0001). While there was no significant difference in PSA testing frequency before and after 5/2012 in men aged 40-49 years (4.2% versus 4.4%) and over age 70 years (10.2% versus 9.3%), there were significant decreases in PSA utilization in men aged 50-59 years (19.2% versus 8.5%, p<0.0001) and 60-69 years (19.3% versus 7.7%, p<0.0001). Considering men aged 50-70 years as a group, testing frequency decreased from 19.3% before to 8.2% after the USPSTF recommendation (p<0.0001). BPH or LUTS was a noted diagnosis in 3.6% of new patients seen, yet only 36% with this diagnosis had a PSA obtained in conjunction with their visit.

Conclusion: PSA testing by primary care physicians has decreased significantly since the USPSTF recommendation against PSA screening in 2012. The most significant decreases in PSA utilization were seen in men aged 50-70 years, men who may be most likely to benefit from screening, while PSA testing remained the same in men over age 70 years. While a PSA test in men with BPH and LUTS was more likely, only a third of these patients were tested, suggesting underutilization of PSA in this symptomatic group of men.
IMPACT OF USPSTF RECOMMENDATIONS ON PROSTATE NEEDLE 
BIOPSIES AT VIRGINIA MASON

(Presentation to be made by Dr. Corman)

Purpose: In 2012 the U.S. Preventive Services Task Force (USPSTF) recommended against prostate-specific antigen (PSA)-based screening for prostate cancer (PCa) for men of any age. However, the AUA continues to support its careful use. We sought to determine whether the characteristics of patients undergoing initial prostate needle biopsies (PNBs) and the results of the biopsies themselves have changed following the release of the USPSTF guidelines.

Methods: Patient demographics and clinical parameters were reviewed using a prospective IRB-approved database of consecutive patients undergoing their first PNB at VM from 2000 to 2014. We compared patients seen before October 7, 2011 (when the USPSTF published draft recommendations) to those seen after May 21, 2012 (when the USPSTF published its final recommendation). Statistical tests were by Student’s t-test and Chi-square. PSA values were log-transformed for comparisons.

Results: A total of 2,569 patients were included, 2,083 of whom underwent PNB before the 2012 USPSTF recommendation (pre-USPSTF cohort) and 486 after (post-USPSTF cohort). Patients undergoing PNB after the recommendation were older (mean: 64.3 years vs. 63.3, p=0.02), had higher PSA levels (median 5.9 ng/ml vs. 4.9 ng/ml, p<0.0001), were more likely to be diagnosed with cancer (52%, 253/486, vs. 44%, 918/2083, RR=1.18, p=0.002), and significantly more likely to have high grade PCa (Gleason score 8-10) (12%, 56/485, vs. 7%, 155/2072, RR=1.54, p=0.005). We found similar results when we compared the post-USPSTF cohort to a pre-USPSTF cohort that included only the two years immediately prior the release of the draft guidelines (n=412). Post-USPSTF patients were older (62.8, p=0.003) and had higher PSA levels (5.0 ng/ml, p=0.001). While they were no longer more likely to be diagnosed with cancer, (50%, 205/412, RR=1.05, p=0.54), they remained more likely to have high grade PCa (8%, 32/411, RR=1.48, p=0.076) although this did not reach statistical significance.

Conclusions: In the short time since the publication of the USPSTF recommendation regarding PSA-based screening, patients undergoing PNB at our institution have a higher PSA and are older. When compared with the preceding decade, they are significantly more likely to be diagnosed with high grade PCa.
VALIDATION OF AN RNA CELL CYCLE PROGRESSION SCORE FOR PREDICTING PROSTATE CANCER DEATH IN A CONSERVATIVELY MANAGED NEEDLE BIOPSY COHORT

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(Presentation to be made by Dr. O’Shaughnessy)

Purpose: The natural history of prostate cancer is highly variable and difficult to predict accurately. Better markers are needed to guide management and avoid unnecessary treatment. We sought to validate the predictive value of a cell cycle progression (CCP) score and a pre-specified linear combination of the CCP score with standard clinical variables (CAPRA) to form a combined clinical cell cycle risk (CCR) score in order to predict prostate cancer death in a cohort of conservatively managed patients diagnosed by needle biopsy.

Methods: This was a retrospective cohort study of 585 men diagnosed by needle biopsy in the UK from 1990-2003 using UK cancer registry data supplemented by hospital records and histopathology review of diagnostic needle biopsies. The primary endpoint was prostate cancer death. Clinical variables consisted of centrally reviewed Gleason score, baseline PSA, age, clinical stage, and extent of disease. These were combined into a single predefined risk assessment (CAPRA) score.

Results: In univariate analysis, the CCP score hazard ratio (HR) was 2.08 ($P < 10^{-13}$) for a one unit change of the score and in a bivariate analysis including CAPRA, the CCP score HR was only marginally decreased (HR=1.76), and remained highly significant ($P < 10^{-6}$). The predefined CCR score combining CCP and CAPRA was highly predictive (HR = 2.17, $\chi^2 = 89.0, P < 10^{-20}$) and captured all available prognostic information. The predictive value of the CCP score was maintained for 10 years, and there was no significant interaction with other prognostic factors. CAPRA identified 80 men (13.7%) in the low risk group (0-2) and they had a 10y prostate cancer mortality of 4.3%. CCR indicated that 19 (3.2%) of these men had a higher risk, but identified a further 31 (5.3%) men with CAPRA > 2, but with a risk < 4.3% using the combined score.

Conclusions: The CCP score provides substantially more significant pre-treatment prognostic information than available from clinical variables and is useful for determining which patients can be safely managed by a conservative policy avoiding radical treatment.

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PERFORMANCE OF PROGNOSTIC NOMOGRAMS FOR PROSTATE CANCER MAY BE IMPROVED BY INCLUDING BODY MASS INDEX AND GLAND SIZE

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Introduction and methods: Prostate cancer outcomes are challenging to predict given the heterogeneous nature of this disease process. Nomograms are routinely utilized as a means to more accurately project a patient’s course. Body mass index (BMI) and prostate gland size are two readily available patient characteristics that are not employed in current models. We hypothesize that inclusion of this additional patient data will more accurately predict the presence of aggressive prostate cancer.

Methods: The Center for Prostate Cancer Research (CPDR) database from 1989 to 2011 was queried for patients that underwent radical prostatectomy with BMI and gland size data available. 2,961 patients met inclusion criteria. 772 were identified as having aggressive prostate cancer, which was defined as pT3 or greater, positive lymph nodes, Gleason 7 with positive surgical margins, or Gleason > 8 with negative margins. Multivariate logistic regression models were constructed using age, prostate specific antigen (PSA), number of positive biopsy cores, race, clinical stage, and biopsy Gleason score. BMI and gland size were included and excluded as variables in the models for comparison and receiver operator characteristic curves were generated to test the performance of these models with and without the inclusion of BMI and gland size.

Results: On multivariate analysis predicting aggressive prostate cancer, BMI (OR=1.029, p=0.0246) and prostate gland size (OR=0.984, p<0.0001) were associated with risk of aggressive disease, with a protective effect for gland size. Receiver operating characteristic curves with calculated area under the curve (AUC) showed improved performance of the model when including BMI, (0.7282 vs 0.7129, p=0.003), prostate size (0.7397 vs 0.7129, p<0.0001), and both (0.7396 vs 0.7129, p<0.0001 – See Figure).

Conclusions: BMI and gland size are readily available clinical variables in our patient population. Inclusion of these characteristics can improve the predictive accuracy of prostate cancer nomograms and may assist with treatment decisions and risk stratification following prostatectomy.

Source of Funding: None
THE 4KSCORE TEST AS A PREDICTOR OF HIGH-GRADE PROSTATE CANCER PRIOR TO BIOPSY
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(Presentation to be made by Dr. Zappala)

Introduction and Objectives: Prostate Specific Antigen (PSA) has modest specificity and most men with elevated PSA do not have prostate cancer (PCa). Hundreds of thousands of negative prostate biopsy (Bx) procedures are conducted each year in the United States (US), and about half of the ~250,000 positive Bx are Gleason Score (GS) = 6. A four kallikrein assay panel of total, free and intact PSA, and human Kallikrein 2 (hK2) combined in an algorithm with age, digital rectal exam (DRE) and prior biopsy status (4Kscore™ test) has been adapted from previous European studies, where the test was found to be an accurate predictor of the result of Bx, and in particular, high-grade disease of GS ≥7. The goal is to replicate the European performance in an independent, prospective, blinded study in the US.

Methods: The study enrolled 1012 men from October 2013 to April 2014 at 26 US Urology centers. Enrollment was open to all men scheduled for a Prostate Biopsy. After phlebotomy, a transrectal ultrasound Bx (≥ 10 cores) was performed. The four assays were performed at OPKO Lab, Nashville, TN, a CLIA-certified laboratory. Histopathology was conducted by the established practice at each site. Independent biostatisticians evaluated the laboratory and Bx data.

Results: High-grade prostate cancer was diagnosed in 231 (23%) of the 1012 men. The 4Kscore test provided a very high degree of discrimination (AUC = 0.82) compared to a clinical algorithm built on PSA and clinical data. Calibration of the 4Kscore algorithm was near perfect compared to its European version. For one illustrative cut point (9%), the 4Kscore test would have reduced the number of Bx’s by 43%, with a Negative Predictive Value (NPV) of 94%, and a delay in diagnosis of only 2.4%. Decision analysis demonstrated that clinical decision-making would be improved by the use of the 4Kscore test.

Conclusions: The 4Kscore test, using fresh samples and blood-based biomarkers, was evaluated in a commercial laboratory, and yields superior performance compared with a clinical model. The 4Kscore test reports a personalized risk of finding high-grade cancer that can inform clinically relevant, shared decision-making between urologist and patient. The prostate biopsy reduction rate was 43% with delayed diagnosis of high-grade cancer in only a small number.

Source of Funding: Funding for the study was provided by OPKO Diagnostics, LLC
ACTIVE SURVEILLANCE FOR LOW RISK PROSTATE CANCER: IS YOUR UROLOGIST INFLUENTIAL?
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(Presentation to be made by Dr. William Chu)

Introduction and Objectives: Concern regarding overtreatment of low risk prostate cancer has made active surveillance (AS) an increasingly favorable option. The decision to initiate an AS protocol is complex and is dependent on multiple patient and provider factors. The objective of this study was to evaluate the impact of the urologist’s experience in selecting AS versus immediate treatment (IT) in a large, diverse, integrated managed healthcare system.

Methods: Men with low-risk prostate cancer were enrolled from March 2011 to October 2013 at 13 medical centers in the Kaiser Permanente Southern California Region. We included men with cT1-T2a stage prostate cancer, prostate-specific antigen (PSA) <10 ng/ml, Gleason grade ≤6, fewer than 3 biopsy cores positive, and ≤50% cancer in any core. The AS cohort was defined as men who had not undergone immediate therapy (surgery, radiation, other) within six months after diagnosis. The urologist’s experience (age, number of years in practice, number of robotic surgeries performed, and fellowship training in oncology and/or robotics) was then compared between AS and IT cohorts using Chi-squared and Wilcoxon Rank-Sum tests. Univariate and multivariate logistic regression was used to estimate the impact of clinical, patient, and provider characteristics on treatment choice.

Results: A total of 4754 men were diagnosed with prostate cancer during the study period. 713 men satisfied inclusion criteria and were enrolled in the study; 433 (60.7%) and 280 (39.3%) chose AS and IT respectively. A total of 87 urologists were included in the study. Univariate and multivariate logistic regression analysis revealed no differences in urologist’s age or years in practice between AS and IT groups. Patients managed by a Urologist with ≥50 prior robotic operations were greater than seven times more likely to choose IT (OR 0.13, 95% CI 0.07-0.23). Conversely, urologists with a fellowship in oncology and/or robotics tended to favor AS (OR 1.64, 95% CI 0.95-2.81).

Conclusions: In addition to patient factors, the decision to pursue AS for prostate cancer may be influenced by the urologist. AS is negatively influenced by urologists with higher prostatectomy surgical volumes. On the contrary, urologists with formal fellowship in robotics/oncology favored AS. While there are numerous plausible reasons for this finding, we believe our capitated managed care population minimizes the financial bias that may be found in a pay-for-service model.

Source of Funding: Intuitive Surgical, Inc.
Purpose: In the contemporary PSA era, more men are diagnosed with lower risk prostate cancer, for whom active surveillance (AS) may delay or avoid treatment with its possible adverse HRQOL consequences, without compromising cancer control and long-term outcomes. However, more than a third of patients who opt for AS experience disease progression on repeat biopsies usually by grade. Although most recommend active treatment in such cases, some patients elected to continue on AS. We describe the natural history of those who continued on AS despite being upgraded on serial biopsies.

Patients and Methods: 1075 men have been managed with AS, of whom 810 have consented to participate in research. The study cohort included men diagnosed with Gleason grade 3+3 or lower, T1C/T2 disease, ≤ 33% positive biopsy cores (minimum 6 cores sampled), ≤ 50% of a single core. Patients undergo quarterly PSA testing, semi-annual TRUS and a repeat biopsy every 12-24 months. Biopsy progression was defined as occurrence of any of the following: upgrade of Gleason score to 3+4 or higher, an increase in volume of cancer to > 33% positive cores, or cancer involving >50% of a single core.

Results: Among men on AS, 642 were diagnosed with Gleason grade 3+3 or lower of whom 228 experienced disease progression at a surveillance biopsy. Median duration of overall follow up was 56 months (IQR 35-88). Median time to progression on surveillance biopsy was 20 months (IQR 13-33). Following progression, 125 (55%) underwent active treatment within median 4 months (IQR 2-5), 69 (30%) patients continued AS, and 34 (15%) had no further follow up reported to date. Among men who continued on AS and underwent biopsy, 39% were downgraded, 29% had no change in grade or volume, and 32% had further evidence of progression by grade and/or volume.

Conclusion: In the cohort described, most of the patients who chose to continue on AS despite progression had stable or less disease on further biopsies. It is still unclear which patients may continue on AS, and further tools, such as genetic and molecular markers, may help to identify the ideal candidates for AS despite adverse grade and/or volume of disease.

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TARGETED ANTIMICROBIAL PROPHYLAXIS FOR PROSTATE BIOPSY USING RECTAL SWAB CULTURES IN A VETERANS ADMINISTRATION POPULATION

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(Presentation to be made by Dr. Summers)

**Purpose:** As recently described by other studies, we too noted an increase in infectious complications after prostate biopsy, especially in patients harboring fluoroquinolone (FQ) resistant organisms. Via rectal swab cultures we sought to target antimicrobial prophylaxis for VA patients undergoing prostate biopsy and thereby reduce the infectious complications.

**Methods:** Patients from June 2013 to February 2014 were enrolled in a prospective study following informed consent. All patients who were scheduled to undergo biopsy underwent a rectal culture 1 to 4 weeks prior to their anticipated biopsy. FQ monotherapy was instituted for patients with negative cultures, while cultures positive for FQ resistance received prophylaxis based on individual susceptibility results. Where possible we followed AUA guidelines for antibiotic selection. Prospectively we collected patient characteristics including those identified to portend increased risk for infection: diabetes, immunosuppression, prior antibiotic use within the previous six months, healthcare employment, and previous prostate biopsy. Sepsis rates and FQ resistance within this group were compared to historical control data from 2006 to April 2014 using Monte Carlo simulation versions of the Armitage trend and Fisher’s exact tests.

**Results:** 124 patients were enrolled in the study, and 109 went on to receive a prostate biopsy. Mean age was 65 years, mean BMI 29.6, and a median prostate size of 50.4 grams. The median PSA was 5.5 and almost half, 49.6% (61) had undergone a previous biopsy. 8% (9) of patients had a positive urine culture in the last 12 months. 46% (49) were found to have prostate cancer on biopsy, with most, 59% (27), identified as having Gleason 3+3 disease. 31% had a Charleston Comorbidity Score of 0, but values ranged as high as 10. 14% (17) of patients swabbed had FQ resistance. There was no statistically significant difference in demographics between patients with FQ resistance and those without. 2 patients developed a complication following biopsy, with one patient requiring inpatient admission for sepsis. Interestingly, however, he did not have a FQ resistant pathogen. When these data were compared to historical controls (n=2759) from 2006 to 2013, there was a trend toward more infectious complications prior to our intervention (1.8-4.0% annually versus 1.6% post-intervention), but it was not statistically significant (p=0.20). There was a statistically significant rise in FQ resistance over time (p<0.001). Additionally, there was a decreasing trend in the volume of prostate biopsies performed, with 488 done at the peak in 2009 and 259 done in 2012.

**Conclusions:** We found high rates of FQ resistance on rectal swab screening. Implementing a rectal swab culture appears to have reduced our infection complication rates, but more patients are being enrolled to provide additional power for the study. Targeted prophylaxis supports antibiotic stewardship and has allowed us to continue to use FQs in 86% of our patients.
REDUCING INFECTIONS FOLLOWING PROSTATE NEEDLE BIOPSY AT VIRGINIA MASON


(Presentation to be made by Dr. Corman)

Purpose: The AUA and Center for Medicare and Medicaid Surgical Care Improvement Project (SCIP) recommend antibiotic prophylaxis prior to prostate needle biopsy (PNB). In response to rising bacterial resistance to fluoroquinolones, we expanded our PNB prophylactic coverage to include a secondary antibiotic and instituted a formal institutional policy in 2011. Here we evaluate whether administration of an additional antibiotic is associated with reduced risk of post-procedural infection.

Materials and Methods:
Infection risk was compared following administration of one (single) or two (dual) prophylactic antibiotics for PNB in an observational study. Patients received antibiotic prophylaxis of fluoroquinolone (Ciprofloxacin) alone, Ciprofloxacin plus a 3rd generation cephalosporin (Ceftriaxone), or, in the case of penicillin allergy, Ciprofloxacin plus an aminoglycoside (Gentamicin). They did not receive a mechanical bowel prep or enema. Urine cultures and blood cultures were obtained following clinical presentation: fever, dysuria, urinary retention, suprapubic pain. Infection risk was compared by generalized estimating equations with a log link.

Results:
Infection outcomes and antibiotic exposures were recorded for 1,118 procedures performed on 986 patients by five providers between 2001 and 2013. The rate of infection was significantly lower following the policy change (4.1%, 18/439, vs. 1.8%, 12/679; RR=0.43; p=0.030), when use of the dual therapy protocol increased from 33.5% to 100%. Across dates, infection risk on dual therapy was significantly lower than on single therapy (1.8%, 15/826, vs. 5.1%, 15/292, respectively; RR=0.35; p=0.008). Importantly, the addition of Ceftriaxone (1.1%, 8/707, RR=0.21, p=0.006), but not Gentamicin (6.3%, 7/104, RR=1.23, p=0.67), was associated with reduced infection risk.

Conclusions:
We were able to combat the rise in fluoroquinolone resistance seen at our own institution by administering fluoroquinolone and cephalosporin in combination prior to PNB. Unfortunately, patients with a reported penicillin allergy remain at an increased risk of infection. Given that reactions to 3rd generation cephalosporins occur less frequently than to 1st generation options, the potential benefits of Ceftriaxone may exceed the risks in patients with a history of penicillin allergy.
MULTI-PARAMETRIC MRI ENHANCES DETECTION OF SIGNIFICANT TUMOR IN PATIENTS ON ACTIVE SURVEILLANCE FOR PROSTATE CANCER

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(Presentation to be made by Dr. Goldenberg)

Introduction and Objectives: A principal limitation of active surveillance (AS) for the management of lower risk prostate cancer (CaP) is undersampling of higher risk tumors, which may be located outside the usual template of a transrectal ultrasound guided biopsy (TRUSBx). Multiparametric MRI of the prostate (mpMRI-P) offers a method to detect these missed lesions, and fusion biopsy enables sampling of them. Here we investigated the utility of mpMRI-P in patients on AS.

Methods: We reviewed the charts of 815 patients on AS for localized CaP at the Vancouver Prostate Centre. Of these patients 110 had a mpMRI-P prior to repeat TRUSBx, and selected patients underwent MRI-TRUS fusion biopsy based on the mpMRI-P findings, in addition to a standard biopsy. The results of fusion biopsy cores were compared to the standard biopsy cores, and the role of mpMRI-P in altering patient management was evaluated.

Results: The median time on AS was 2.47 years (range: 0.6 - 6.9) at the time of the mpMRI-P. Gleason 3+3 cancer was found on initial biopsy in 98 (89%) and Gleason 3+4 in 12 (11%). mpMRI-P detected 112 suspicious lesion in 72 (65%) patients. Of these, 80 (72%) were PIRADS 3 lesions and 32 (28%) PIRADS 4 or 5. Cancer and significant cancer (any Gleason pattern 4) were detected in 20 (25%) and 9 (11%) of PIRADS 3 lesions, and in 20 (61%) and 13 (39%) of PIRADS 4/5 lesions, respectively. Fusion biopsy was carried out in 65 of these patients (37 true and 28 cognitive). Gleason grade progression compared to previous biopsy was detected in 11 (10%) patients in the fusion cores, in 7 (6.3%) patients in the standard cores, and in 3 (2.7%) patients in both fusion and standard cores. Two patients discontinued AS due to size increase of a lesion on mpMRI-P. AS was discontinued due to PSA elevation in 1 case and patient choice in 2 cases. MpMRI-P with fusion biopsy was responsible for the determination of disease progression in 13(11.8%) cases.

Conclusions: These preliminary findings suggest that mpMRI-P with subsequent fusion biopsy enhances the identification of AS patients requiring definitive treatment. Longer follow-up in a larger series of patients is needed to determine the real value of mpMRI-P and subsequent fusion biopsy in the management of patients on AS.

Source of Funding: None
MRI TARGETED BIOPSY FOR THE DETECTION OF PROSTATE CANCER IN PATIENTS AFTER PRIOR NEGATIVE BIOPSY

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(Presentation to be made by Dr. Goldenberg)

Introduction and Objectives: As technical advancements improve the ability of multi-parametric MRI (mpMRI) of the prostate to detect clinically significant prostate cancer (CaP) while overlooking clinically low risk tumors, the appropriate clinical applications of mpMRI continue to evolve. We aimed to determine the efficacy of mpMRI in the detection of CaP in patients with prior negative systematic transrectal ultrasound-guided prostate biopsy (TRUSBx).

Methods: The study was designed as a non-randomized retrospective cohort study. Between January 2010 and September 2013, 2416 men were identified as having had TRUSBx and/or mpMRI at Vancouver General Hospital. Among these, there was a persistent suspicion of CaP in 283 despite all having had one or more prior negative TRUSBx. An MRI was obtained in 112, and a lesion (PIRADS score ≥ 3) was identified in 88 cases (78%). A subsequent MRI-TRUS fusion biopsy (“cognitive” or software-directed (Hologic Inc., Bedford, MA)) plus a standard template biopsy (8-12 cores depending on prostate volume), was performed in 86 of these 88 cases. From the 171 men who underwent repeat TRUSBx without MRI, a matching cohort of 86 patients was selected using a one nearest neighbour method without replacement. Cases were matched on PSA level, PSA density, prostate volume, and history of ASAP or HGPIN in previous biopsies. The primary end-point was the detection rate of any CaP or clinically significant CaP (Gleason ≥3+4). Logistic regression analysis was used to determine which factors predicted significant CaP on fusion biopsy.

Results: Fusion biopsy detected CaP and clinically significant CaP in 36 (42%) and 30 (35%) of men compared to 19 (22%) and 14 (16%), respectively, in the men without MRI (p = 0.006 for both). In 9 cases (10%) fusion biopsy detected significant CaP that was missed on standard cores. Significant CaP was present in 5 cases (6%) on standard cores but not the targeted cores. The 26 patients with mpMRI studies who did not undergo biopsy because they all had at least 2 prior negative biopsies and no MRI lesion of significance, were followed for a mean of 14 months without subsequent diagnosis of prostate cancer.

Conclusions: In patients with prior negative biopsy but persistent concern for prostate cancer, MRI enhances the detection of CaP and especially clinically significant CaP. It is possible that this also reduces the number of patients undergoing TRUSBx, although we are uncertain of the true CaP status in the 23% of patients who underwent mpMRI without subsequent TRUSBx. While these results require further validation, we now routinely recommend mpMRI prior to combined targeted and systematic biopsies.

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STATE OF THE ART LECTURE

Evolution of Targeted Prostate Biopsy.

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