Welcome

Kaiser Permanente North Bay

Prostate Cancer Class

Physicians

- Kaiser Santa Rosa Urology
  - Mark Klein MD, David Martin, MD, Keith Palmer MD, Michael Shulman MD
- Kaiser San Rafael Urology
  - Jay Belani MD, Anjali Ganatra MD, Joseph Lee MD, Gary Nicolaisen MD, Paul Alpert MD
- Kaiser Rohnert Park Radiation Oncology
  - Marc Fields MD, Irwin Lee MD, Anand Parthasarathy MD

Class Goals

1) Learn about prostate cancer
   - How to read your pathology report
   - Define your risk group
2) Learn about prostate cancer treatments
   - Benefits of each treatment
   - Risks of each treatment

Disclaimers

This class is designed to help educate you about your prostate cancer. It is not designed to tell you what is the best treatment option for you

Please feel free to ask questions, but please do not disclose any of your personal health information when you do so

Prostate Cancer Basics

- Most common cancer of American men (excluding skin cancers)
- 232,000 new cases of prostate cancer will be diagnosed this year
- 30,000 men will die of prostate cancer this year

Prostate Cancer Basics

- **About 1 man in 5** will be diagnosed with prostate cancer.
- **About 1 in 7 men** diagnosed with prostate cancer will eventually die from it.
- Most men die *with* the disease, not *of* the disease

American Cancer Society

"For men with cancer that has not spread beyond the prostate gland (localized prostate cancer), the **5-year relative survival rate, is 100%,** whether or not they are treated".

http://www.nccn.org/patients/patient_gls/_english/_prostate/2_detection.asp

American Cancer Society

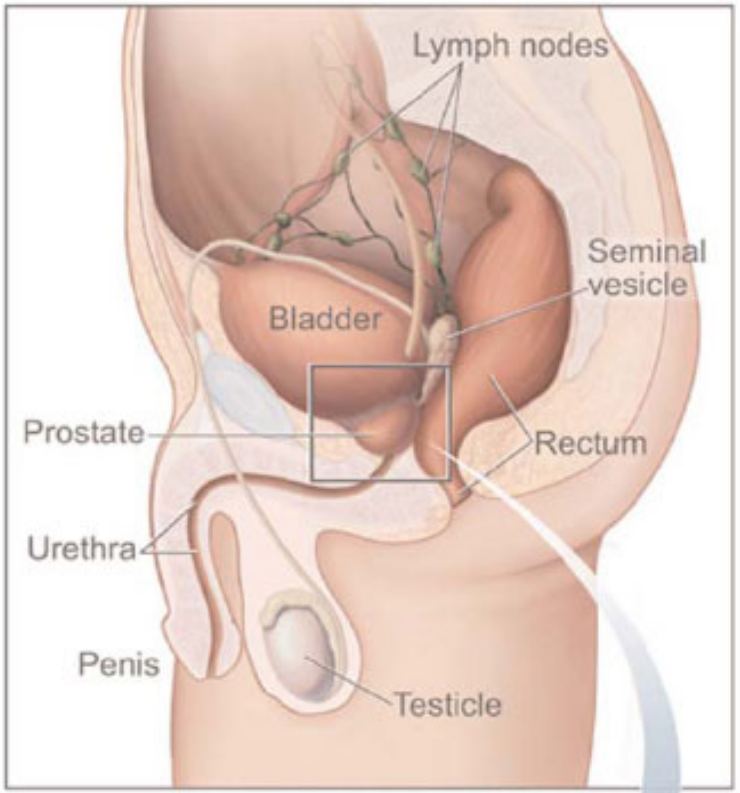
"**10-year survival is nearly the same** as in men without prostate cancer".

"Early diagnosis and treatment of prostate cancer will help **some** men to live longer"

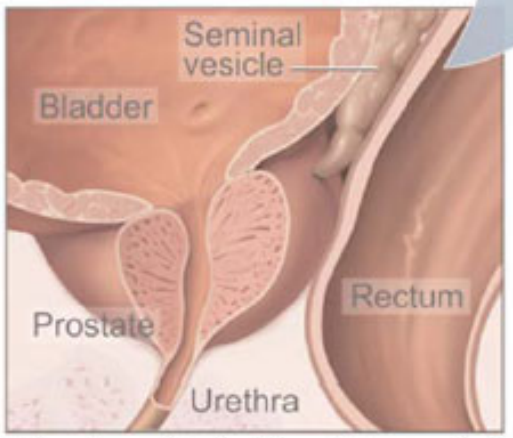
http://www.nccn.org/patients/patient_gls/_english/_prostate/2_detection.asp

What is the Prostate?

- Part of the male reproductive and urinary tracts
- Produces seminal fluid
- Needs the main male hormone, testosterone, to grow and function normally



This shows the prostate and nearby organs.

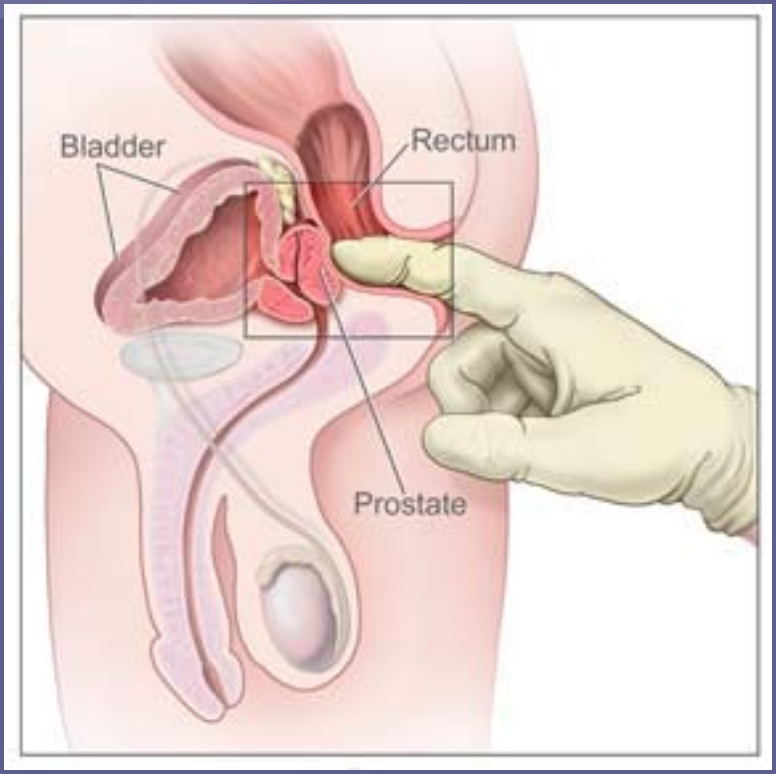


This shows the inside of the prostate, urethra, rectum, and bladder.

How do we evaluate prostate cancer?

- Cancer stage
- PSA
- Biopsy results / Cancer grade
- Imaging when appropriate

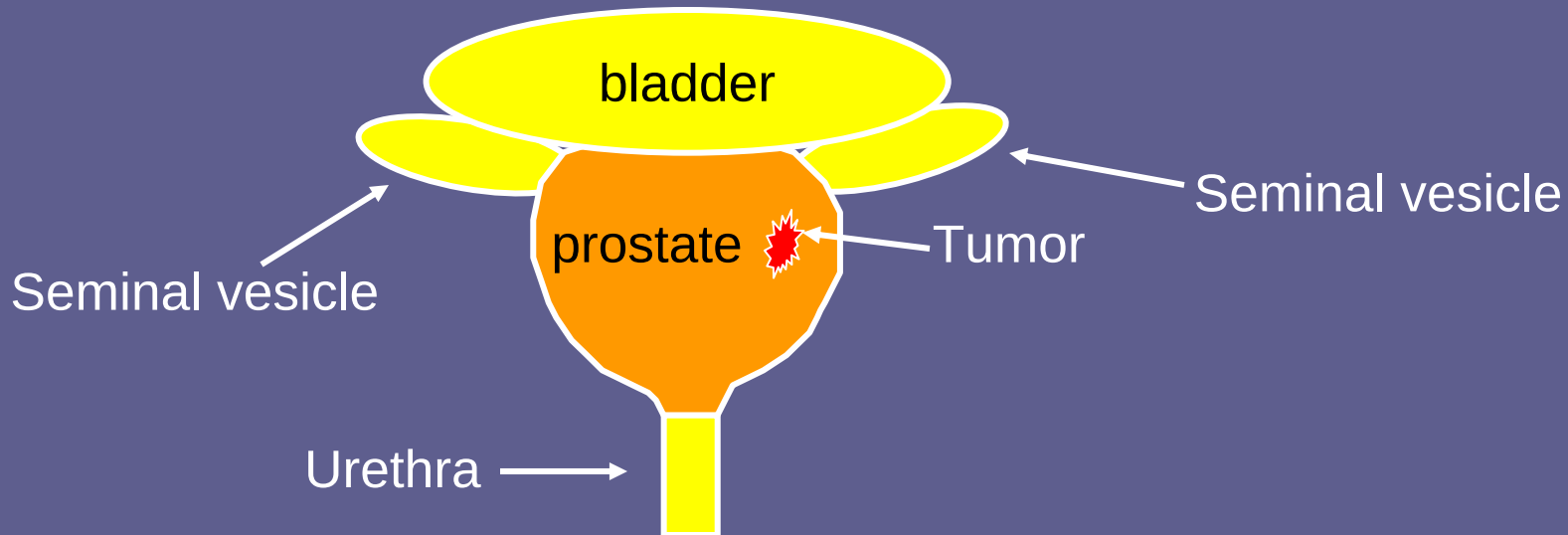
Prostate Cancer Staging



Based on the rectal exam

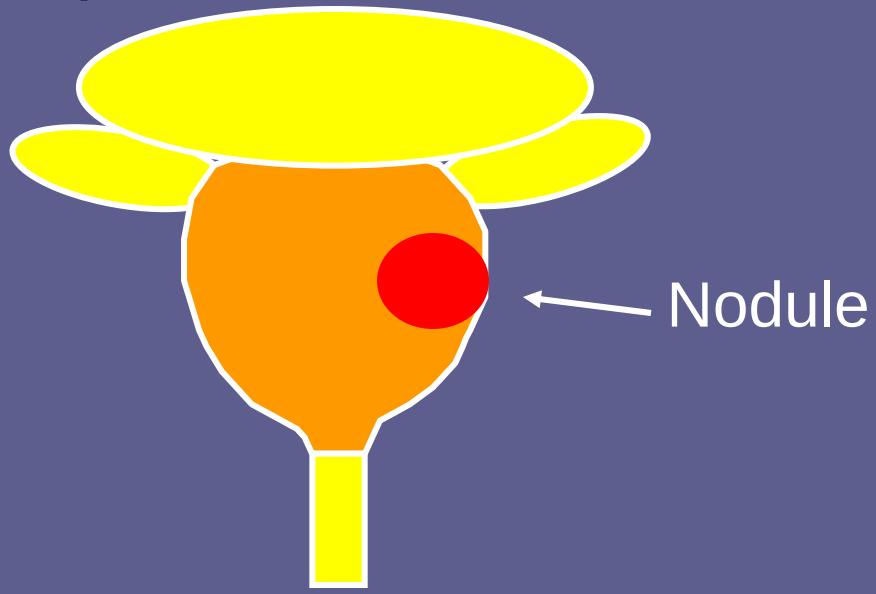
Prostate Cancer Staging

- Stage T1C
  - Tumor was found on needle biopsy performed due to an elevated PSA
  - No nodule was palpable on exam
  - This is the most common stage



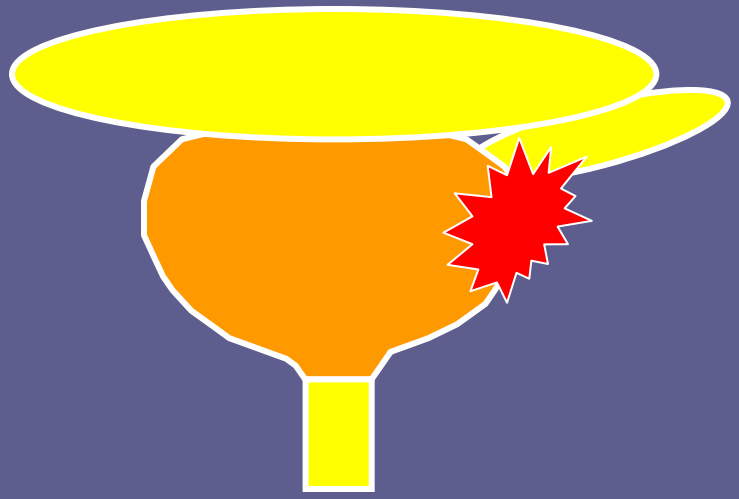
Prostate Cancer Staging

- Stage T2
  - The prostate has a nodule felt on exam
  - The cancer has not spread through the prostate capsule



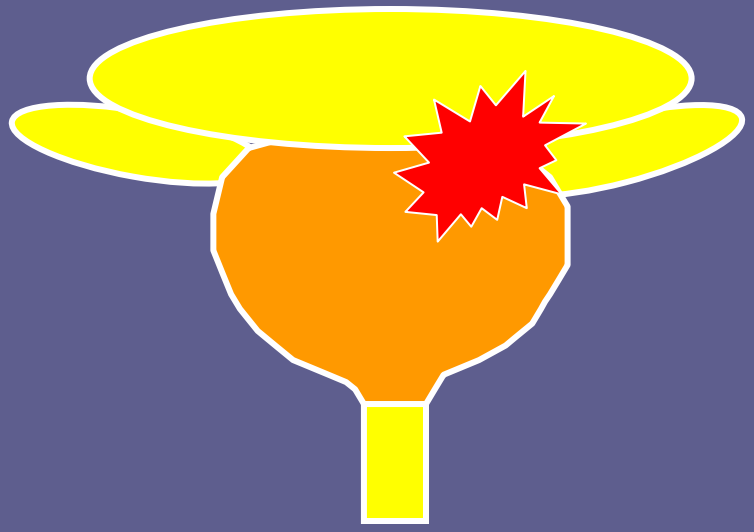
Prostate Cancer Staging

- Stage T3
  - The tumor has spread through the capsule and/or into the seminal vesicles



Prostate Cancer Staging

- Stage T4
  - The tumor has invaded other nearby structures

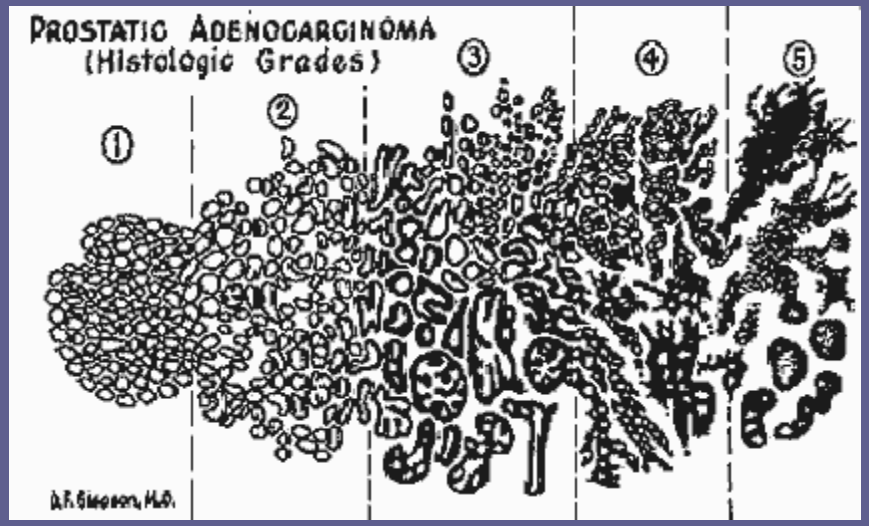


PSA

- Protein made by the prostate
- Blood test
- Higher PSA levels increase the chance of more advanced cancer
  - PSA less than 10 low risk
  - PSA between 10-20 intermediate risk
  - PSA over 20 high risk
- May determine need for further testing, including imaging (for example, if PSA is above 20, imaging often recommended)
- Will be used to measure the outcome of treatment

Gleason Grade

- Microscopic appearance of prostate cancer can help predict cancer aggressiveness
  - Least aggressive cancer → Gleason 1
  - Most aggressive cancer → Gleason 5
  - Gleason scores of 1 and 2 are very rare
  - Therefore Gleason 3 is effectively the lowest score
- Total Gleason Grade is the sum of the two most common patterns of cancer

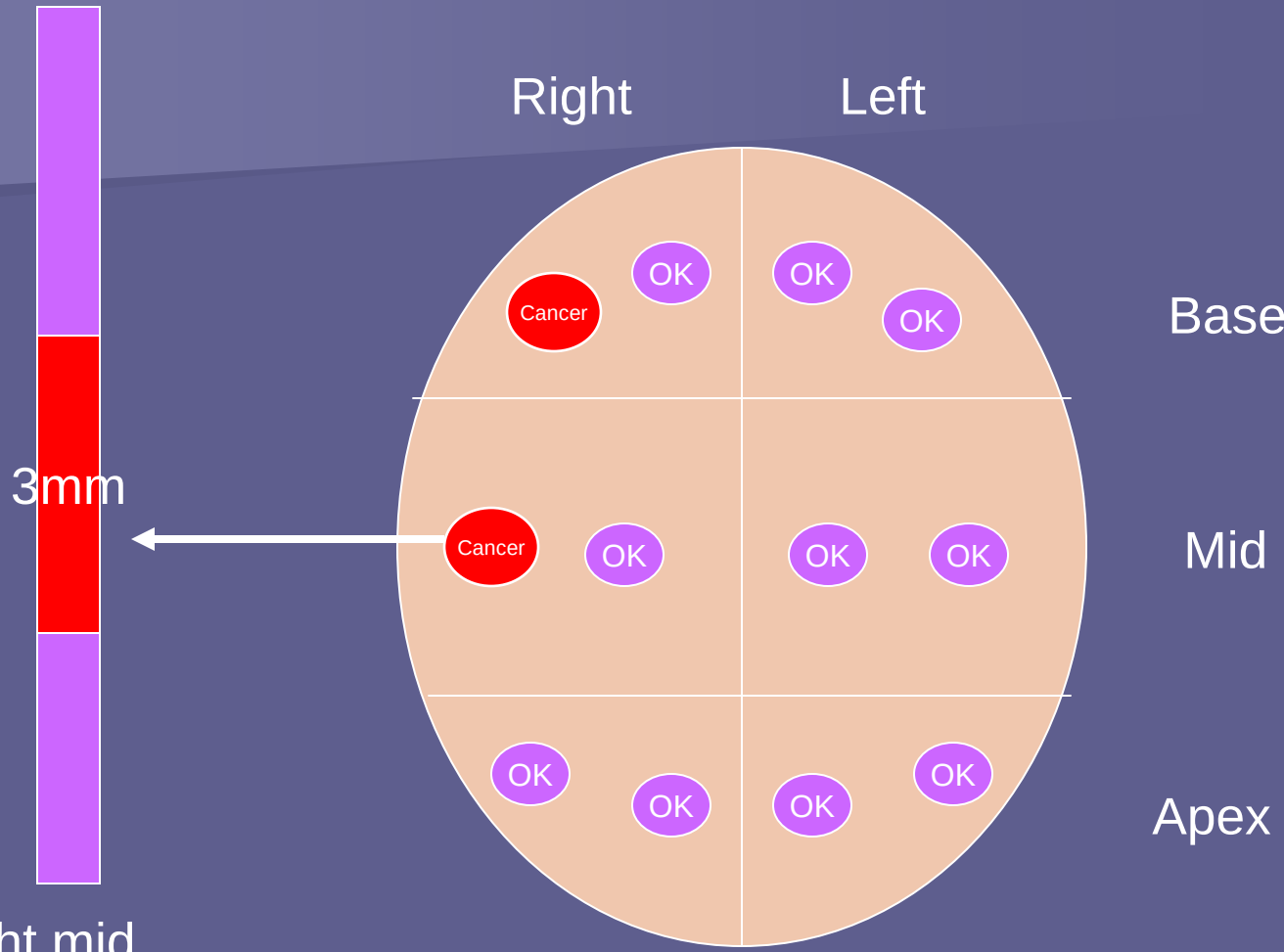


Gleason Grade

Gleason Score	Level of aggressiveness
3+3 = 6	Low
3+4 = 7	Low-to-intermediate
4+3 = 7	Intermediate
8 – 10	High

Sometimes the 3rd most common grade of cancer will be 5 (i.e. Gleason 4+3 with some 5) and this can be clinically important

Interpreting Biopsy Results



Right mid
10 mm biopsy
3 mm of cancer

Prostate Cancer found in 2 of 6 zones
2 of 12 biopsies show cancer

Imaging

- Bone Scan
  - Purpose is to look for spread to the bones
- CT scan
  - Purpose is to look for spread to lymph nodes
- When are these tests most commonly ordered?
  - PSA greater than 20
  - Gleason 8-10 (or any aggressive features)

Investigational Imaging

- PET scan
- MR spectroscopy
- Endorectal MRI
- Prostascint
- Nanoparticle MRI

Risk Groups

- Low Risk
- Intermediate Risk
- High Risk

Prostate Cancer Risk Groups

Refers to Chance of:

- Cancer spread outside the prostate gland
- Cancer spread to lymph nodes
- Recurrence after treatment
- Death from prostate cancer

Low-Risk Prostate Cancer

- PSA less than 10

  and
- Gleason Score 6 or less

  and
- Stage T2a disease or less (includes T1c)

Intermediate-Risk Prostate Cancer

- PSA 10-20

  or
- Gleason Score 7

  or
- Stage T2b

High-Risk Prostate Cancer

- PSA 20 or higher

  or
- Gleason Score 8-10

  or
- Stage T2c or higher

Treatment Options by Risk Group

- Low-risk
  - Radical Prostatectomy
  - Brachytherapy
  - External Radiation
  - Active Surveillance
  - Watchful Waiting
  - Other (including HIFU and cryotherapy)

Treatment Options by Risk Group

- Intermediate-risk
  - Radical Prostatectomy
  - Brachytherapy
  - External Radiation
    - +/- Anti-hormonal therapy
  - Watchful waiting
  - Other

Treatment Options by Risk Group

- High-risk
  - Radical Prostatectomy
  - External Radiation
    - ± Anti-hormonal therapy
  - Watchful Waiting
  - Multimodal Therapy

Radical Prostatectomy

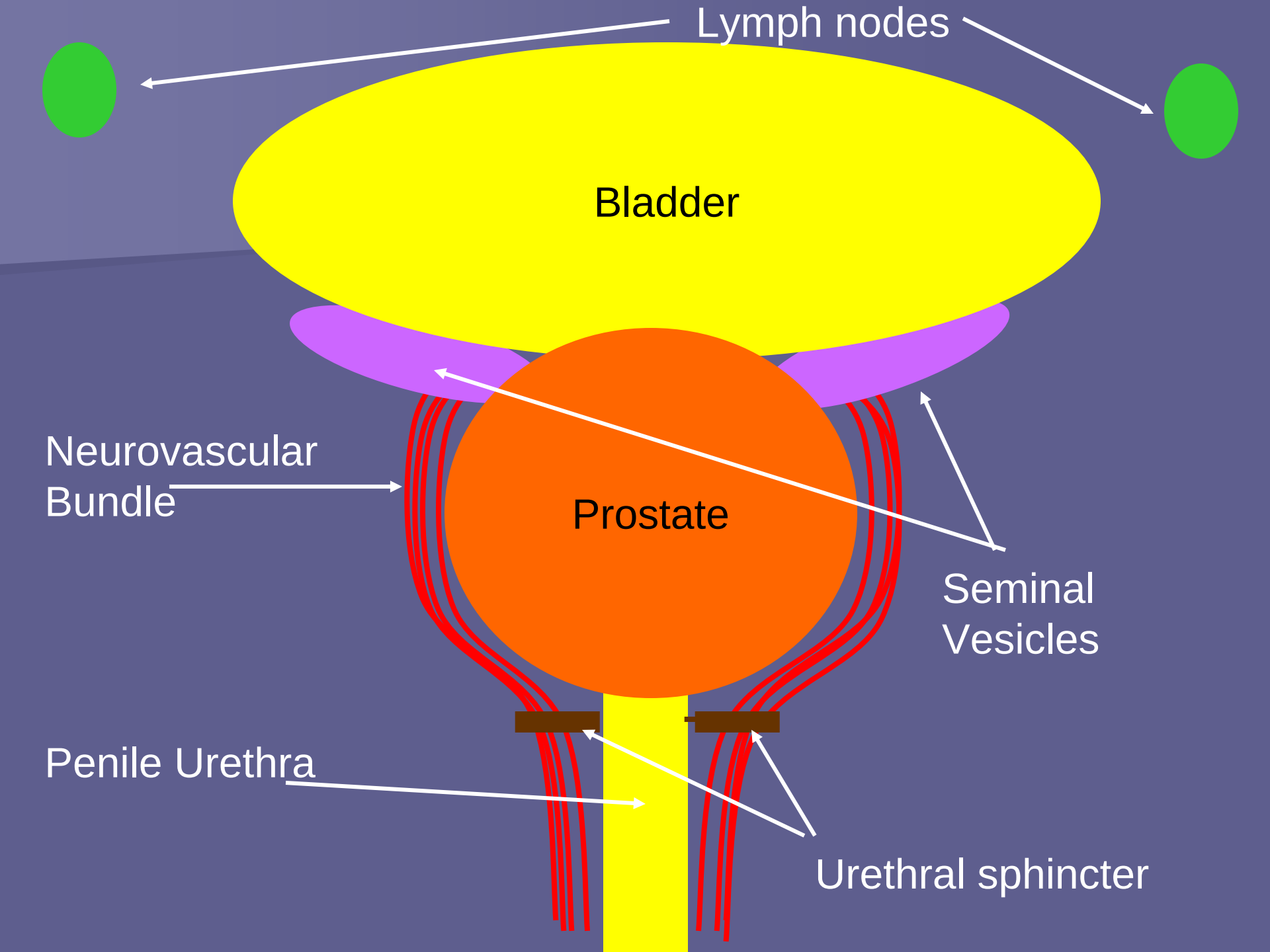
Surgery to remove the prostate gland

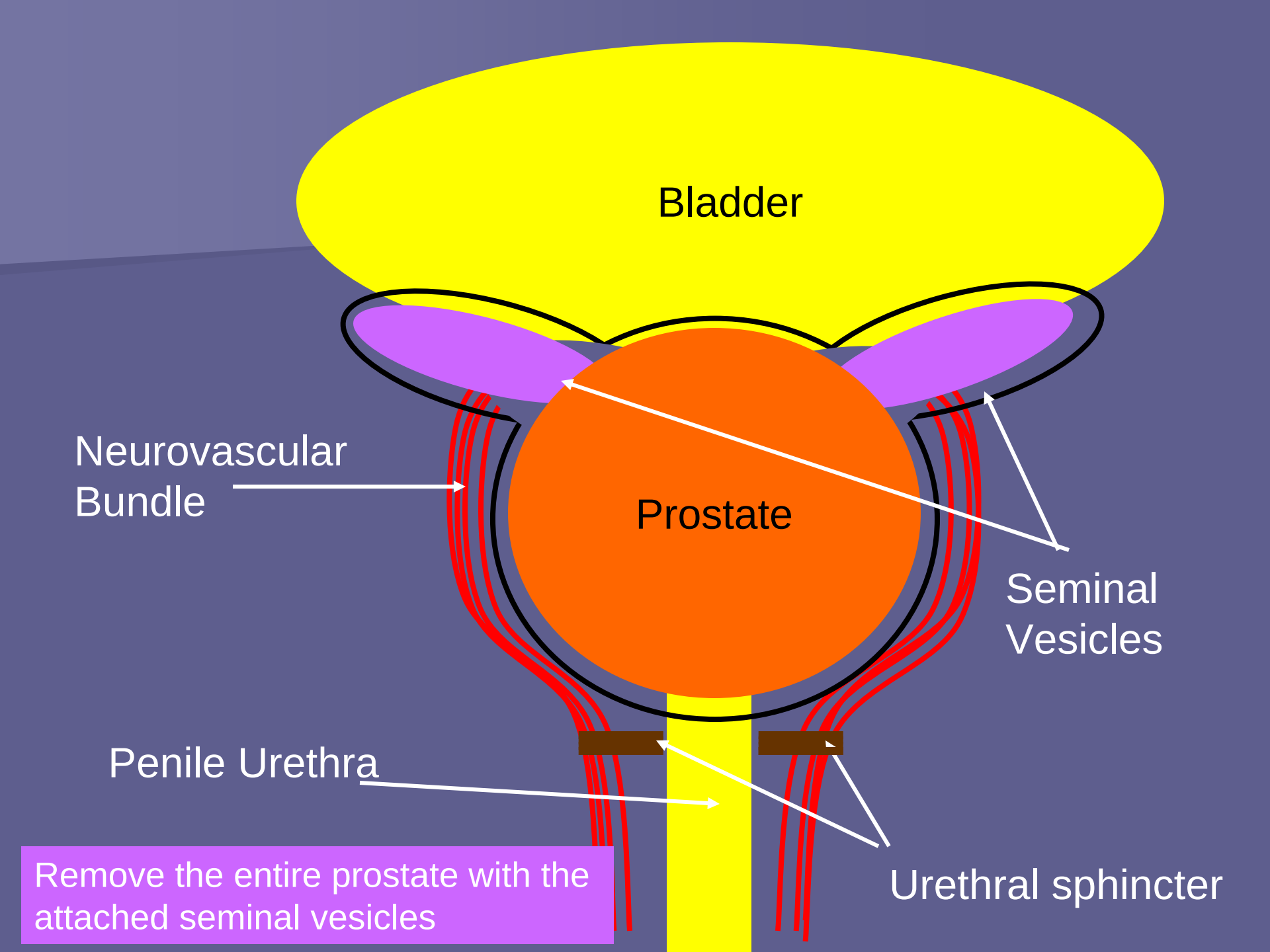
Radical Prostatectomy

- What is done
- Methods to take out the prostate
- What to expect after surgery
- Outcomes

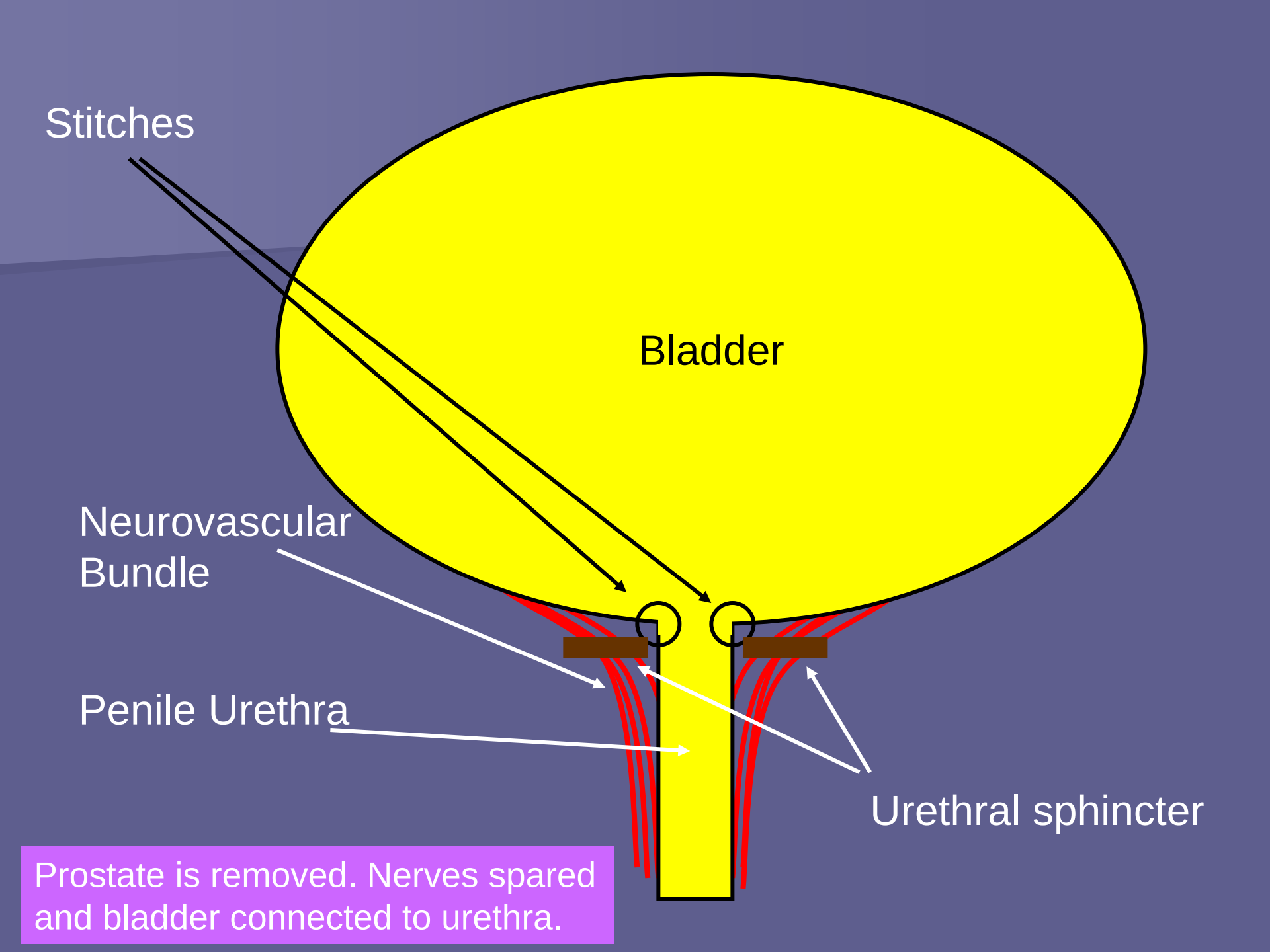
Radical Prostatectomy Technique

- Remove entire prostate gland and seminal vesicles
  - Different than surgery for an enlarged prostate (i.e. “Roto-rooter” or TURP)
- Separate prostate from the bladder, rectum and urethra
- Sew the bladder to the urethra and place a catheter
- Attempt to spare the nerves going to the penis
- May also remove pelvic lymph nodes
  - Dependant on stage of the prostate cancer, Gleason score, and PSA


Lymph nodes
Bladder
Neurovascular Bundle
Prostate
Seminal Vesicles
Penile Urethra
Urethral sphincter



Remove the entire prostate with the attached seminal vesicles



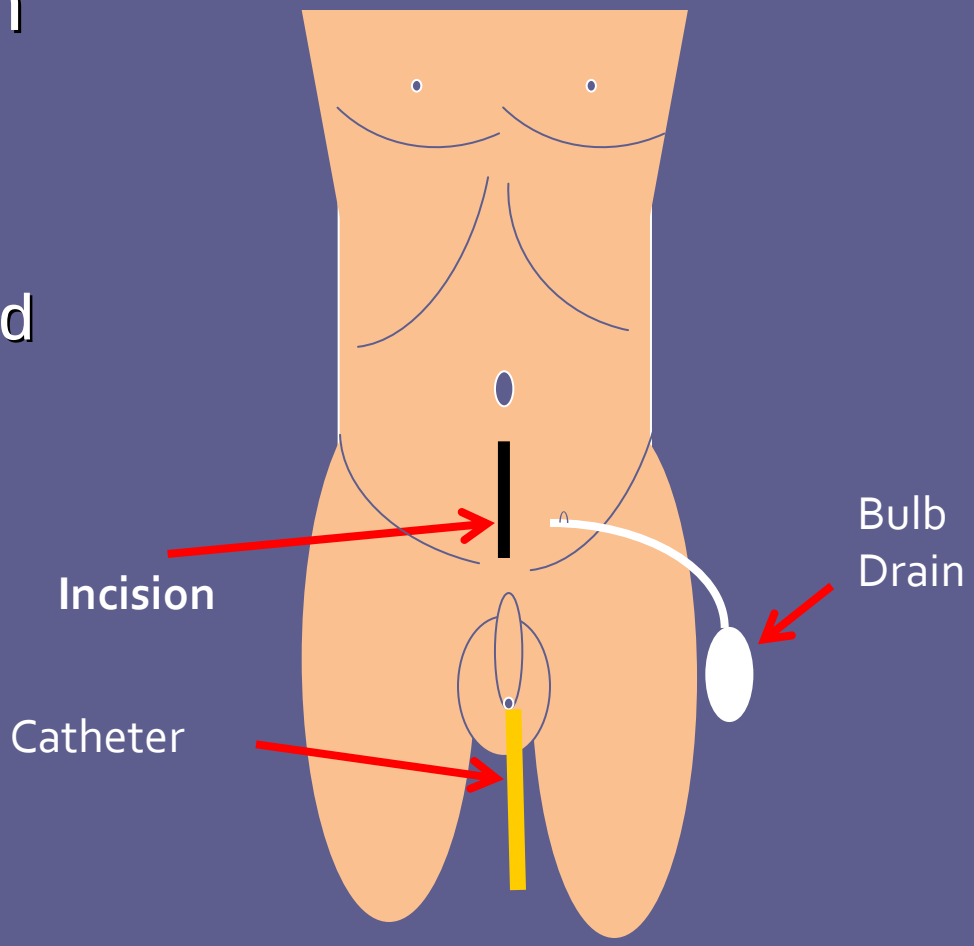
Prostate is removed. Nerves spared and bladder connected to urethra.

Techniques of Radical Prostatectomy

- Open Radical Prostatectomy
  - Radical Retropubic Prostatectomy
  - Radical Perineal Prostatectomy
- Robotic Assisted or Laparoscopic Radical Prostatectomy

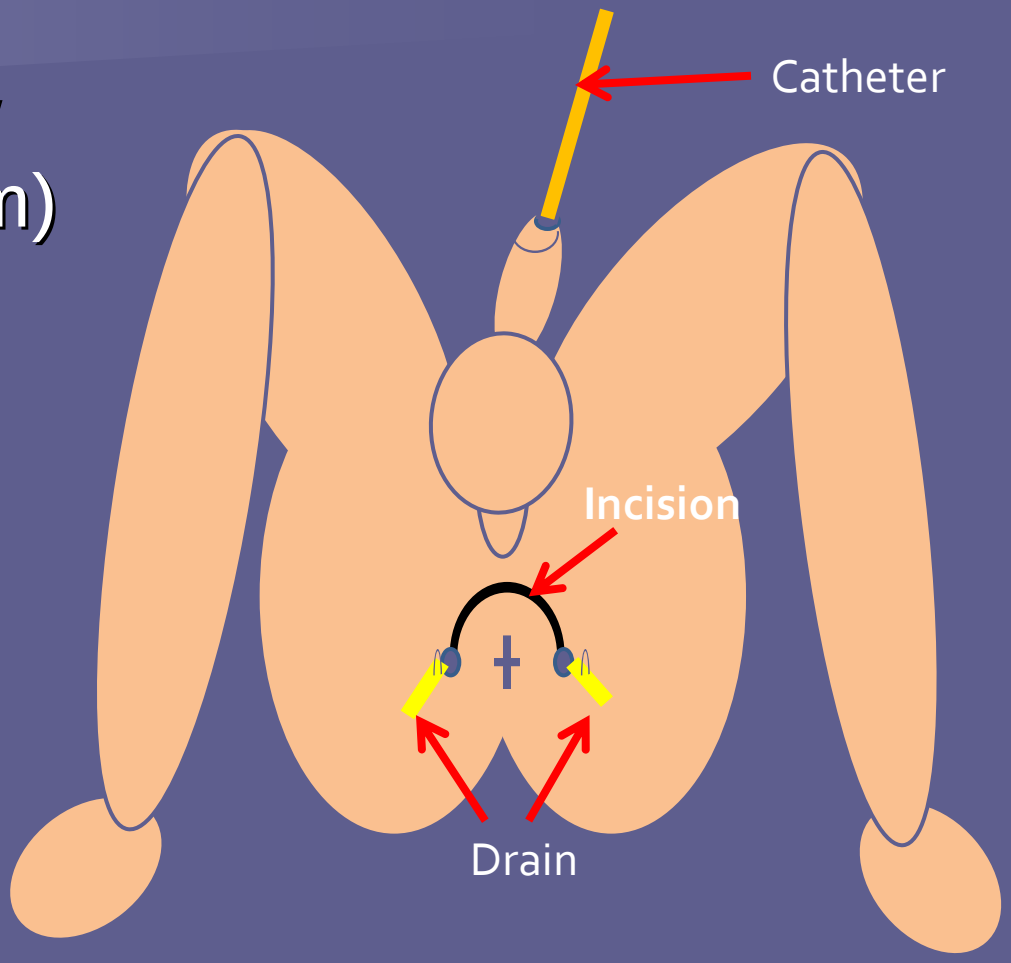
Radical Retropubic Prostatectomy

- Lower midline incision
- Standard of Care
- Advantages
  - Feel the prostate gland
  - Outside of abdominal cavity
- Operation close to home



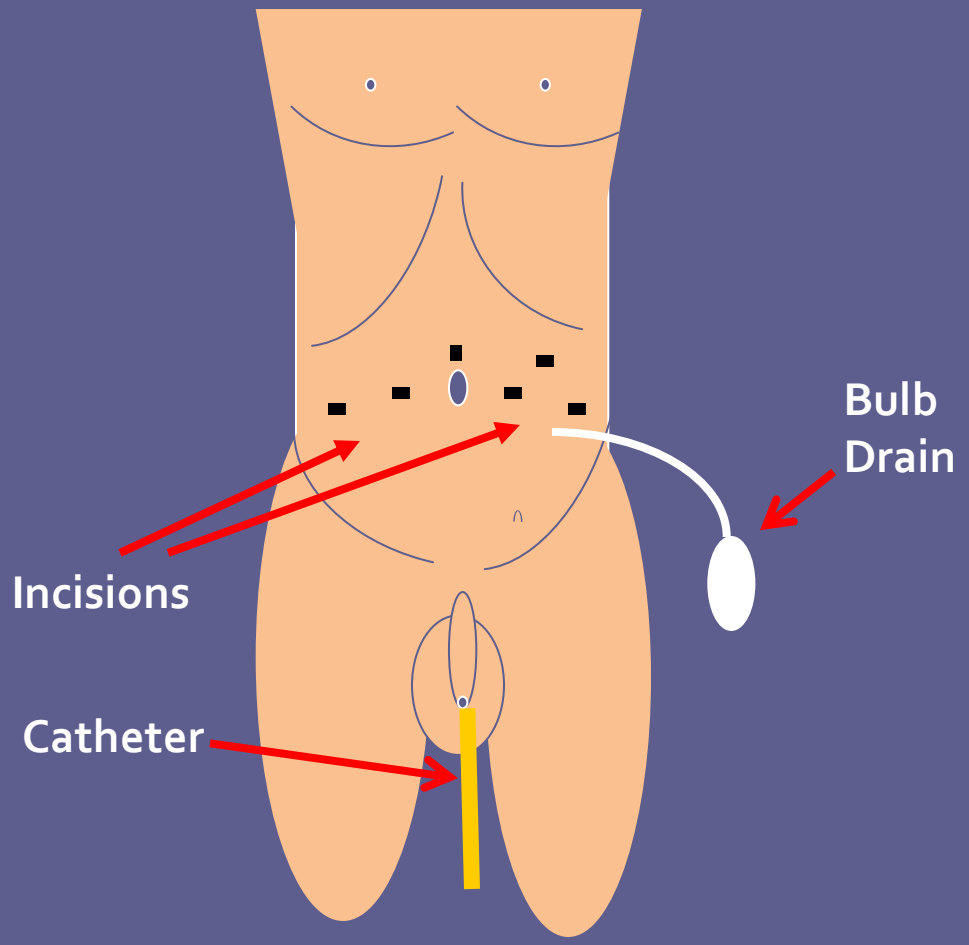
Radical Perineal Prostatectomy

- Incision made below testicles (in perineum)
- Advantages
  - Lower blood loss
  - Slightly quicker recovery
- Consider for obese men



Robotic Assisted or Laparoscopic Prostatectomy

- Small keyhole-size incisions
- Robotic arms dock onto the ports
- Advantages
  - Visualization
  - Decreased blood loss
  - Wrist movement of the instruments



What's the best for you?

- Patient dependent
  - Stage of disease
  - Other medical problems
  - Weight
- Surgeon dependent
  - Experience with different techniques
  - Accessibility

Which technique is best?

- Overall outcomes are the same
- Cancer control outcomes are similar
- Continence rates are similar
- Chance of functional erection is similar

What to expect at home

- You may be sore
- No heavy lifting for about 1 month
- You will have a catheter in your bladder for 1-2 weeks
- You cannot drive for about 2 weeks
- Most people return to work or normal activity in about 1 month

Risks

- Blood Loss
  - Transfusion rate is low – About 1%
- Infection
  - Intravenous antibiotics are given prior to the surgery
- Injury to nearby organs
  - Rectum lies just underneath the prostate gland
- Hernia
- Urinary Leak
- Scar Tissue
- Medical Complications
  - Heart attack, stroke, blood clot

The Trifecta

- Cancer cure
- Incontinence
- Erectile dysfunction

Cancer Cure

- Cure rate depends on
  - PSA
  - Final Stage
  - Final Gleason Grade
  - Margin Status
    - Is there cancer at the edge of the prostate?

Incontinence

- Stress incontinence
  - Leakage with cough/strain, going from a sitting to standing position, etc.
  - It can be frustrating and it takes time to recover
    - Use pads or adult diapers
- Kegel's
  - Squeeze the muscles that stop the urination
  - Helps return of continence
- Outcomes
  - About 10% of men are still leaking urine at 1-2 years after surgery
  - About 90% of men will have return of continence

Who is at risk for incontinence?

- Older age
- Obesity
- Diabetes
- Smoking
- Poor urinary control before surgery

Erectile Function

- Nerve Sparing Radical Prostatectomy
  - Every attempt is made to spare the nerves surrounding the prostate that go to the penis
- Factors that can affect recovery
  - Age
  - Degree of function preoperatively
  - Number of nerves spared (none, one or both)
  - Extent of cancer

Erectile Function

- Erectile function is usually non-existent initially after the surgery
- It takes a few months to 2 years for gradual improvement
- Medications and devices can assist recovery
  - Oral medications
  - Vacuum Device
  - Injections

Erectile Function

- If you have normal erections and both nerves are spared, you have the possible best chance of regaining your erections
- The chance decreases significantly if only one nerve is spared

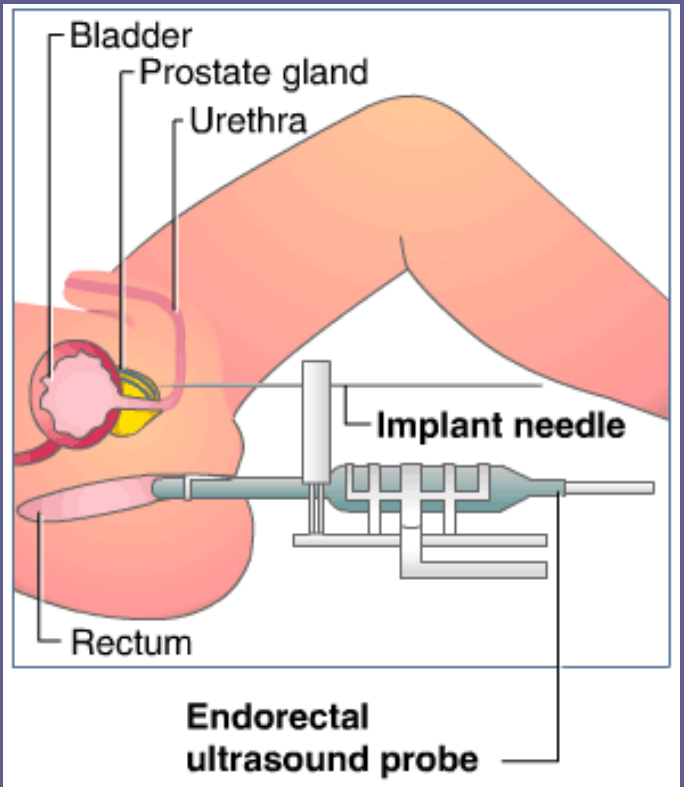
Radiation Therapy

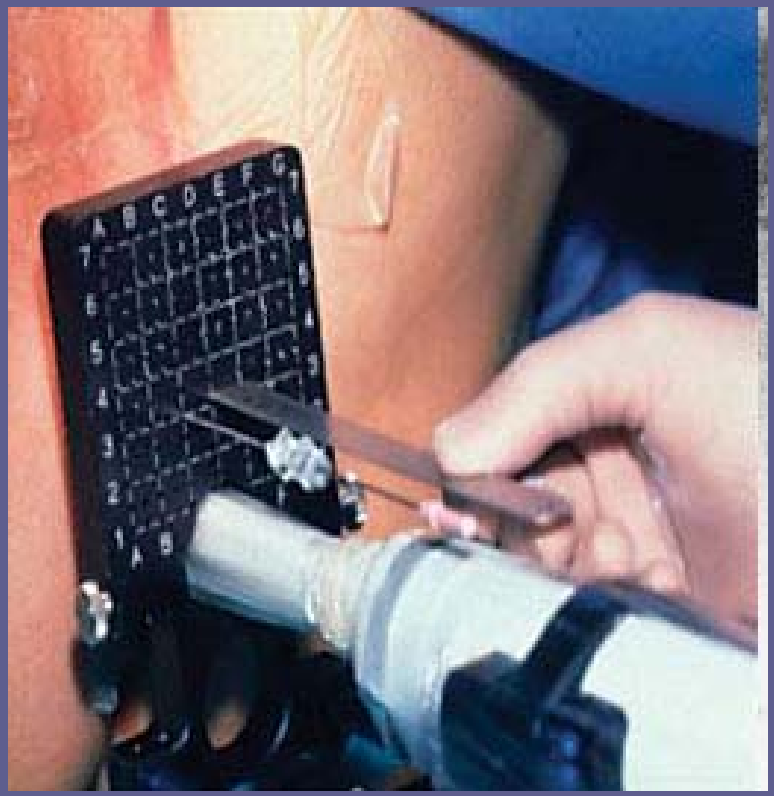
- Brachytherapy
  - Also known as brachy, seeds, internal radiation
- External Beam
  - Also known as RT, XRT, EBRT

Brachytherapy

Permanent radioactive seeds

Brachytherapy





Placement of seeds under anesthesia

Brachytherapy

- There are typically about 100-120 seeds in a prostate implant, so each seed has 1% or less of the total dose of the implant
- Occasionally 1 seed may migrate out of the prostate and migrate elsewhere in the body
  - Since each migrated seed has little radiation dose, it does not pose a significant risk, and it does not lower the effectiveness of the implant

Who is a good candidate for brachytherapy?

- Men with low to low-intermediate risk disease
  - PSA less than 10
  - Gleason score 3+3 or 3+4
- Patients with good urinary function
- Not a very large prostate
- No prior prostate operations, especially a TURP

Brachytherapy Advantages

- Erectile Dysfunction may be less likely compared to
  - Radical Prostatectomy with bilateral nerve sparing
  - External Beam Radiation
- Less radiation damage to bladder and rectum compared to External Beam Radiation.
- One-time procedure

Brachytherapy Potential Side-Effects: Short-Term

- Urinary frequency, urgency and burning
  - Approximately 15% chance of needing a catheter for a few days after the procedure
  - You may need a urinary medication to help with symptoms
- Bowel frequency or urgency
- Tiredness
- No danger to spouse or partner, but you should not have children or pregnant women in front of you or on your lap for extended amounts of time in the first 1-2 months

Brachytherapy
Potential Side Effects: Long-Term

- Urinary symptoms
  - weak urinary stream
  - pain with urination
  - need for urinary medication
  - urethral stricture
- Erectile dysfunction
- Rectal injury (rare)
- Second cancer (rare; risk is about 1 in 1000 and takes 10-20 years to develop)

Brachytherapy

- Done at Kaiser Roseville
  - One of the largest volume centers west of Mississippi
- Must attend brachytherapy class in Sacramento area
- 3-5 visits to Sacramento required for class, planning and treatment
- Outpatient procedure
- Follow-up by your local urologist

High Dose Rate (HDR) Brachytherapy

- How is it done?
  - High activity radiation source temporarily placed inside the prostate gland
- Pros
  - No permanent radioactive seeds
- Cons
  - More invasive procedure and requires overnight hospitalization
  - Usually combined with external radiation
  - May have more side effects compared to permanent seed implants

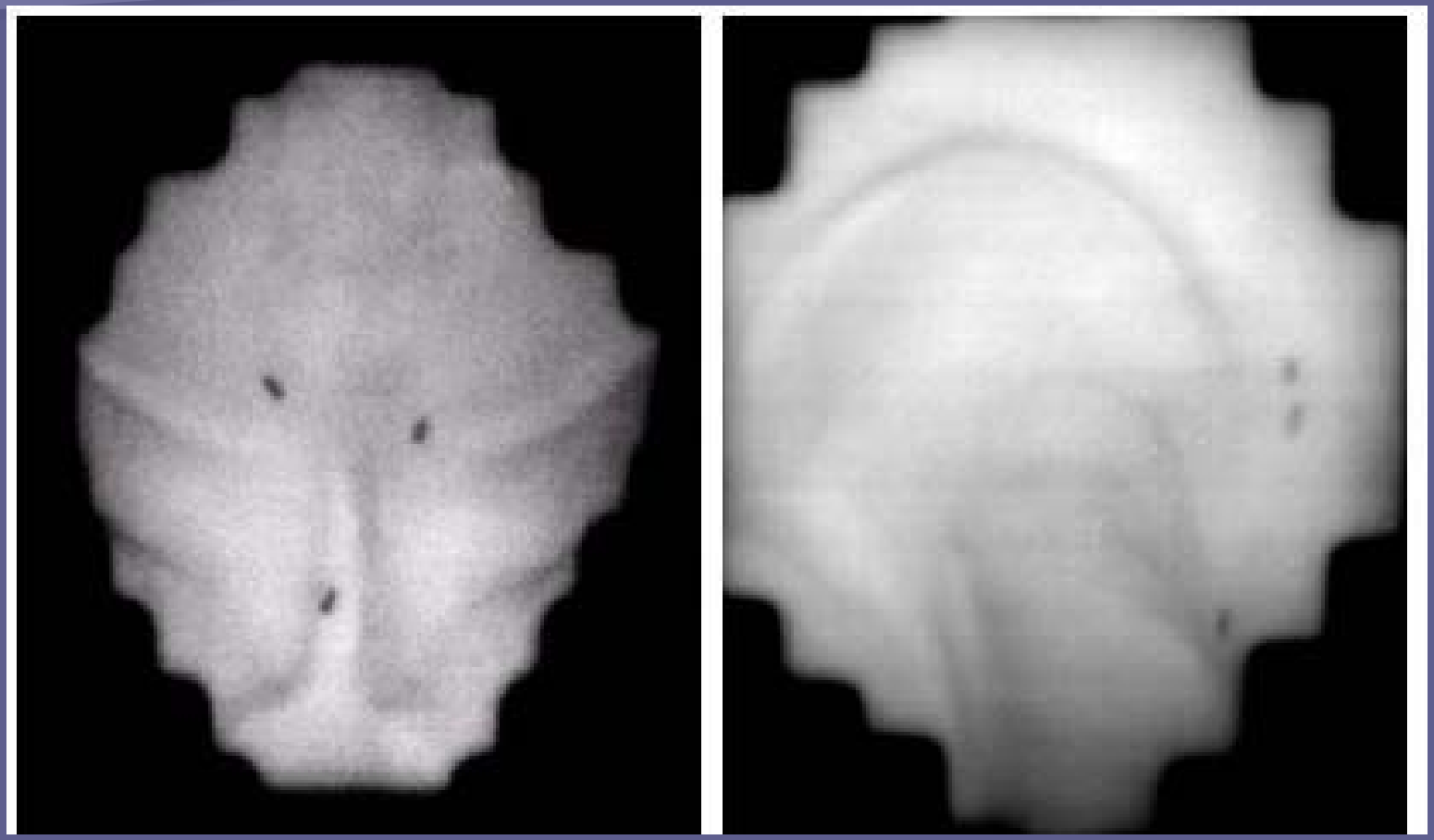
External Beam Radiation

External Beam Radiation

Linear Accelerator

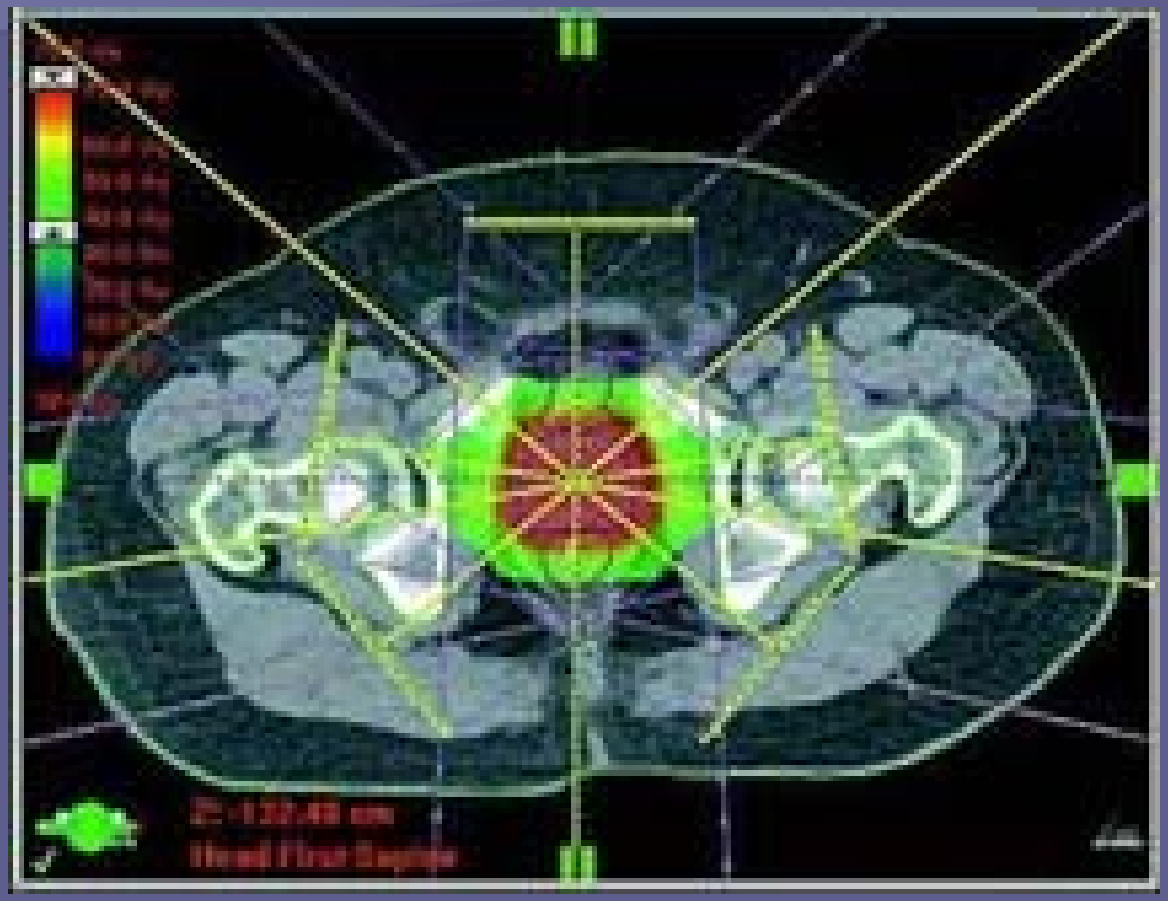
This is the machine that delivers external radiation

Gold seeds for prostate tracking



This is a picture of the gold seeds that help us aim the radiation at the prostate; these films are taken daily during radiation

External Beam Radiation



CT scan used for radiation planning

External Beam Radiation Logistics

- Treatments are:
  - Relatively short (10-20 minutes)
  - Consecutive weekdays (Monday-Friday)
  - About 7 1/2 weeks

External Beam Radiation Potential Short-Term Side Effects

- Urinary
  - Burning, frequency, urgency
- Bowel
  - Mild urgency and frequency
- Tiredness (not debilitating)
- Hair loss is only in the area of treatment

External Beam Radiation Potential Long-Term Side Effects

- Urinary
  - Decreased bladder capacity
  - Urethral strictures and blood in urine
  - Need for urinary medication
- Rectal
  - 10-20% of men can have long-term, permanent, intermittent, minimal volume rectal bleeding
  - 1% or less of men will need a transfusion or an operation

External Beam Radiation Potential Long-Term Side Effects

- Erectile function
  - Overall, about a 50/50 chance of erectile dysfunction
  - In contrast to surgery, a slow decline over a few years, rather than an immediate change
- Second cancers
  - Similar to brachytherapy, 1 in 1000 risk over 10-20 years

Proton Radiation

- Proton radiation is biologically equivalent to standard (photon) radiation
- There may be less radiation dose to surrounding tissue with proton radiation
- There are no studies showing an advantage to proton radiation over photon radiation
- The closest proton facility is at Loma Linda University, 400+ miles away, and the cost would be completely out of pocket for the patient
- 99%+ radiation centers do not use protons

External Beam Radiation with Anti-Hormonal Therapy

What is it?

An injection to lower testosterone (medical castration)

Who needs it and for what duration?

Intermediate Risk Patients

- 4-6 months of total anti-hormonal treatment, usually starting 2-3 months before radiation begins

High Risk Patients

- May have a longer period of anti-hormonal treatment (sometimes up to 2-3 years)

External Beam Radiation with Anti-Hormonal Therapy

- Why use anti-hormonal therapy?
  - In men with intermediate and high risk prostate cancer, suppressing testosterone (along with radiation treatment) leads to better cancer control compared to radiation alone
  - The younger the patient and the shorter the duration of anti-hormonal therapy, the better the chance of testosterone recovery

Anti-Hormonal Therapy Potential Side Effects

- Side effects of short-term therapy
  - Sexual dysfunction
  - Hot flashes
  - Often resolves after therapy is completed
- Additional side effects of long-term therapy
  - Bone weakening
  - Anemia (low blood count)
  - Higher risk of developing diabetes
  - Loss of muscle
  - Obesity
  - Depression

What if cancer recurs after radiation?

Options

- Surgery after brachytherapy or external radiation is associated with significant risks
  - rectal injury with possible need for colostomy (bag for stool)
  - very high risk of urinary incontinence and erectile dysfunction
  - high risk of scar tissue formation
- Additional radiation (external or internal) cannot be given safely
- Salvage cryotherapy may be a good option
- Anti-hormonal treatment or observation

Active Surveillance

Active Surveillance with Curative Intent

- The majority of men with prostate cancer die from other causes
- The goals of active surveillance:
  - Prevent unnecessary treatment and loss of quality of life in men with non life-threatening prostate cancer
  - Identify men as early as possible with potentially life-threatening cancers who will benefit from curative treatment

Who are good candidates for active surveillance?

- The best candidates are older men with small volume prostate cancer detected by PSA screening, including:
  - Cancer not felt on digital exam (Stage T1c)
  - PSA <10
  - Gleason score 6
  - Less than 3 biopsy cores contain cancer
  - Less than 50% involvement of any core involved with cancer

Important considerations when contemplating active surveillance

- Potential loss of quality of life with treatment (e.g., urinary incontinence, erectile dysfunction)
- Potential to miss the window of opportunity to cure
- Anxiety of living with an untreated cancer
- Approximately 30% of men on active surveillance eventually choose treatment

How is active surveillance done?

- Regularly scheduled digital prostate exams and PSA tests
- Repeat prostate biopsy
  - Consider confirmation biopsy
    - 30% will show more extensive cancer
  - Biopsy one year later to assess for cancer progression
  - Thereafter, repeat biopsy every 1-5 years

When do men on active surveillance need treatment?

- Rapidly rising PSA
  - PSA doubling time less than 2-3 years
- New and/or enlarging prostate nodule
- Repeat prostate biopsy confirms:
  - Increase in Gleason grade
  - Increase in cancer volume
- Patient preference/anxiety

Active Surveillance Outcomes

- Approximately 30% of men on active surveillance may be offered definitive treatment within 8 years of diagnosis
- No difference in survival between immediate and delayed curative therapy:
  - 97% overall cancer survival rate after 10 years of surveillance
  - Ratio of other-cause to prostate cancer mortality almost 19 to 1
  - Caution: 50% of men treated radically with either surgery or radiation experienced a PSA failure

Klotz et al. Journal of Clinical Oncology, Vol 28, No 1, 2010: pp. 126-131

What else can you do for your health while in active surveillance?

- Eat a plant-based diet of fresh vegetables, fruits, soy, and tomatoes
- Limit or eliminate consumption of
  - All types of fat
  - All animal meats
  - Dairy products
- There are no specifically recommended dietary supplements
- Exercise
- Limit stress

Watchful Waiting

This a non-curative treatment option

(THIS IS DIFFERENT THAN ACTIVE SURVEILLANCE)

Who may want to consider watchful waiting?

- Advanced age
- Life expectancy less than 10 years
- Risk of dying from another medical condition is greater than from prostate cancer
- Prostate cancer is too advanced to cure at the time of diagnosis
- Improved quality of life by delaying treatment for as long as possible

Other prostate cancer treatment options

Other treatment options

- Cryotherapy
  - Primary treatment in select cases
  - Salvage after radiation failure
- High Intensity Focused Ultrasound (HIFU)
  - Not FDA-approved. Only available in the U.S. under a clinical trial.
  - Available abroad at high out-of-pocket costs
- Chemotherapy
  - Only used when all other treatments have failed

What’s next?

What to do next?

- Review your risk group
- Consider all your treatment options
  - Consult web sites listed on class handout
  - Visit your doctor's homepage at kp.org
- Contact your urologist
  - Available by telephone, secure messaging, and/or an office visit
- Your urologist will coordinate all of your prostate cancer care and submit any necessary referrals
- Please fill out the questionnaires given to you and give them to the referring urologist

How to access this presentation

- www.kaisersantarosa.org/cancer
- Or go to Google and type in “kaiser santa rosa cancer” and click on the first link
- The slides are at the bottom of the page