

The background of the slide features a light blue, stylized illustration of a muscular man flexing his right arm. The man is wearing a white tank top and a white wristband. The illustration is composed of bold, white outlines and is set against a light blue background. The text is centered over this graphic.

SPC

SPERLING

PROSTATE CENTER

*The state of prostate cancer management and therapies,
courtesy of Sperling Prostate Center in Florida*



SPERLING

PROSTATE CENTER

**QUALITY OF LIFE WITH AN AGING PROSTATE:
THE SPERLING PROSTATE CENTER PROTOCOL**

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THE SPERLING PROSTATE CENTER PROTOCOL

*Excellence in Protecting and Maintaining
Prostate Health*

- Testosterone Replacement Therapy
- BPH
- Prostate Cancer Detection, Diagnosis, and Image-Guided Treatment

AS MEN AGE, PHYSIOLOGICAL CHANGES AFFECT QOL

- Testosterone levels ↓ (low T)
- Prostate cancer risk ↑ (PCa)
- Prostate gland volume ↑ (benign prostatic hyperplasia)

Objective: How Sperling Prostate Center protocols address these

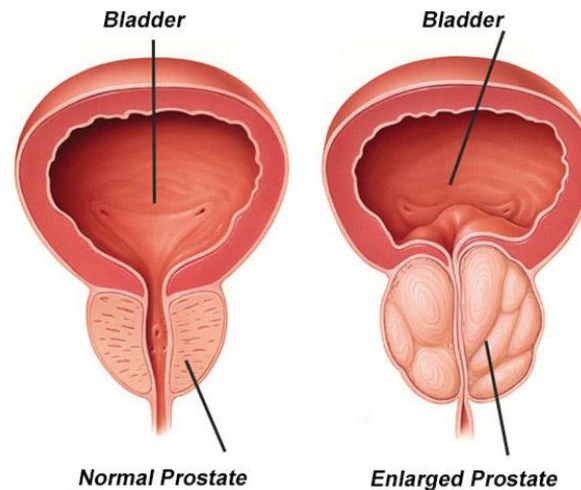
LOW-T IMPACTS MEN'S QOL

- Erectile dysfunction (ED)
- Energy loss/fatigue
- Reduction in lean muscle mass and strength
- Mood changes (depression, irritability)



BENIGN PROSTATIC HYPERPLASIA (BPH)

- Affects about 50% of men between ages 51-60
- 70% at age 60
- 90% at age 70



BPH REDUCES MEN'S QOL

- More frequent need to urinate
- Sense of urgency
- Nocturia
- Difficulty urinating
- Weak stream/inadequate bladder emptying
- Increased risk of UTIs
- Medications may not help or have unpleasant side effects

PROSTATE CANCER STATS

- Among men, prostate cancer is:
 - The **most common** non-skin cancer
 - The second leading cause of **cancer death**
 - Diagnosed in **250,000 cases per year** (primary and recurrent)
- **3 million – 7 million** men suffer from non-malignant prostate disorders detrimental to quality of life (e.g. benign prostatic hyperplasia)
- **About 2/3 of cases are diagnosed at age 65+**
- **Generally, the greater age at Dx, the less aggressive the disease**

PROSTATE CANCER TREATMENT CAN IMPAIR QOL

- Radical prostatectomy risks

- Incontinence

- ED

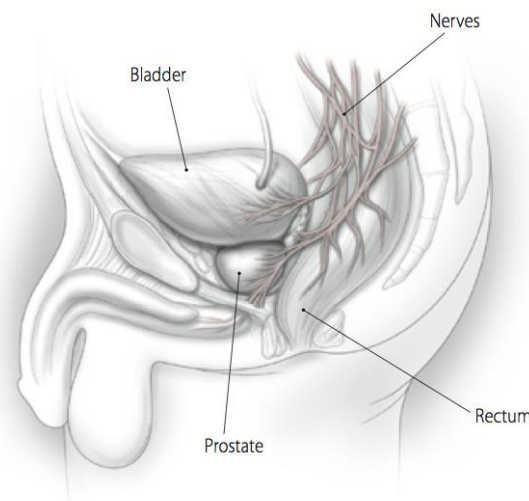
- Radiation risks

- Late onset dysfunction (bladder, sexual, bowel)

- Secondary cancers

- Androgen deprivation therapy (ADT; chemical castration)

- Breast tenderness, mood shifts, loss of bone density, loss of libido, ED, hot flashes, etc.



IMPROVEMENTS IN CLINICAL PRACTICE PROTECT & PRESERVE QOL AS MEN AGE

- Testosterone Replacement Therapy
- Focal therapies for PCa
- Minimally invasive BPH treatments

IMPROVEMENT: TESTOSTERONE REPLACEMENT THERAPY (TRT)

- Level 1 evidence supports safety and improved QOL¹
- Improves sexual function/desire
- Improves body composition
- Improves bone density

¹Morgentaler A. Controversies and Advances With Testosterone Therapy: A 40-Year Perspective. [Urology](#). 2016 Mar;89:27-32.

TRT – GENERALLY SAFE

Possible risks include:

- Biochemical changes can include change in cholesterol & lipid levels
- Lower sperm count
- Rise in PSA
- Increased red blood cell count
- Higher risk of blood clots
- May increase risk of heart attack and stroke

CONTROVERSY: TRT AND PCa

- 1940s to 1990s – belief that high total T levels fuel PCa growth
- Based on observing effect of ADT/chemical castration on PSA and T levels
- Assumption that testosterone “fuels” PCa
- Conclusion – PCa contraindicates TRT
- Starting in 2004, new research challenged that 60-year old belief

MORGENTALER'S PUBLISHED WORK – PARADIGM SHIFT

Harvard expert Abraham Morgentaler

- 2004 – Men with high T levels had no greater PCa risk
- 2008 – Limited ability of androgens to stimulate PCa growth once androgen receptors in prostate tissue are saturated²
- This “saturation model” began changing old beliefs
- Now a growing body of evidence supports TRT safety for PCa patients with low-T³

²Morgentaler A, Traish AM. Shifting the paradigm of testosterone and prostate cancer: the saturation model and the limits of androgen-dependent growth. Eur Urol. 2009 Feb;55(2):310-20.

³<http://www.renalandurologynews.com/canadian-urological-association/testosterone-replacement-safe-for-men-with-prostate-cancer/article/505807>

ONGOING STUDIES

- Some controversy and questions remain
- Paradoxically, recent findings correlate low blood levels of free T and overall T with PCa progression
- Gat-Goren hypothesis (free T saturation in prostate due to vascular problem) offers possible explanation⁴

⁴[San Francisco IE](#), [Rojas PA](#), [DeWolf WC](#), [Morgentaler A](#). Low free testosterone levels predict disease reclassification in men with prostate cancer undergoing active surveillance. [BJU Int](#). 2014

THE SPERLING PROSTATE CENTER PROTOCOL FOR TRT



- Baseline mpMRI prior to TRT
- Monitor changes in prostate at regular intervals as prescribed using mpMRI
- Monitor PCa patients on TRT during AS

MPMRI: PORTRAIT OF A PROSTATE

In conjunction with ever-improving biomarkers (e.g. testosterone blood levels, PSA/variants, genomic analysis), mpMRI information has a direct bearing on QOL as men face age-related health changes:

- TRT - baseline before starting, then periodic monitoring
- BPH - image-based prostate profiling
- Suspected PCa - identification of suspicious area and in-bore targeted biopsy
- Diagnosed PCa - qualifying patients for AS vs. tx
- Diagnosed BPH or PCa, qualifying patients for best tx choice including focal tx

THE PROSTATE HEALTH GAME CHANGER:

3 Tesla Multiparametric MRI



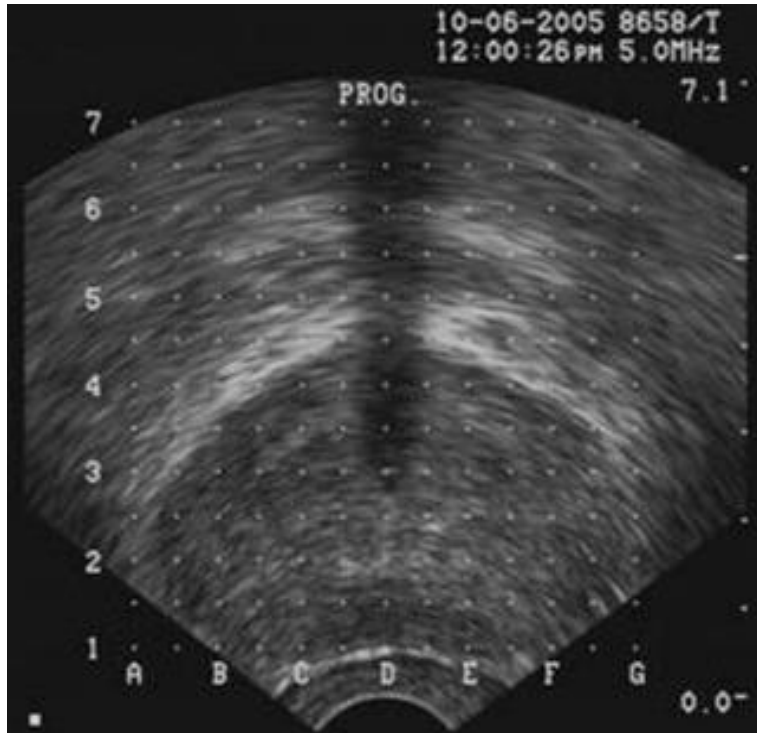
MULTIPARAMETRIC MRI (MPMRI)

- Imaging revolutionizes prostate detection, diagnosis, treatment
- Powerful 3 Tesla magnets produce very high resolution 3-D images
- Specific scanning sequences (parameters) characterize healthy vs. diseased tissue:
 - Anatomy
 - Motion of water molecules
 - Blood flow
 - PCa aggressiveness
- mpMRI achieves baseline and prostate monitoring
- mpMRI enables image-guided biopsy (dx) and Focal Laser Ablation (tx)

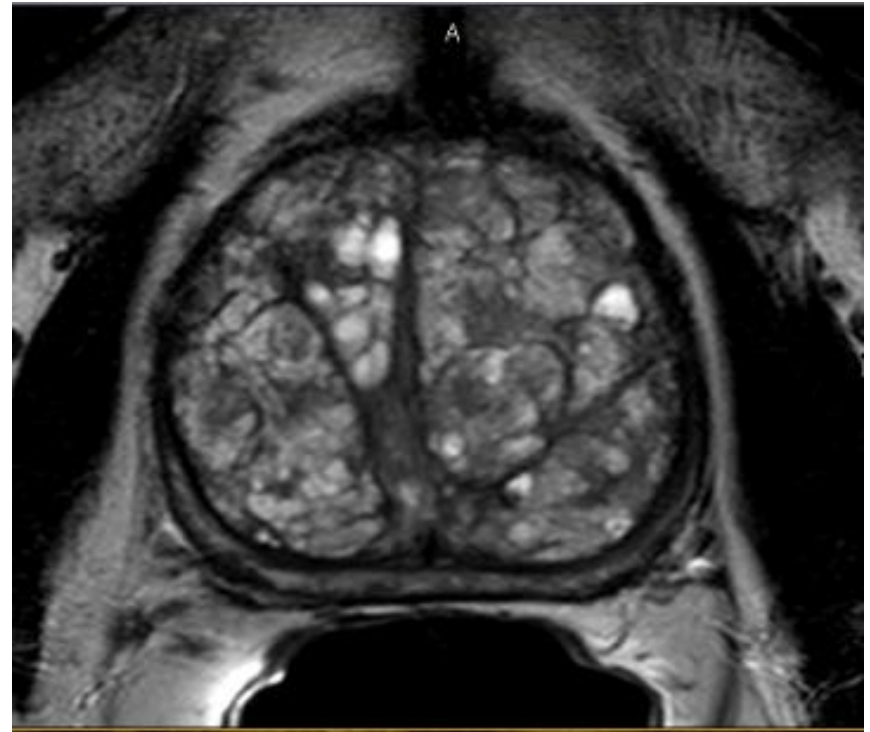
BENEFITS OF MPMRI

- Excellent functional soft-tissue contrast contrary to TRUS and CT
- Identify and localize diseased tissue (inflammation, BPH, PCa, etc.)
- Guide probes into targeted tissue for biopsy or treatment
- Monitor and control interventions in real-time
- No exposure to ionizing radiation as with CT scans or X-rays

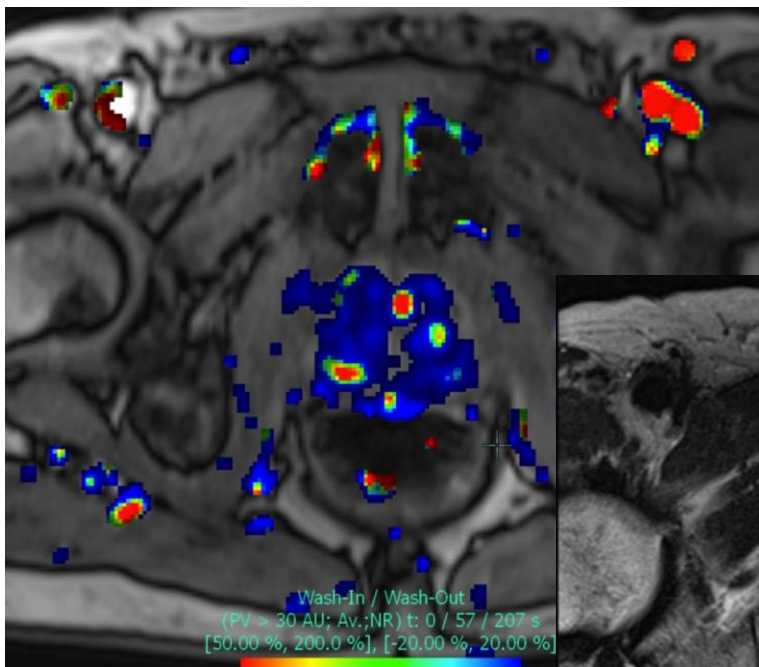
ULTRASOUND VS. MRI



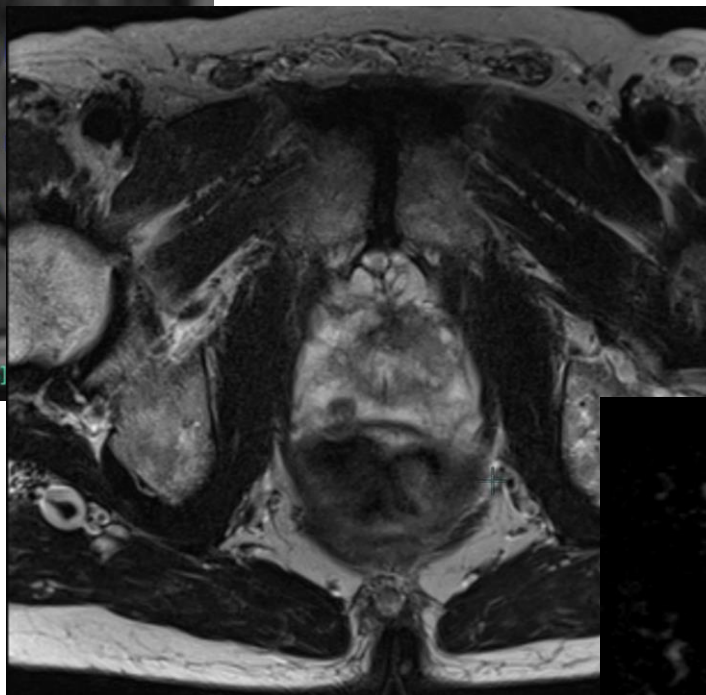
ULTRASOUND: LOW DEFINITION



MRI : HIGH DEFINITION

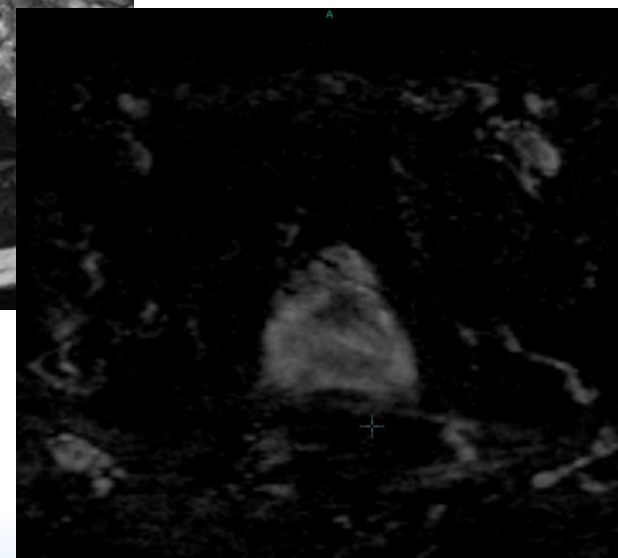


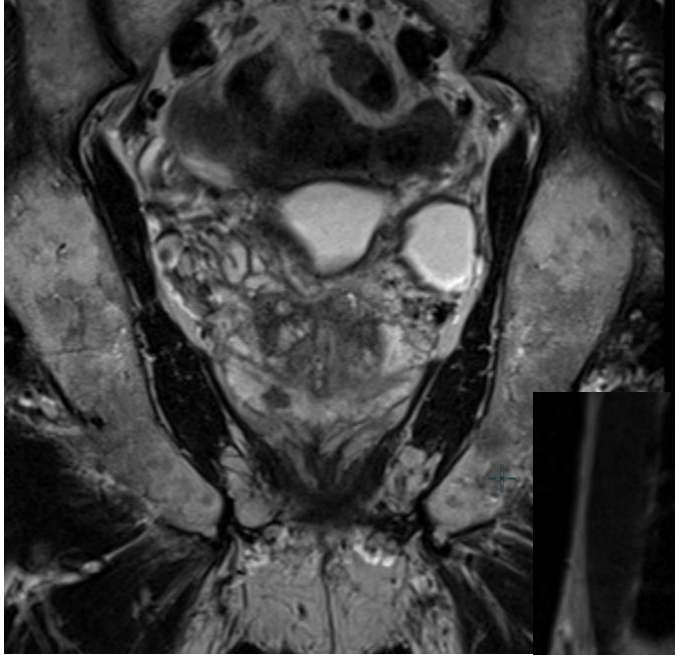
Dynamic Contrast
Enhanced Imaged



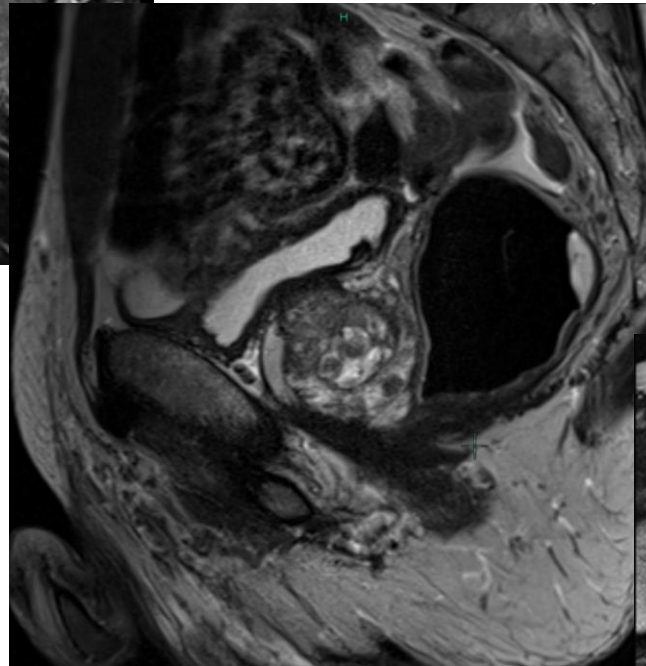
T2 Weighted Imaged

Diffusion Weighted
Imaging

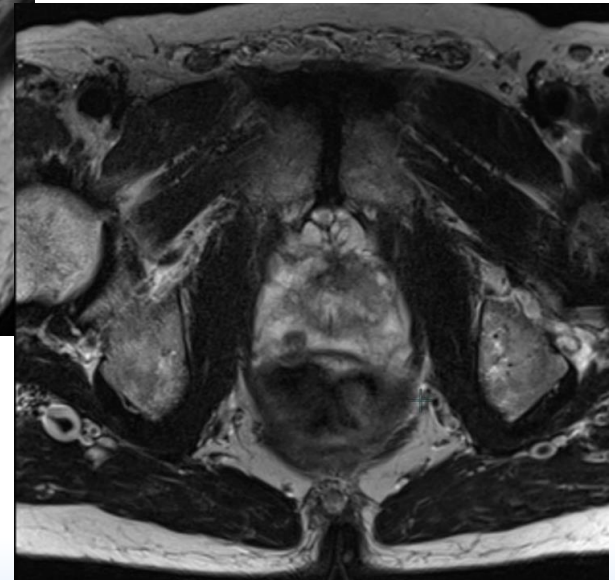




Coronal Plane

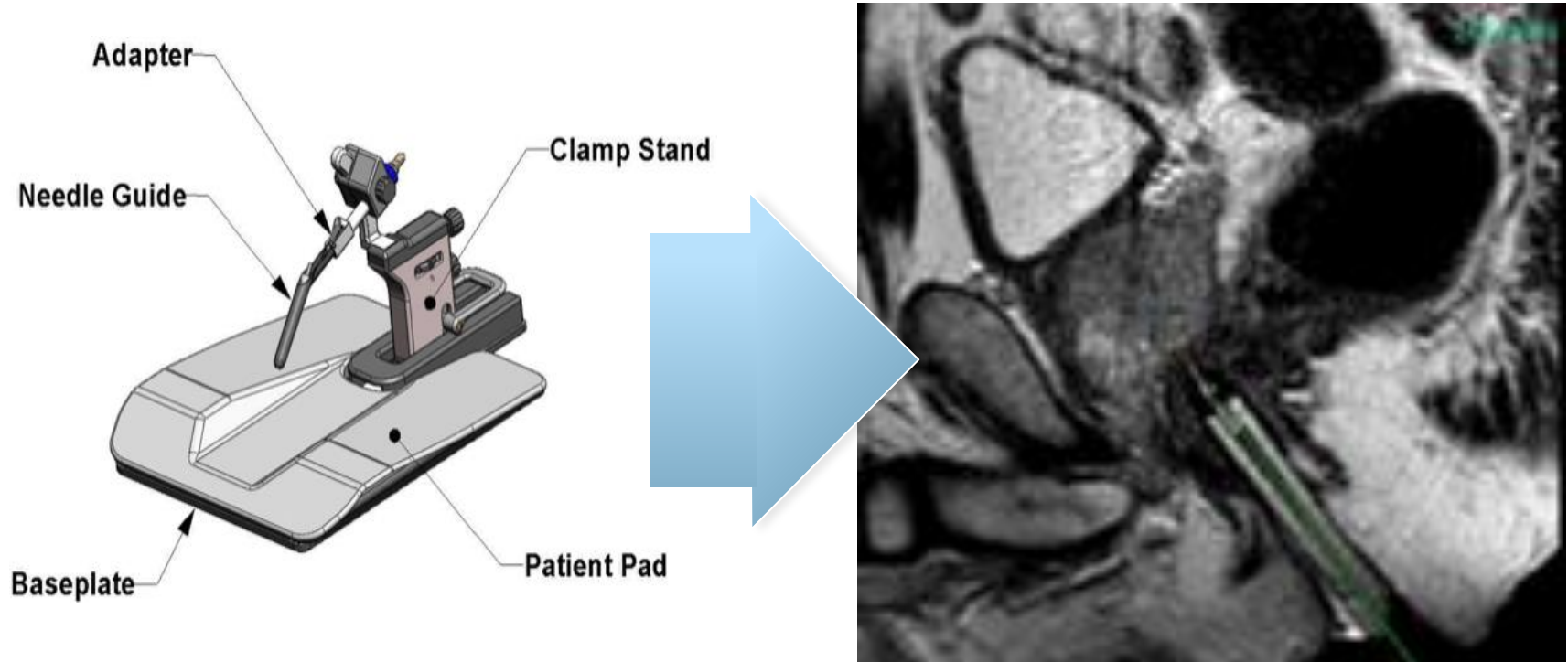


Sagittal Plane

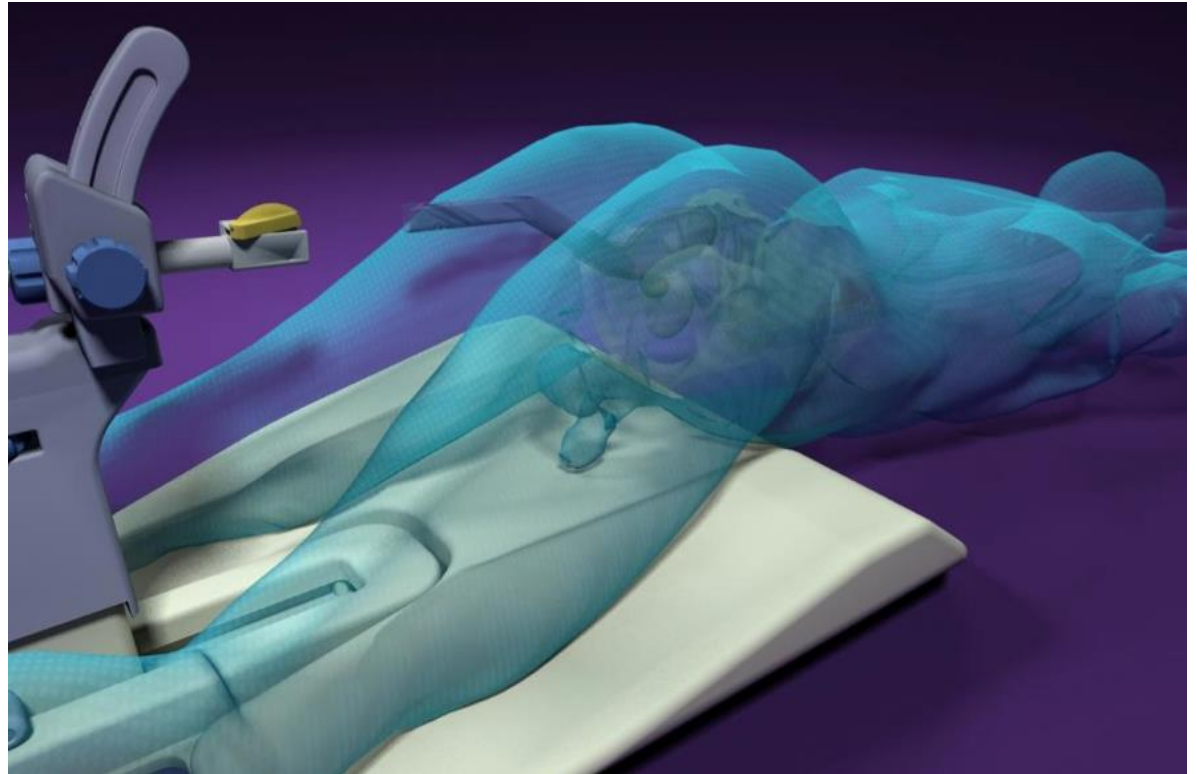


Axial Plane

SPERLING PROSTATE CENTER OFFERS STATE OF THE ART MRI GUIDED IN-BORE PROSTATE BIOPSY



STATE OF THE ART PROSTATE BIOPSY



WHAT'S THE BOTTOM LINE?

Need excellence in monitoring

- TRT risks in general
- TRT for PCa patients



IMPROVEMENT: FOCAL THERAPY FOR PCA IS NOW RECOGNIZED

- Mid-1990s ushered in PSA screening (early detection)
- Prevailing belief then: PCa = multifocal disease
- Standard of care was 2 choices: radical tx or WW
- Early 2000s pathology evidence → 1/3 of cases are unifocal
- Around 2010, shift in belief begins regarding insignificant vs. significant PCa
- Groundswell in patient awareness about over-tx and under-tx
- Radical treatments (surgery, radiation, cryotherapy) put QOL at risk
- Watchful waiting/Active Surveillance risks missing tx window

MRI-GUIDED FOCAL LASER ABLATION (FLA)

The Sperling Prostate Center is the leading pioneer and practice in MRI-guided FLA for focal PCa tx.

- Focal Laser Ablation was originally developed to treat brain tumors
- MRI-guided, precision placement (transrectally) of a slender optical fiber that carries the laser light beam
- When the tip of the fiber is positioned in the targeted tissue, the beam is activated
- When the laser contacts tissue it generates a sphere-shaped zone of heat intense enough to coagulate (but not vaporize) tissue

THE SPERLING PROSTATE CENTER

PROTOCOL FOR PCA

- Baseline mpMRI
- PCa detection using mpMRI
- PCa diagnosis using real-time MRI-guided biopsy in conjunction with other clinical factors
- Tx planning enhances effectiveness of any whole-gland or focal tx option
- MRI-guided FLA for qualified patients
- Monitoring patients on AS
- Annual post-treatment mpMRI after any tx, in conjunction with PSA/biomarkers
- Protects and maintains QOL before, during and after PCa treatment

THE FLA TREATMENT PROCESS

- Outpatient
- No general anesthesia
- Each ablation lasts 2-4 minutes and includes an additional ablation “safety margin”
- Temperature monitoring assures precise zone of destruction and correct temperature
- Multiple ablations are possible during the same treatment by repositioning the fiber
- After ablation, mpMRI confirms no viable tumor tissue
- Procedure duration typically 1.5 hours

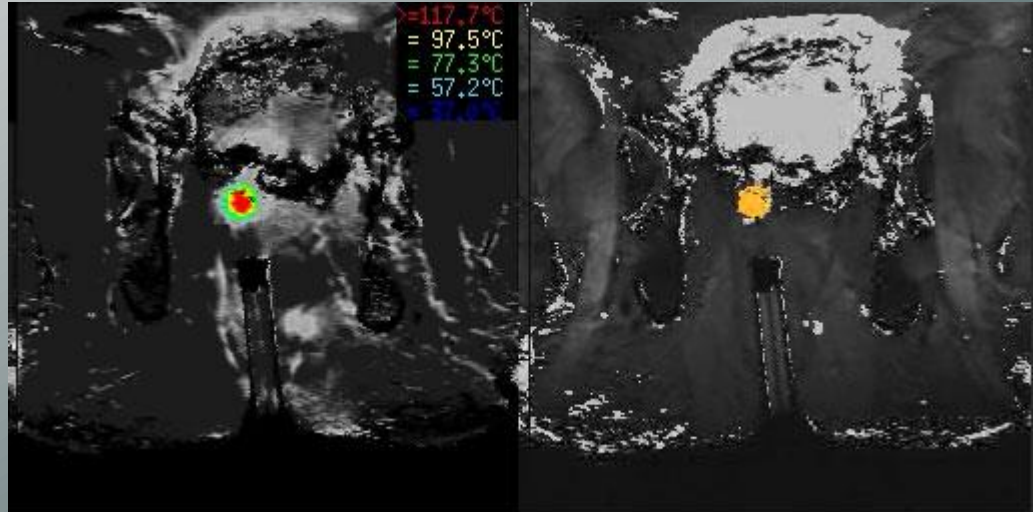
ABLATION 1

Test Dose
3W for 34sec

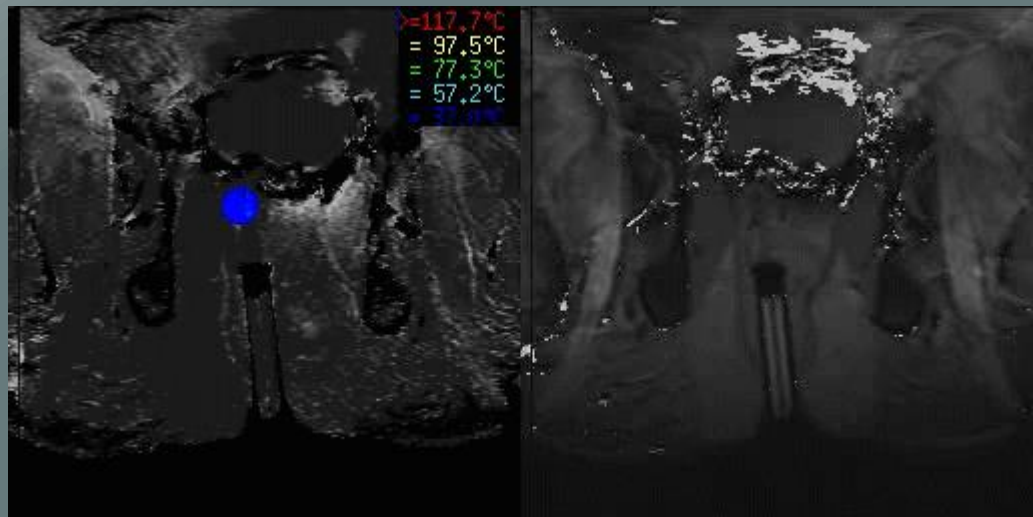
Laser Doses
12W for 81 sec

Irreversible Damage Estimate
15mm by 13mm

Final Images



Animation – not in real-time



Axial

Treatment Temperature Map

Irreversible Damage Estimate

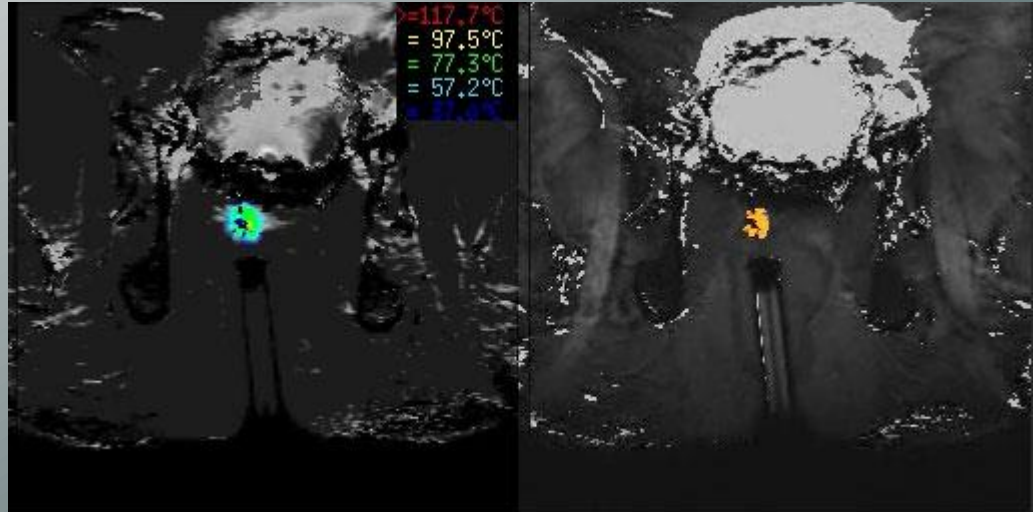
ABLATION 2

Test Dose
3W for 27sec

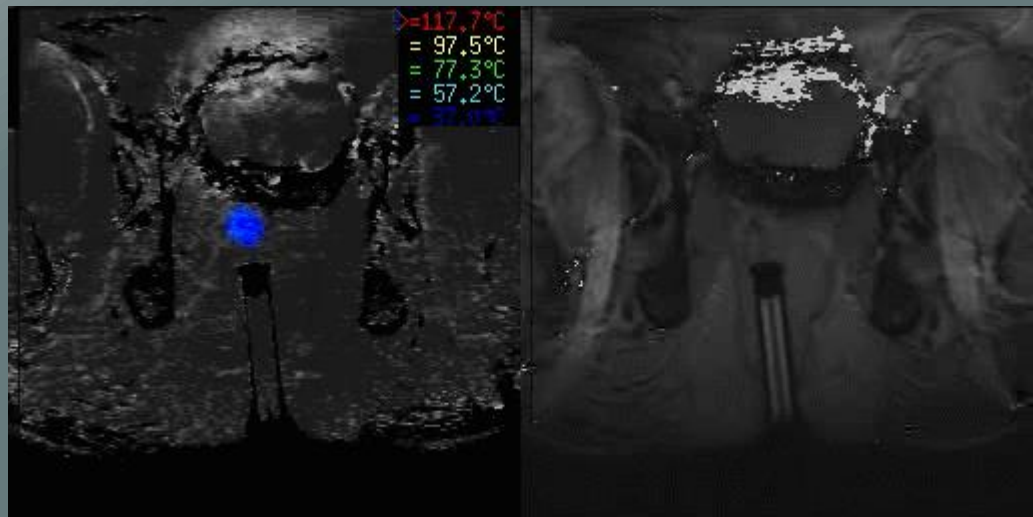
Laser Doses
12 W for 67 sec

Irreversible Damage Estimate
15mm by 14mm

Final Images



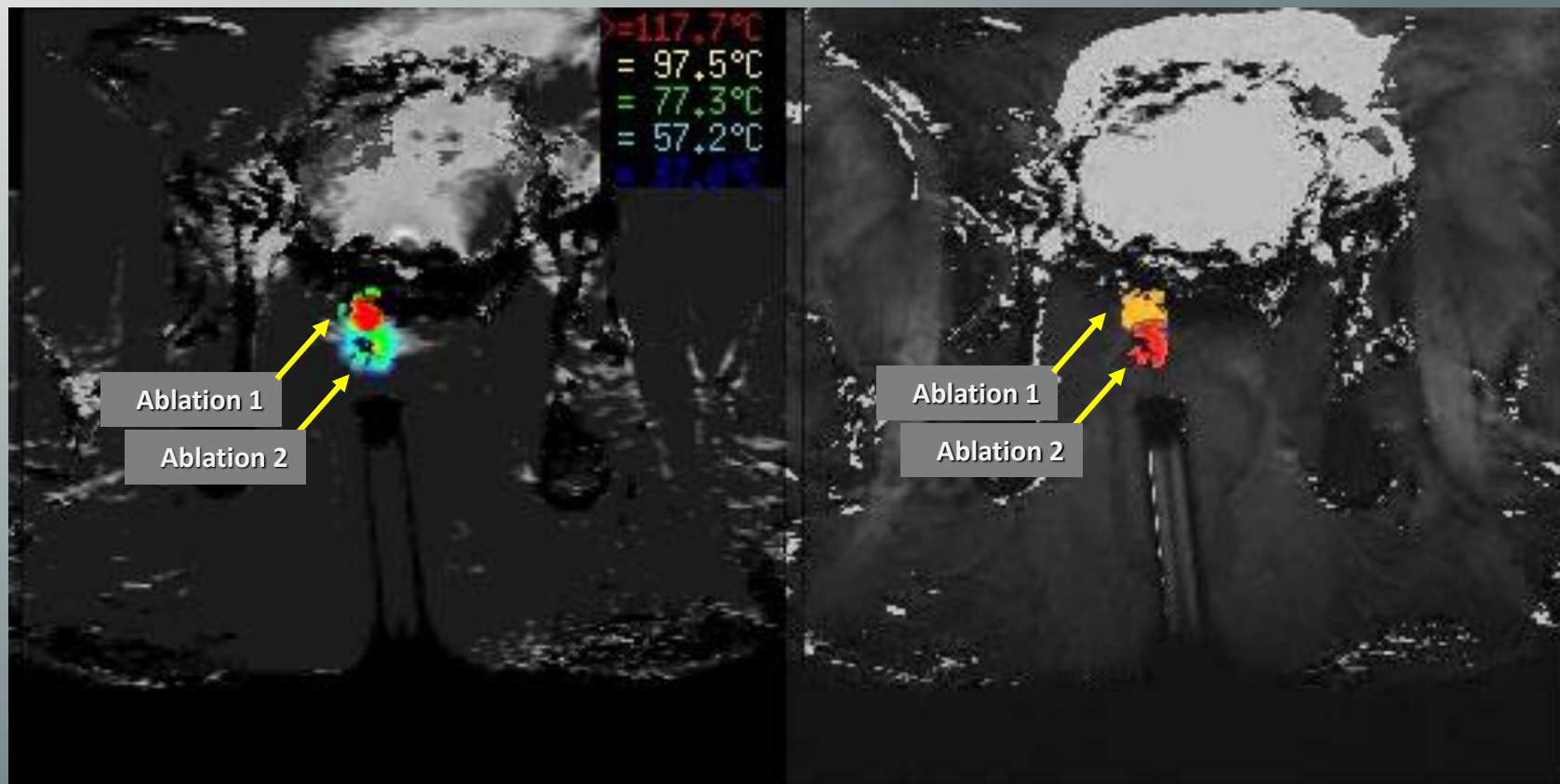
Animation – not in real-time



Axial

Treatment Temperature Map

Irreversible Damage Estimate



Treatment Temperature Map

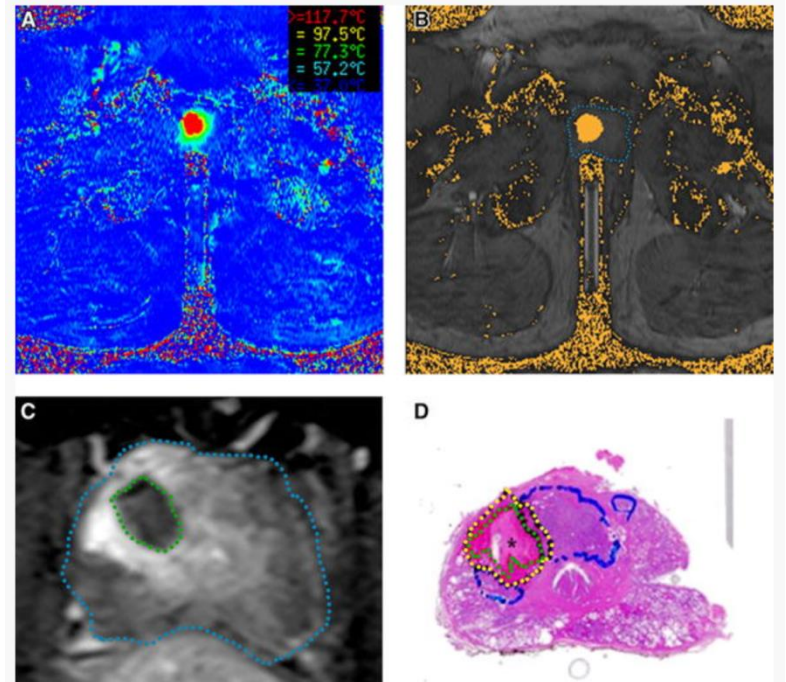
Irreversible Damage Estimate

Axial

CONFIRMING FLA ABLATION ZONE

**MRI-guided FLA creates
ablation with no evidence of
viable cells in treated regions**

**mpMRI images following FLA
using contrast enhancement
are more reliable than
damage-estimation maps**



FOCAL LASER THERAPY

Short therapy

No catheter required for post-therapy patients

Almost no co-morbidities

FDA cleared and approved

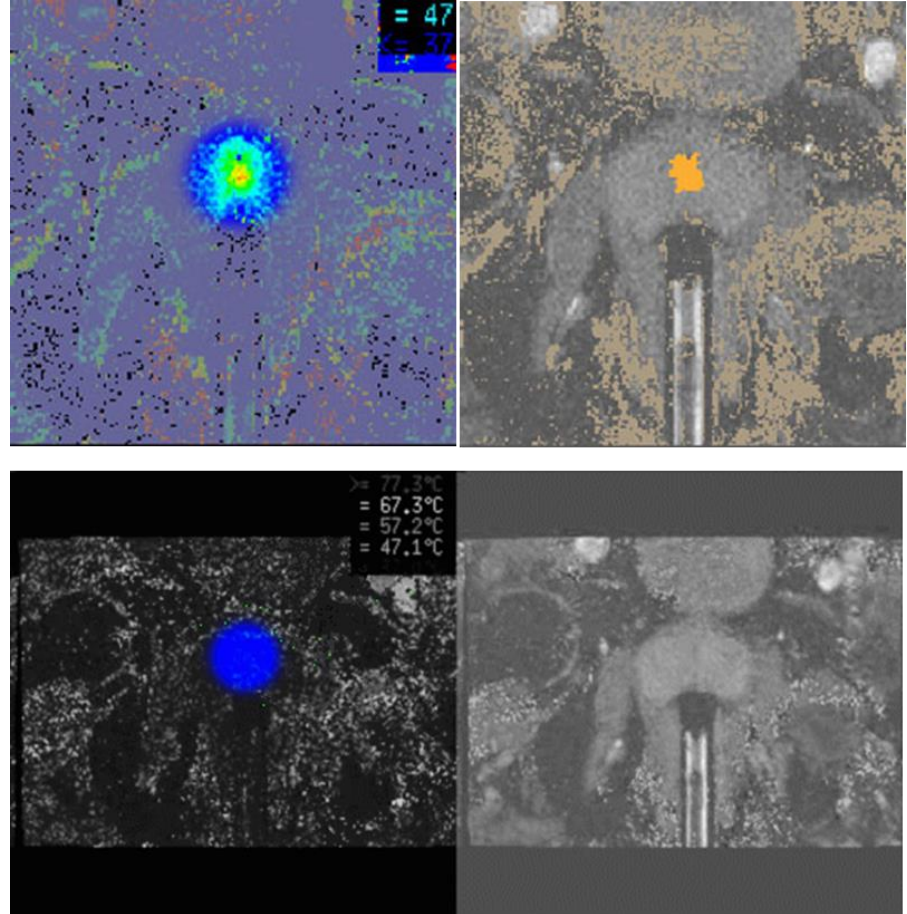
Effectively destroys tumors

Repeatable if necessary

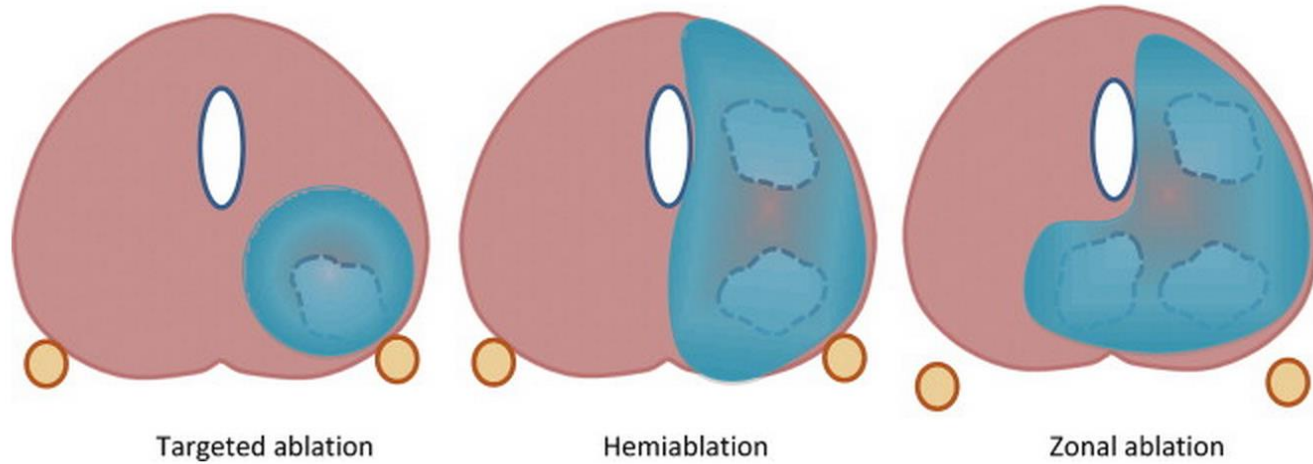
Does not preclude any future prostate therapies

More proactive than active surveillance

Almost no risk of impotence and incontinence



FOCAL PROSTATE THERAPY



PROSTATE CANCER MANAGEMENT

Current landscape



1. **Radical Prostatectomy:** Robotic or Traditional
2. **Radiation** (External Beam, Cyber knife, Proton Beam)
3. **Focal Therapies**
 - a) HIFU
 - b) Cryotherapy
4. **Active Surveillance**
5. **Androgen Deprivation Therapy** (Lupron)
6. **Dendritic Treatments**

PATIENT SELECTION AND FLA ADVANTAGES

- mpMRI to detect suspicious area(s)
- In-bore MRI-guided targeted biopsy into suspicious areas = most accurate sampling
- Confirmation of tumor focality and significant/insignificant PCa on biopsy
- Patient QOL and preferences (take whole person into account)

ADVANTAGES FOR QUALIFIED PATIENTS

- Zero-to-minimal risk of urinary and sexual side effects
- Outpatient procedure
- Very rapid recovery and return to normal activities
- Very high QOL
- Cancer control comparable to whole-gland procedures
- Repeatable if necessary
- Leaves all future treatment options open if necessary



PROSTATE LASER ABLATION

Boasts the advantage of zero impotence/incontinence risk

...as opposed to the risk factors of traditional therapies:

	RECTAL INJURY				INCONTINENCE	IMPOTENCE
	Fistula	Urgency	Bleeding	Diarrhea		
Radical Prostatectomy		16%	3%	19%	52%	86%
Beam Radiation		43%	17%	42%	15%	61%
Brachytherapy	3%		11%		19%	66%
Cryoablation	0.5%				7%	95%
HIFU	5%				2%	30%

FLA OUTCOMES FOR PCA

Table 2 – Early functional and oncologic outcomes (n = 25)

	Baseline	After ablation (3 mo)	p value
AUASS, median (IQR)	5.5 (3–13.5)	5 (2–10.75)	0.112 ^a
SHIM score, median (IQR)	20.5 (12.75–24)	21 (16–24)	0.205 ^a
Incontinence (%)	0	0	
Mean PSA (ng/ml)	5.3	2.9	0.0003 ^b
Residual cancer in FA (%)		4	

AUASS = American Urological Association Symptom Score; SHIM = Sexual Health in Men; IQR = interquartile range; PSA = prostate-specific antigen; FA = focal abnormality.

^a Wilcoxon signed-rank comparison between baseline and 3 mo.

^b t-Test comparison between baseline and 3–6 mo.

WHAT'S THE BOTTOM LINE?

- Need better PCa-specific early detection
- Need more accurate diagnosis to enable best treatment match
- Need a middle-ground alternative to radical tx
- Minimum risk of side effects that lower QOL
- Maximum cancer control
- Leave future tx options open
- Rational alternative to WW/AS

IMPROVEMENT: MINIMALLY INVASIVE BPH THERAPIES

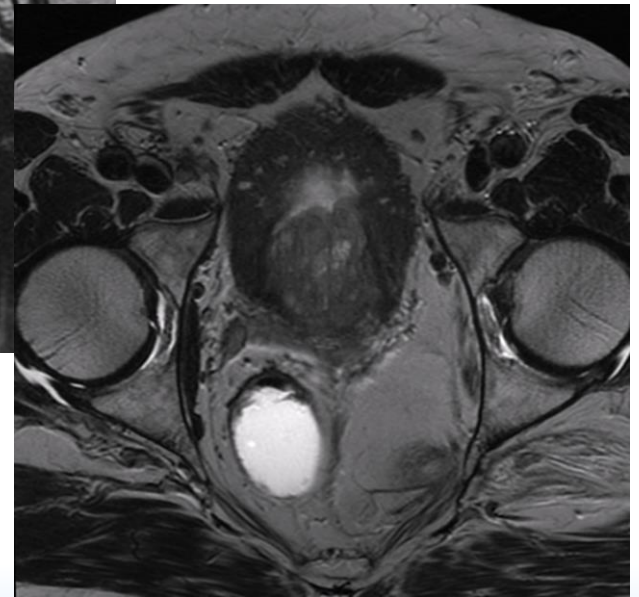
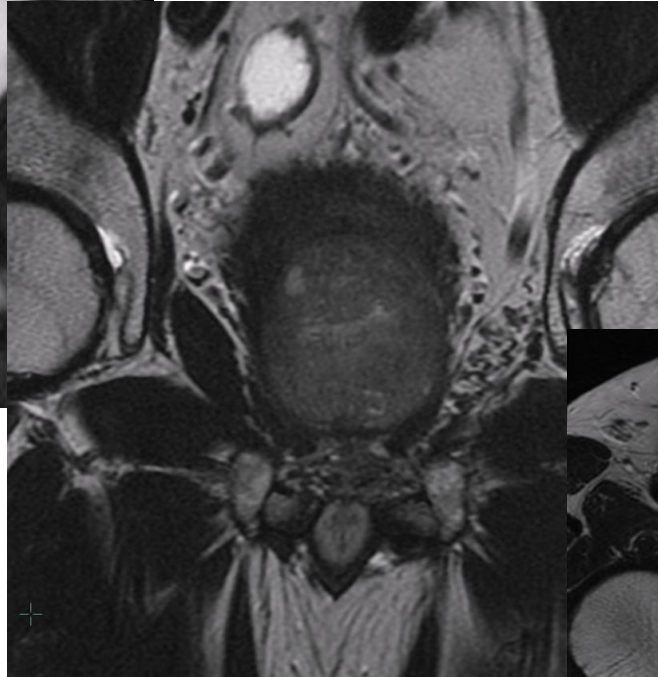
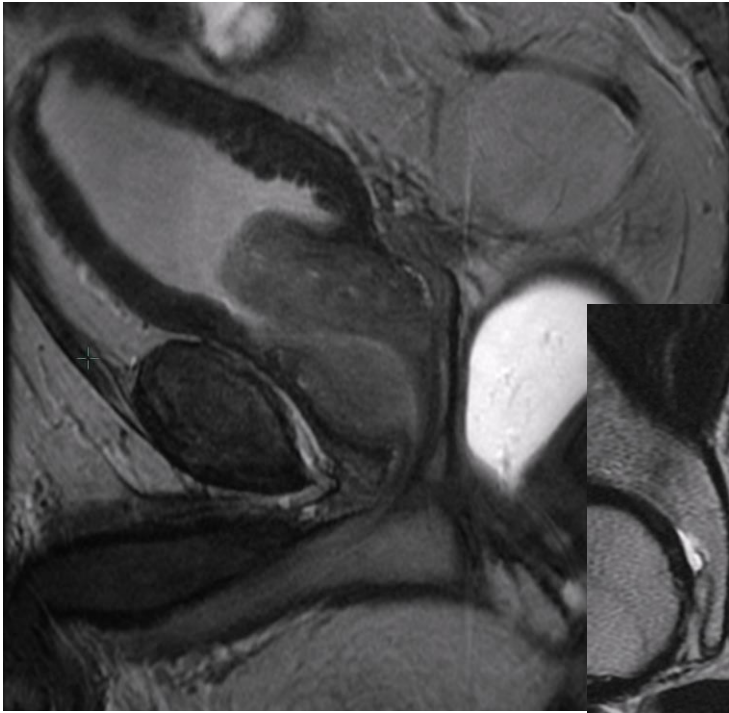
Medications may be ineffective or have unpleasant side effects

Conventional surgical interventions to relieve symptoms are transurethral

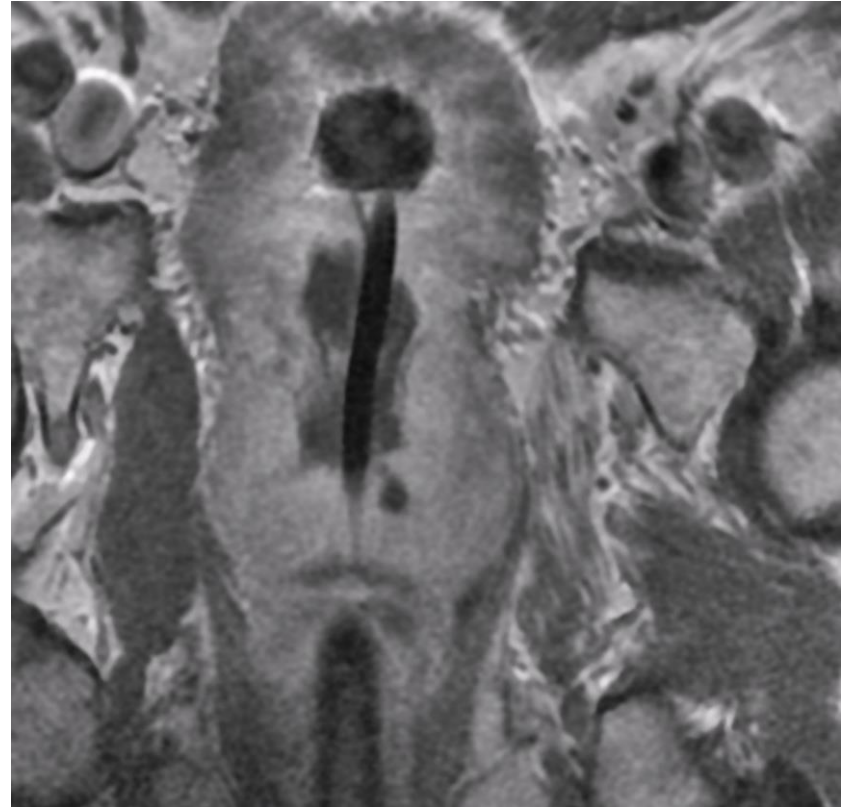
- Transurethral resection of the prostate (TURP)
- Transurethral needle ablation (TUNA)
- Laser vaporization (e.g. GreenLight Laser)
- Urolift system
- Rezum

FLA FOR BPH

- Focal Laser Ablation for BPH is an alternative to transurethral procedures
- The outpatient treatment is similar to FLA for PCa (transrectal) so there is no urethral entry or tissue damage
- The ablated area gradually shrinks as harmless scar tissue forms and then is reabsorbed
- Pressure/constriction of the urethra is relieved as prostate volume reduces
- This alternative to transurethral treatments
- Zero-to-minimal temporary side effects
- Very rapid recovery/return to normal activities
- Durable



PRE AND POST LASER ABLATION BPH



THE SPERLING PROSTATE CENTER PROTOCOL FOR BPH

- Baseline mpMRI
- Evaluate sources of anatomic compression or blockage of urethra
- Ongoing monitoring using mpMRI for patients simply watching and waiting
- Ongoing monitoring using mpMRI for patients on medications
- Treatment planning and symptom relief using MRI-guided FLA
- Restores QOL



WHAT'S THE BOTTOM LINE?

- Transurethral procedures: recovery, efficacy, and risks vary
- Need intervention alternative to transurethral procedures



WHAT'S THE BOTTOM LINE?

A picture is worth a thousand words. mpMRI has permanently changed the prostate health landscape and empowers men and their doctors to make the most informed decisions and treatment matching.

TO REVIEW:

- Age-related changes in testosterone and prostate health can lower QOL
- A man's well-being and self-image are intimately connected with his pelvic health
- Our protocol offers mpMRI and minimalist treatments that preserve quality of life and get men back on the road of life.

