embolizations and the remaining failures in both groups were due to atherosclerosis. There was a statistically significant reduction in IPSS. Significant post-treatment differences in IPSS was noted in Group A (24.6 to 10.2, $p < 0.00001$) and B (21.7 to 7.1, $p < 0.0001$). Similar prostate size reductions were present in both Groups A ($p = 0.17$) and B ($p < 0.0001$). No major adverse events were reported.

Conclusion: Our results add to the existing literature and confirm the effectiveness of PAE in patients with smaller glands. The ability to target smaller glands presents a unique advantage over existing minimally invasive surgical options.

Abstract No. 260

Does Preprocedural CT Angiography Improve Prostate Artery Embolization Procedure Time and Radiation Dose Compared with MRI?

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Purpose: Preprocedural imaging for prostate artery embolization (PAE) is typically obtained to assess prostate size, and preprocedural vessel mapping and to evaluate for any potential malignancy. The choice of imaging is often decided by the operator based on patient factors. We sought to evaluate whether preprocedural imaging choice could reduce procedure time and radiation dose.

Materials and Methods: This was an IRB-approved retrospective study of 143 PAE performed between February 2020 and June 2024. Each procedure was reviewed to determine which form of imaging was obtained or available prior to the procedure. Those that obtained a CT angiography (CTA) were compared with those that obtained an MRI. Fluoroscopy time (minutes), radiation entry skin dose (mGy), prostate size (g), International Prostate Symptom Score (IPSS), and prostate-specific antigen (PSA) levels were compared between the two groups for statistical significance.

Results: 53 patients (average age 71.7) had CTA prior to their procedure and 90 patients (average age 67.7) had an MRI. Technical success in the CTA group was 96.2% and 97.8% in the MRI group (2 technical failures in each group). No significant difference was between preprocedural CTA and MRI for average fluoroscopy time (44.6 minutes ± 17.4 and 49.3 minutes ± 17.7, respectively, $p = 0.224$), radiation dose (4008mGy ± 2603 and 3406mGy ± 2158, $p = 0.13$), prostate size (130.2g vs 124.6g, $p = 0.62$), IPSS score (22.0 vs 22.7, $p = 0.69$), and PSA level (6.57 vs. 7.20, $p = 0.69$).

Conclusion: Preprocedural imaging has utility in assessing prostate size and aids in preprocedural planning. The decision between CTA or MRI does not appear to influence procedure fluoroscopy time or radiation dose to the patient. Further studies comparing the two modalities are suggested.

Abstract No. 261

Efficacy and Safety of MRI-Guided Trans-Perineal Cryoablation for Treating Primary Prostate Cancer: A Prospective Study

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Purpose: To evaluate the incidence of biopsy-confirmed recurrences and adverse events in patients with native prostate cancer treated with MRI-guided trans-perineal focal cryoablation.

Materials and Methods: In this prospective study, approved by the institutional review board, 100 patients diagnosed with primary prostate cancer underwent 1.5T MRI-guided trans-perineal cryoablation from December 2020 to April 2024. The procedure on average involved the use of four cryoneedles (ranging from three to six cryoneedles) with typically three freeze/thaw cycles. A urethral warmer was used to protect the urethra. T2-weighted MRI sequences (~20 sec) were used to monitor iceball expansion and target coverage. Post-ablation follow-up consisted of serum PSA every three months, prostate multi-parametric MRI every 6 months, and a follow-up biopsy at 1-2 years post-ablation. Additionally, the impact on patients' urinary symptoms and sexual health was measured using the American Urological Association Symptom Score (AUASS) with assessments at 6 and 12 months post-ablation.

Results: Trans-perineal MRI-guided cryoablation was performed on 100 male patients, with a mean age of 68 years (52-83) and a mean Body Mass Index of 30.41 (21-44), all with biopsy-proven primary prostate cancer. The average target lesion size was 1.46 cm (0.2-5.3 cm). A total of 63 patients have completed their one-year post-ablation follow-up, including imaging and biopsy. At the one-year follow-up, 63 patients showed significant reductions in PSA levels compared with pre-ablation values. PSA reductions were as follows: at 3 months (59.51% ± 36.12; $p < 0.0001$), 6 months (60.06% ± 25.82; $p < 0.0001$), and 12 months (56.79% ± 27.37; $p < 0.0001$). AUASS data suggested that urinary symptoms, including stream strength, urgency, incomplete emptying, and hesitancy, remained in the mild category throughout follow-up. At the one-year follow-up, biopsies indicated that 7 of 63 (11.1%) patients had cancer recurrence, with 6 of 7 (9.5%) demonstrating in-field recurrence and 1 of 7 (1.6%) showing an out-of-field recurrence in another region of the prostate. Erectile function worsened in 14% of patients, with 14 of 100 requiring treatment for erectile dysfunction, predominantly managed with Viagra or Cialis. One patient reported perineal pain at 6 months post-procedure, which resolved with steroids and antibiotics.

Conclusion: MRI-guided trans-perineal focal cryoablation is a promising treatment that combines the precision of cryoablation with the superior soft tissue resolution and ablation monitoring capabilities of MRI.

Abstract No. 262

MR-Guided Transurethral Ultrasound Ablation (TULSA) with Dose Escalation to MRI-Visible Prostate Cancer Lesions

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Purpose: MRI-guided transurethral ultrasound ablation (TULSA) is an interventional MRI procedure for prostate cancer (PCa). Regulatory studies used whole-gland ablation in low to intermediate-risk PCa with a single sweep. We report outcomes of TULSA with dose escalation to MRI-visible lesions concordant to clinically significant histology on targeted biopsy, spanning from low to high-grade PCa.

Materials and Methods: A retrospective analysis included PCa patients with at least 3 months follow-up who underwent TULSA with dose escalation (two or more sweeps) to the index lesion targeted by intraoperative DWI, ADC, and T2-weighted imaging. High-grade patients with negative PSMA-PET were included after counseling. Patients were followed daily for 2 weeks, PSA q3m, with MRI, IPSS, and IIEF at 6-9 months. Radiologic recurrence was defined as PI-RR≥4 on mpMRI, or positive PSMA-PET after PI-RR=3. Biochemical recurrence (BCR) was defined as nadir + 2 ng/mL.

Results: 136 patients were identified with median (IQR) age and follow-up duration of 63 (IQR 58-68) years and 11 (9-18) months. Proportions of men with histological grade group 1-5 PCa were 9%, 52%, 23%, 10%, 7%. PIRADS 4 and 5 MRI lesions were present in 42% and 58% of men. Median prostate volume was 50cc (IQR 37-68, range 12-160). Whole-gland ablation was performed in 60% of men, with uni/bilateral NVB sparing in 13%/25%. The extreme apex was targeted in 27%. PSA nadir after primary treatment was 0.9 (0.3-1.9) ng/mL. 89% (121/136) are free of radiologic and biochemical recurrence, with four patients undergoing repeat TULSA. 1 case with BCR had no imaging follow-up. 8/14 radiologic recurrences are BCR-free and remain on surveillance. 3/14 failures were out-of-field, 4/14 had residual disease near ejaculatory duct sparing which was since discontinued. Failures occurred where either MRI thermometry or ultrasound propagation was compromised by calcifications or motion.Grade 1-2 adverse events in 11 men (LUTS, mild hematuria, bladder spasms) resolved within 4 weeks with oral medication. Three men had Grade 3 events requiring endoscopic intervention (retention/obstruction/stricture). Urinary symptoms (IPSS) were stable. Two men incurred early post-op urine leakage, 100% are pad-free beyond 4 months. 84% maintained erection firmness sufficient for penetration (IIEF Q2≥2).

Conclusion: Customized TULSA with dose escalation to MRI-visible lesions shows promising real-world efficacy and safety. Ongoing optimization of patient selection and technique may further improve treatment across all histologic grades.

Abstract No. 263

Outcomes of Prostatic Artery Embolization Following Failure of Prostatic Urethral Lift for Lower Urinary Tract Symptoms Attributed to Benign Prostatic Hyperplasia

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Purpose: We aimed to evaluate improvement in urination, safety, and sexual function in patients undergoing prostate artery embolization (PAE) following failure of prostatic urethral lift procedure (UroLift) for the treatment of lower urinary tract symptoms associated (LUTS) in patients with benign prostatic hyperplasia (BPH).

Materials and Methods: Between April 2012 and February 2023, all patients from a single institution with a history of prior prostatic urethral lift procedure who subsequently underwent PAE for BPH with moderate to severe LUTS were included in this retrospective analysis. We evaluated the baseline demographics, technical success postoperative complications, functional scores (IPSS, QoL, SHIM, and MSHQ-EjD), and post-void residual volume. Paired sample t-tests were used for statistical analysis.

Results: 27 patients were included for analysis with a mean age of 69 years. Technical success was achieved in 25/27 patients (92.6%), with unilateral embolization performed in the remaining two patients (7.4%). There was a significant improvement ($p< 0.01$) in IPSS scores relative to baseline with a mean decrease of 12.35 (95% CI: [8.2, 15.8]) at 3 months and 5.9 (95% CI: [0.34,11.46) at 12 months post-PAE. There was a significant improvement ($p< 0.01$) in urinary bother (QoL) scores relative to baseline with a mean decrease of 2.8 (95% CI: [2.1, 3.5]) at 3 months and 1.8 (95% CI: [0.6, 3.0]) at 12 months post-PAE. No significant changes in SHIM score, MSHQ-EjD, or post-void residual volume were identified during follow up. No major adverse events occurred. One patient developed a femoral artery pseudoaneurysm that resolved without intervention.

Conclusion: Prostate artery embolization is associated with significant improvement in IPSS and QOL-Bother at 3 month follow up and is maintained at 1 year follow up in patients who have previously had a urethral lift procedure.

Abstract No. 264

Photon Counting Detector CTA for Prostate Artery Evaluation Prior to Prostate Artery Embolization

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Purpose: To evaluate the use of small field of view (FOV) high spatial resolution (0.2 mm slice thickness) photon-counting detector (PCD) prostate CT angiogram (CTA) for delineating prostate arterial anatomy in patients undergoing workup for prostate artery embolization (PAE).

Materials and Methods: In this IRB-approved study, imaging and electronic medical record review of men who underwent pelvic PCD prostate CTA as part of PAE workup at our institution from 2022 to 2024 was performed. PCD prostate CTAs were evaluated prospectively and independently by two vascular and interventional radiologists for prostate arterial supply, and consensus was achieved in all cases using the Carnevale PA classification. Candidate anastomoses to penile or rectal arteries were identified. In patients who went on to PAE, conventional angiograms were retrospectively compared with PCD CTA for confirmation of prostate arterial supply.

Results: PCD prostate CTA was obtained prior to PAE consultation for 33 men (mean age, 75y; range, 53–98y). We evaluated 66 pelvic sides, identifying 112 candidate PAs (cPAs) with a median of 3 cPAs per patient (mean, 3.4; range, 2–7). cPAs classified as follows: Type 1, 32% (n = 36); Type 2, 16% (n = 18); Type 3, 15% (n = 17); Type 4, 19% (n = 21); Type 5, 18% (n = 20). Type 5 cPAs originated from the superior rectal artery in 6 cases on PCD CT and were confirmed angiographically in 3 cases. To date, 64% of patients (n=21) have gone on to PAE and main prostatic arterial supply at PCD CTA was confirmed at conventional angiography in all cases (100%). No non-target embolization occurred.

Conclusion: High spatial resolution (0.2 mm slice thickness) PCD prostate CTA can detect the origin and course of prostatic arterial supply with high diagnostic accuracy in patients undergoing workup prior to PAE. Compared to cone-beam CT performed