Moderated Poster Session I: Prostate Cancer
Thursday, October 8, 11:00 a.m. – noon

P1
Pelvic Radiation in Patients with a Pelvic Kidney: No Longer Playing With Fire

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Introduction and Objective: With improvements in surgical techniques and better control of post transplantation complications, there are a growing number of long-term kidney transplantation survivors. Due to the emergence of prostate cancer screening the lifetime risk of developing prostate cancer has increased to 1 in 6. These advances have spawned a new subpopulation of patients with pelvic kidneys who are surviving long enough to develop malignancies such as prostate cancer. Classically, pelvic radiation therapy was contraindicated for patients with pelvic kidney due to the high sensitivity of the transplanted organ and its proximity to the prostate. Moreover, patients who have received transplantations are often poor surgical candidates due to their coexisting morbidities. With advances in radiation therapy over the past few decades, namely IMRT and IGRT, a pelvic kidney may no longer be a contraindication to pelvic radiation therapy.

Methods and Materials: We present a series of treatment plans for patients with renal transplantation who developed prostate cancer and were treated with radical radiation therapy using IMRT technique delivered via Helical Tomotherapy (HT). Seven plans per patient were developed to illustrate circumstances when the pelvic nodes are or are not included in the treatment plan. We then compared the dosimetric aspects of the HT plans to 2D-conventional EBRT, 3D-CRT and LinAc-based IMRT. We treated the prostate, with or without the proximal seminal vesicles, using 0.7 cm margins to PTV, to a dose of 72 Gy delivered in 36 fractions. The internal and external iliac lymph nodes were treated to 46 Gy in the high-risk plans.

Results: Dose-volume histograms demonstrating the doses received by the implanted kidney, as well as other normal structures, were well within acceptable limits, while targeted structures received near or full dose when utilizing HT or LinAc-based IMRT planning. This compared favourably to 2D or 3D CRT planning of the same cases. For high-risk plans, a reduction in mean maximum dose to the transplanted kidney from 50.9 Gy in the 3D CRT treatments to 13.9 Gy with HT is noticed. Similarly, a reduction in mean kidney V20 volume from 43.1% to 0% is observed. With nearly 2 years of follow-up we continue to see baseline kidney functioning and no evidence of disease recurrence in our patients.

Conclusion: Radical radiation therapy via HT or LinAc-based IMRT can be safely utilized to treat low to high-risk prostate cancer in patients with a transplanted pelvic kidney.

P2
Management of Prostate Cancer Following Solid Organ Transplantation

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Introduction and Objective: We report our experience with the management of prostate cancer diagnosed following solid organ transplantation at a single institution.

Materials and Methods: We retrospectively reviewed the University of Pittsburgh Medical Center's transplant registry to identify patients diagnosed with prostate cancer following solid organ transplantation between January 1992 and December 2007. Demographic characteristics, immunosuppressive regimens, biopsy results, and treatment outcomes were reviewed.

Results: Prostate cancer was diagnosed in 27 (0.4%) of the 2925 renal and 2761 liver transplant recipients, with complete records available in 21 (0.36%). Prostate cancer developed following liver and renal transplantation in 11 and 10 patients, respectively. The mean age at diagnosis was 62 ± 7 (51-74) years, and prostatic adenocarcinoma was detected a mean duration of 22 ± 20 months (1-52 months) following transplant. Maintenance immunotherapy protocols included tacrolimus + prednisone/Imuran/cortef and tacrolimus + sirolimus in 95% and 5% of patients respectively. Clinical stage T1, T2, T3, and T4 prostate adenocarcinoma was diagnosed in 8 (39%), 7 (33%), 4 (19%), and 2 (9.5%) patients, respectively. Clinical management included XRT (38.1%), RRP (28.6%), XRT + ADT (14.3%), brachytherapy (9.5%), orchiectomy for metastatic disease (4.8%), and observation (4.8%). With a mean follow-up of 23 ± 23 months (range 8-96 months), two patients with cT4 disease died within 12 months of diagnosis, but all remaining patients are alive and recurrence or progression-free. Undergoing treatment for prostate cancer did not result in allograft loss in any patient in our cohort.

Conclusion: The management of prostate cancer can be challenging following solid organ transplantation. In appropriate candidates, all contemporary treatment options are available with minimal risk to graft function. As in non-transplant patients, the decision to proceed with treatment is patient specific and should be determined by clinical risk stratification and competing risks.

P3
A Systematic Analysis of the Detrimental Effect of Orchiectomy on 12 Systemic Morbidities

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Introduction and Objective: We tested whether orchiectomy, a form of androgen deprivation therapy (ADT), predisposes to 12 non-skeletal morbidities in a large, population-based cohort.

Materials and Methods: Within the Québec Health Plan database, 8572 men diagnosed with prostate cancer and treated between 1992 and 2000 with either bilateral orchiectomy (n=1146), or definitive therapy (radical prostatectomy [RP] or radiation therapy [XRT]) without any ADT (n=7426) were identified. Separate univariable and multivariable Cox regression models tested the effect of orchiectomy on the subsequent diagnosis of one of 12 morbidities that contribute to the Charlson Comorbidity Index. Covariates consisted of age, administrative region of residence, postal code, and the year of treatment. The diagnoses of morbidities other than the morbidity of interest and their respective dates were used as time-dependent covariates. Finally, competing risks regression models addressed the potential confounding effect of all-cause mortality.

Results: Orchiectomy was a statistically significant univariable predictor of 5 of the 12 examined morbidities: dementia (HR 3.6; p<0.001), myocardial infarction (HR 1.5, p<0.001), congestive heart failure (HR 1.5; p<0.001), chronic pulmonary disease (HR 1.3; p=0.01), and moderate to severe renal disease (HR 1.5; p<0.001). In multivariable analyses, orchiectomy only independently increased the risk of dementia (HR 1.6; p=0.001). Orchiectomy remained an independent predictor of dementia in competing risks regression models (p<0.001).

Conclusion: It is reassuring that orchiectomy does not increase the risk of 11 of 12 examined morbidities. Nonetheless, orchiectomy may predispose to dementia. Thus, baseline and longitudinal dementia assessment should be considered in orchiectomy candidates.

P4

A Systematic Analysis of the Detrimental Effect of Orchiectomy on Four Skeletal Morbidities

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Introduction and Objective: In men from the United States of America, bilateral orchiectomy, like other forms of androgen deprivation therapy (ADT) for prostate cancer (PCa) was shown to predispose to skeletal morbidities (osteoporosis, spinal fracture and hip fracture). We examined the effect of orchiectomy on skeletal-related events in Canadian men.

Materials and Methods: We used the Québec Health Plan database to identify 12241 assessable men diagnosed with prostate cancer (PCa), who were treated between 1992 and 2000 with either bilateral orchiectomy (n=3211, 26.2%), or definitive therapy (radical prostatectomy [RP] or radiation therapy [XRT]) without orchiectomy or any other form of ADT (n=9030, 73.8%). Separate univariable and multivariable competing risks regression models that adjusted for the effect of other-cause mortality tested the effect of orchiectomy vs. no orchiectomy on the incident rate of three skeletal morbidities, namely osteoporosis, as well as spinal and hip fractures. Covariates consisted of age, administrative region of residence, definitive therapy (RP vs. XRT vs. none), other skeletal and non-skeletal morbidities and year of treatment. The diagnoses of non-skeletal morbidities were used as time-dependent covariates.

Results: The absolute increase in the rates of osteoporosis, spinal fracture and hip fracture were, respectively 5.0% [95% confidence interval (CI)=4.2-5.7%], 3.8% (95% CI=3.1-4.5%) and 4.5% (95%-CI=3.8-5.2%) at 5 years (all, p<0.001). The significance of these findings was confirmed in multivariable competing risks models, where orchiectomy independently increased the risk of new diagnosis of all skeletal morbidities: osteoporosis [adjusted hazard ratio (HR)=2.7 - 95% CI=2.1-3.4%; p<0.001], spinal fracture (HR=2.7-95% CI=2.0-3.8% ; p<0.001) and hip fracture (HR=2.3-95% CI=1.7-3.2%; p<0.001).

Conclusion: Orchiectomy increases the risk of osteoporosis, spinal fracture and hip fracture.

P5

External Validation of a Postoperative Nomogram Predicting the Probability of Prostate Cancer Recurrence After Radical Prostatectomy

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Introduction and Objective: In 2005, Stephenson and coworkers published an updated nomogram predicting the risk of prostate cancer (PCa) recurrence up to 10 years after radical prostatectomy (RP). We externally validated this tool in a European patient cohort.

Materials and Methods: Our validation cohort consisted of 3122 assessable patients treated with open RP at a single institution between 1992 to 2007, who fulfilled the inclusion criteria according to Stephenson et al. According to institutional policies, none of the patients received adjuvant or salvage therapy before biochemical recurrence (BCR) (PSA-value of 0.1ng/ml and rising after RP). The nomogram derived PCa recurrence predictions at 1-7 years after RP were tested and compared with the observed BCR rates, using standard validation metrics (area under the receiver operating characteristics curve [AUC]). The relationship between predicted and observed recurrence rates was graphically explored in calibration plots.

Results: The median follow up of censored patients was 48 months. For recurrence predictions at 1 to 7 years after RP, the accuracy of the nomogram ranged from 78 to 89%. Despite good overall accuracy, the calibration between the predicted and the observed recurrence rate was only adequate at 2 years after RP. At all other examined time-points, substantial departures from ideal predictions were recorded, which were as high as 35%.

Conclusion: Our results indicate that the Stephenson et al nomogram is not well calibrated in European patients. Therefore, tools specifically developed for European patients might represent a better alternative. Unfortunately, such tools have not yet been developed.

P6

National Patterns of Diagnosis and Treatment of Localized Prostate Cancer at Veterans Administration Medical Centers

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Introduction and Objective: The Veterans Health Administration (VA) operates the largest healthcare network in the United States with a large number of men over age 50. Important changes have been noted in the stage at diagnosis as well as management of clinically localized prostate cancer nationwide. Recently, nationwide non-VA data reported an increase in surgical therapy, with a decrease in the use of radiation therapy and hormonal therapy. We sought to determine the trends for the treatment of localized prostate cancer at the VA Medical Centers, to investigate the changes in the pattern of care that may have occurred over time, and to compare treatment patterns in the VA to the national trends.

Materials and Methods: De-identified patient information was obtained from the VA Central Cancer Registry for all patients with clinically localized prostate cancer diagnosed and treated within the VA system between 1995 and 2005. Detailed records were available for 105,471 total patients, with 94,218 with localized prostate cancer. Clinical staging was standardized to reflect the current AJCC cancer staging system. We analyzed the trends for the detection of cancer as well as the mode of therapy used for clinically localized prostate cancer over time.

Results: There was a steady increase in the total number of men diagnosed with prostate cancer each year, ranging from 7,435 in 1995 to 10,935 in 2005. There was also a similar increase in localized prostate cancer, from 6,190 in 1995 to 10,170 in 2005. The majority of these men had clinical stage II disease. There was a definitive increase in the utilization of monotherapies, including radiation (17.2 to 20.2%), hormonal therapy (10.9 to 15.9%), and surgical therapy (19.7 to 21.4%). A definitive decrease in active surveillance/watchful waiting was seen (34.5% to 14.6%). Combination therapy was utilized with increasing frequency (6.6% to 14.3%), with the largest increase found with the combination of radiation and hormones (3.4% to 12.3%).

Conclusion: The number of patients diagnosed and treated at the VA medical centers has more than doubled over the last 10 years, although there was a clear delay when compared to national data. This is of particular importance in terms of allocating additional resources and personnel to manage the increasing number of patients. While there was an increase in low risk prostate cancer which corroborated national data trends, there was a significant difference in the pattern of initial management for localized prostate cancer.

P7

The Impact of Surgeon Fatigue on Performance of Open Radical Retropubic Prostatectomy

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Introduction and Objective: To assess the impact of fatigue on surgeon performance during radical retropubic prostatectomy (RRP).

Materials and Methods: Data were prospectively collected from a single surgeon's consecutive series of 1900 patients undergoing RRP for clinically localized prostate cancer between November 1999 and January 2009. Patients were stratified by case order (single procedure per day, or the first, second and/or third of multiple procedures per day). Operating room (OR) time, estimated blood loss (EBL), margin status, and extent of nerve sparing were compared between groups using Analysis of Variance (ANOVA) and Pearson chi-square tests to determine significant associations. Outcomes were also evaluated by case position over time to assess the impact of experience.
Results: In our cohort, the majority of cases occurred on multiple procedure days: 1st case (n=616), 2nd case (n=616), 3rd case (n=405), single case (n=263). There was no significant difference in patient age stratified by case order (mean 59.7±6.5 years). OR time differed slightly between groups ($p<0.001$), although no clear trend was identified (mean 145.9±19.8 min). EBL (mean 648.6±391.8cc) differed between groups ($p<0.001$), and significantly decreased over time in all groups regardless of case position; the median EBL was 935cc for the first 100 cases and dropped to 350cc for the last 100 cases. On pathologic review 76.2% and 23.8% of tumors were pT2 and pT3 respectively, with an overall positive margin rate of 8.1% (3% pT2, 24.8% pT3). 85.0% of men underwent a bilateral nerve sparing procedure, while partial or non-nerve sparing was performed in 12.9% and 2.1% of patients, respectively. Positive margin rates and the extent of nerve sparing were comparable between groups and remained consistent over time regardless of case position.
Conclusion: In this series, fatigue appeared to have minimal impact on the performance of open RRP. These findings may be useful for reassuring patients regarding their daily case position.

P8
Clinical Results of Long-Term Follow-up of a Large Active Surveillance Cohort

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Introduction and Objective: In 1995, a prospective phase 2 trial of active surveillance was initiated at our centre. This approach was offered to men with favorable risk prostate cancer as an alternative to radical intervention. Patients were closely followed with serial PSA and periodic biopsy, and intervention was offered based on PSA kinetics or grade progression. Our initial results were reported in 2002 on 231 patients. This report is our 2nd analysis of this group, which now constitutes 453 men.
Materials and Methods: A prospective, single arm cohort study. Patients with favorable clinical parameters (screen diagnosed patients with Gleason ≤6, PSA ≤10) were managed with active surveillance. Initially a subset of men > 70 were included with Gleason 3+4 or PSA 10-15. In 2000, the study was restricted to favorable risk disease. Definitive intervention was offered to those patients with a PSA doubling time of < 3 years, Gleason score progression (to 4+3 or greater), or unequivocal clinical progression. PSA doubling time was calculated using the General Linear Mixed Model.
Results: Since November 1995, 453 patients have been entered on the program. Median age is 70 (range 45-86). Median follow-up is 7.2 years (range 1-13 years). Overall survival is 83%, and prostate cancer survival is 99% (5 of 453 patients have died of prostate cancer). 35% of patients have been reclassified as higher risk and offered definitive therapy. The commonest indication for treatment was a PSA DT < 3 years (14%) or Gleason upgrading (6%). Of 137 patients treated radically, the PSA failure rate was 52%. Patients with biochemical failure after radical therapy constitute 15% of the overall cohort. The ratio of non-prostate cancer to prostate cancer mortality was 16:1.
Conclusion: A policy of watchful waiting with selective delayed intervention based on defined criteria of disease reclassification as higher risk is feasible and is associated with a low prostate cancer mortality in the intermediate time frame. Patients with favorable risk parameters at baseline who subsequently demonstrate a PSA doubling time < 3 years or pathologic progression to Gleason 4+3 represent a high risk cohort, reflected in a 52% rate of biochemical progression after radical therapy. This strategy offers the benefit of an individualized approach based on the demonstrated risk of clinical or biochemical progression with time and, thus, it may decrease the burden of therapy in patients with indolent disease, while providing definitive therapy for those with biologically active disease.

P9
Racial Differences in Risk Perception and Receipt of PSA Testing

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Introduction and Objective: In 2008 there were approximately 186,320 incidence cases of and 28,660 deaths from prostate cancer (PCa) in the United States. African American Men (AAM) are associated with a higher prostate cancer incidence and mortality, compared to Whites. Prostate cancer risk perception may be associated with whether or not someone participants in prostate cancer early detection programs.
Materials and Methods: The 2003 Health Information National Trends Study (HINTS) were analyzed to examine the association between demographic characteristics, perception of the risks of developing PCa and PSA test utilization among men age 45 or older (n=1,075).
Results: Nearly 50% of AAM, 47.4% of Hispanic and 43.3% of Non-Hispanic white men perceived their future risk of developing prostate cancer as somewhat or very low. About 22% of Hispanic, 17.5% of AAM and 12.9% of Non-Hispanic white men perceived that they were *more* likely than the average man of the same age to develop prostate cancer. Overall men who perceived that they were at a very low to moderate risk of (compared to those men who perceived that they were at a higher of) developing PCa in the future had lower adjusted odds (OR 0.42;95% CI 0.24-0.73) of receiving a PSA test. Overall men who perceived that they were less/about as likely to (compared to men who perceived themselves as more likely to) develop PCa as the same age average man had a *lower* adjusted odds (OR=0.47;95% CI=0.27-0.81) of receiving a PSA test.
Conclusion: Despite the higher PCa risks noted in AAM, in this national population half of the AAM perceived themselves to be at very low and somewhat low risks of developing PCa. The significance of this is that in the same population of men, perceived PCa risks is associated PSA testing. Although the use of PSA testing is controversial, if it is to have a benefit with regards to PCa mortality that benefit is more likely to be noted in high risk men. Regardless of this debate, a very important health policy questions is what is the best way to educate men with regards to their disease risks. The findings of this study would imply that we have failed in this regard as it relates to AAM and PCa risk.

P10
High-Grade Prostatic Intraepithelial Neoplasia (HG-PIN) on Initial Prostate Biopsy is not a Risk Factor for Prostate Cancer at Repeat Biopsy

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Introduction and Objective: The importance of high grade prostatic intraepithelial neoplasia (HG-PIN) at initial biopsy after adjusting for age, PSA, gland volume and digital rectal examination (DRE) findings is debatable. We assessed the prognostic significance of HG-PIN at initial biopsy on the risk of prostate cancer (PCa) diagnosis at repeat biopsy in a contemporary patient cohort.
Materials and Methods: Between 1997 and 2008, a repeat biopsy was performed in 477 men at two institutions. Of these 477 men, 73 (15.3%) had HG-PIN at initial biopsy. Univariable and multivariable logistic

regression analyses tested the effect of HG-PIN at initial biopsy on the risk of PCa at repeat biopsy. Covariates consisted of age, PSA, DRE findings (suspicious vs. unremarkable), and gland volume.
Results: The median number of cores at the repeat biopsy was 10 (range 6-28). PCa was diagnosed in 102 men (21.4%). Of patients with HG-PIN at initial biopsy, 20/73 (27.4%) had PCa at repeat biopsy vs. 82/404 (20.3%) of the cohort without PIN at initial biopsy (odds ratio [OR] 1.5; p=0.2). In multivariable analyses, adjusted for age, PSA, DRE and gland volume, HG-PIN at previous biopsy did not reach independent predictor status (OR 1.3, p=0.4).
Conclusion: Presence of HG-PIN at initial prostate biopsy is not an independent risk factor for PCa at repeat biopsy. In consequence, other established PCa risk factors at repeat biopsy should be considered. For example, the combination of age, DRE, PSA, and percent free PSA are up to 77% accurate in predicting the individual risk of PCa at repeat.

P11
Unilateral Prostate Cancer Cannot Be Reliably and Accurately Diagnosed with Systematic 10 or More Core Biopsy

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Introduction and Objective: Focal or even unilateral therapy strategies are gaining popularity in patients with low-risk prostate cancer (PCa). The assumption of these therapy modalities is that PCa can be accurately localized by clinical staging. We tested the accuracy of unilateral negative biopsy findings in low-risk PCa patients who were treated with open radical prostatectomy (RP).
Materials and Methods: The population consisted of 243 men with clinical stage T1c/T2a, PSA <10ng/ml, a biopsy Gleason sum ≤6, and a maximum of two positive biopsy cores within one of two prostate lobes on a 10-core or higher prostate biopsy. None received any form of androgen deprivation therapy or previous prostate surgery. All patients underwent open RP in our institution. Univariable and multivariable logistic regression models were performed to identify significant predictors of unilateral PCa. Variables consisted of PSA, %fPSA, clinical stage (T2a vs. T1c), gland volume, and number of positive biopsy cores (2 vs. 1).
Results: Most of the patients were clinical stage T1c (89.7%). The median PSA was 5.4ng/ml and a proportion of 28% had a PSA ≤4ng/ml. Presence of bilateral or non organ-confined PCa was reported in 64% of all patients. In men with only one positive biopsy core, the proportion of bilateral or non organ-confined PCa was 60%. None of the examined variables was a statistically significant predictor of unilateral PCa in either univariable or multivariable analysis (all p-values and adjusted p-values >0.05).
Conclusion: Almost two thirds of patients with low-risk PCa and a maximum of two positive unilateral biopsy cores have bilateral or non organ-confined PCa at RP. Our findings indicate that the prediction of unilateral (single lobe) PCa cannot be made with even the slightest degree of confidence. This observation should be taken into consideration when treatment decisions are made.

P12
Presence of Prostate Cancer at Saturation Biopsy Can Be Accurately Predicted

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Introduction and Objective: The use of office-based saturation biopsy increased. We attempted to improve the ability of our previously reported saturation biopsy nomogram that quantifies the risk of prostate cancer (PCa).
Materials and Methods: Saturation biopsies of 540 men with one or more previously negative 6 to 12 core biopsies were used to develop a multivariable logistic regression model based nomogram, predicting the probability of PCa. Candidate predictors were used in their original or stratified format. These consisted of age, total PSA, percent free PSA (%free PSA), gland volume, finding on digital rectal examination (DRE), cumulative number of previous biopsy sessions, presence of HG-PIN on any previous biopsy, and presence of ASAP on any previous biopsy. Two-hundred bootstraps resamples adjusted for overfit bias.
Results: PCa was diagnosed in 39.4% of saturation biopsies. Age, total PSA, %free PSA, gland volume, number of previous biopsies, and presence of ASAP at any previous biopsy achieved independent predictor status for prediction of PCa (all p-values <0.05). The nomogram was 77.2% accurate and demonstrated virtually perfect correlation between predicted and observed rates of PCa.
Conclusion: We improved the accuracy of the saturation biopsy nomogram from 72 to 77%. It relies on three previously included variables, namely age, %fPSA, and prostate volume and on three previously excluded variables, namely PSA, the number of previous biopsy sessions, and evidence of ASAP on previous biopsy. Our study represents the largest series of saturation biopsies to date.

P13
Are All Low-Risk Prostate Cancer Patients Created Equally?

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Introduction and Objective: We hypothesized that prognostically, not all Gleason-score ≤3+3 prostate cancers (PCa) are the same. We tested, whether the number of positive biopsy cores can discriminate between favorable and less favorable Gleason-score ≤3+3 patients.
Materials and Methods: Open radical prostatectomies were performed in 1104 consecutive patients with a PSA ≤10ng/ml and a biopsy Gleason-score ≤3+3 or 3+4. The number of positive biopsy cores (≤2 vs. ≥3) stratified the Gleason-score ≤3+3 patients into low vs. high-risk groups. For comparison purposes, patients with biopsy Gleason-score 3+4 were also stratified into low vs. high-risk groups according to the number of positive biopsy cores. The pathological stage and the 5-year biochemical recurrence (BCR) free survival rates were examined in univariable and multivariable models.
Results: The rate of non-organ confined disease was 11.7 and 23.3% in respectively low and high-risk Gleason-score ≤3+3 patients (p<0.001). The 5-year BCR free survival rates were 95.0, 77.8, 81.2, and 66.5% for respectively low and high-risk Gleason-score ≤3+3 patients and for low and high-risk Gleason-score 3+4 patients. Univariable and multivariable intergroup BCR rate differences were statistically significantly different between low vs. high-risk Gleason-score ≤3+3 patients (p<0.001), but failed to reach statistical significance between high-risk Gleason-score ≤3+3 vs. low-risk Gleason-score 3+4 patients (p=0.6).
Conclusion: Our results indicate that not all patients with biopsy Gleason-score ≤3+3 PCa harbor low-risk disease. High-risk Gleason-score ≤3+3 patients virtually have the same risk profile, as more favorable Gleason-score 3+4 patients. This finding warrants consideration in treatment decision-making.

P14
Withdrawn

P15

Comparison of Tertiary Center and Referred Prostate Biopsies: Impact of Re-Review on Gleason Score Accuracy

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Introduction and Objective: It has been shown previously that referred prostate biopsies are less accurate than tertiary center biopsies in predicting prostatectomy Gleason score. Therefore, review of outside biopsies by tertiary center pathologists is often recommended for better assessment of patient risk before establishing treatment recommendations. We sought to determine the differences in diagnostic accuracy of outside biopsies and biopsies performed by our tertiary center by comparing biopsy to prostatectomy Gleason scores. We also sought to determine whether review of outside biopsies by our tertiary center pathologists could improve the correlation between biopsy and prostatectomy Gleason scores.

Materials and Methods: We identified 360 consecutive patients with detailed biopsy and prostatectomy data including primary and secondary Gleason grades, biopsy scheme, number of positive cores, percent of cores involved, age, PSA and clinical stage. Gleason scores were divided into 3 categories: ≤ 6, 7, and ≥ 8. Patients were divided into three groups based on their biopsy location and review: 1) biopsy by outside urologist - not reviewed; 2) biopsy by outside urologist with review by a tertiary center pathologist; and 3) biopsy performed by our tertiary center urologists. Outside biopsies were reviewed by tertiary center pathologists based on the surgeon's discretion.

Results: Of 360 patients, 243 (68%) had a biopsy performed at our tertiary center. Of the remaining 116 patients, fifty-four (47%) patients had the biopsy slides reviewed by a tertiary center pathologist. The outside biopsy report was in agreement with the tertiary center review in 46/54 cases (85%). Correlation between tertiary center biopsy and prostatectomy Gleason score was noted in 172/243 (71%) men, upgrading in 36/243 (15%), and downgrading in 35/243 (14%). Pathology review of outside biopsies correlated with prostatectomy Gleason score in 27/54 (50%), upgrading in 23/54 (43%), and downgrading in 4/54 (4%). Outside biopsies that were not reviewed correlated with prostatectomy Gleason score in 39/62 (63%), upgrading in 21/62 (34%), and downgrading in 2/62 (3%).

Conclusion: Tertiary center biopsies were superior to outside biopsies in predicting prostatectomy Gleason scores. After review of outside biopsies, tertiary center biopsies still resulted in better correlation with final Gleason score ($p<0.005$) and fewer patients upgraded ($p<0.005$). There was a good correlation between the initial biopsy report and the tertiary center review (=0.69). This suggests that the urologists performing the biopsy may represent an important variable in predicting final Gleason score, possibly due to improved targeting and sampling of the peripheral zone.

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Systematic Assessment of Total Prostate-Specific Antigen (PSA) and Percentage-Free/Total PSA on the Rate of Biopsy Recommendation: A Population-Based Study

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Introduction and Objective: Various serum total prostate specific antigen (tPSA) and percentage free/tPSA (%f/tPSA) may be used as indicators for prostate biopsy. The use of increasingly lower tPSA thresholds and the combined use of %f/tPSA with tPSA may result in an exponential increase in the proportion of biopsy recommendations. To perform a systematic assessment of various tPSA and %f/tPSA thresholds with respect to their effect on the proportion of biopsy recommendations.

Materials and Methods: We studied a cohort of 3048 men with normal digital rectal examination findings who participated in one of five annual prostate cancer screening events between 2004 and 2008.

Results: The use of total tPSA≥2.5ng/ml would have resulted in a 16% biopsy rate vs. 8% for PSA≥4ng/ml. The use of %f/tPSA≤10% resulted in a 2.9% rate vs. 46.4% for %f/tPSA ≤25%. The combined use of tPSA≥2.5ng/ml and %f/tPSA ≤25% would have resulted in 49.3% biopsy rate. In men with tPSA 2.5-10ng/ml (n=464), the use of %f/tPSA ≤10% or ≤25%, would have respectively resulted in 8.4% and 80.8% biopsy recommendations.

Conclusion: The use of %f/tPSA may drastically increase the recomended biopsy rate relative to the use of tPSA alone and may have a far reaching health economical impact. In consequence, prior implementing %f/tPSA-based early detection strategies, the nature and the natural history of prostate cancers detected using %f/tPSA may warrant a close assessment.

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Initial Experience with Prostate Brachytherapy: Ten-Year Results from a Single Surgeon at a Single Institution

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Introduction and Objective: Prostate brachytherapy (PB) remains one of the main treatment modalities for localized prostate cancer. We present our initial experience with over 300 patients who were treated with curative intent with prostate brachytherapy for organ-confined prostate cancer.

Materials and Methods: A retrospective analysis of 305 consecutive patients undergoing PB from 1997 to 2003 was performed. Patients with pubic arch interference seen on planning transrectal ultrasound were given a short course of androgen deprivation therapy to shrink the prostate (leuprolide given for 3 months prior to implantation and up to 3 months after PB). External beam radiation was administered to high risk patients per D'Amico criteria. Treatment failure was defined as a PSA > nadir +2, biopsy proven recurrence, or documented metastatic disease. All cause mortality was determined by querying the social security database. Cardiac specific mortality was limited to observed events of death due to cardiac disease or cerebral vascular event.

Results: Average age at the time of implant was 70 years. The average PSA was 7.81 and average Gleason grade was 5.9. After twelve years of follow-up, overall freedom from disease was 88%. Overall all-cause mortality was 14% and prostate cancer-specific mortality was 1%. All patients received either palladium or iodine seed implants. Patients receiving external beam radiation (46%) did not have a difference in treatment failure. A total of 103 patients (34%) received neoadjuvant hormonal downsizing. The only treatment related variable that affected overall mortality was the use of neoadjuvant hormonal therapy. The patients receiving downsizing hormonal therapy had a statistically higher incidence of overall mortality ($p=0.048$). We could not attribute this increased mortality to cardiac-specific causes, as both groups had similar numbers of cardiac incidents. The incidence of new-onset urinary incontinence (requiring daily pad use) was 8.2%. The incidence of urinary retention or obstruction requiring a surgical procedure including transurethral resection or optical internal urethrotomy was 8.8%. No patient required urinary diversion and there were no reported recto-urethral fistulas.

Conclusion: Our technique for PB yields results comparable to those reported elsewhere. The overall freedom from disease is 88% at 12 years. We also see that the use of hormonal manipulation for downsizing increases overall mortality. The etiology of this increase is unclear but it does not seem attributable to cardiac events.