

Adverse Effects of Prostate Cancer Therapies

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1

Objectives

Overview of expectations/milestones in post-prostatectomy rehabilitation in uncomplicated case

Expand knowledge of pelvic health physical therapy evaluation and treatment, rehab options

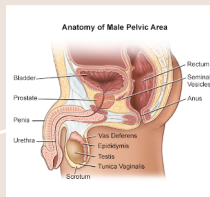
Gain appreciation of physical therapy interventions to restore bladder, bowel, and sexual function

Encourage empathetic care and positive experiences to improve survivor health outcomes

2

The Prostate Gland

A walnut shaped organ at the base of the bladder that makes semen which transports sperm



3

Prostate Cancer

- 2nd most common cancer in men
- 2nd leading cause of death by cancer in men
- Signs:
 - Trouble urinating
 - Hematuria/hematospermia
 - Erectile Dysfunction
 - No symptoms
- Prostate cancer is diagnosed by a digital rectal exam or by watching the velocity of PSA lab values
- Therapeutic options: prostatectomy (robotic vs open), radiation, brachytherapy (seeds), chemo, androgen deprivation (hormone), proton, cyberknife, active surveillance

4

Treatment Complications

- Erectile dysfunction
- Urinary incontinence
- Positive margin/residual disease
 - Requiring adjuvant/salvage therapy further worsening ED and UI
- Overactive Bladder Syndrome
 - Issue with bladder capacity causes sudden urge to void which is difficult to stop
 - Urinary urgency (2-4 hours is normal), urinary frequency, urge urinary incontinence, nocturia (0-2 is normal)
 - Usually due to detrusor overactivity
 - 27-63% post radical prostatectomy
 - More common after radiation (vs surgery alone)

5

Erectile Dysfunction Risk Factors

- Diabetes
- Obesity
- Etoh
- Smoking
- CKD
- CAD
- Neurologic pathology

Low pre-op SHIM = typically poorer erection outcomes post op

6

Post-op Erectile Dysfunction

- Local inflammation from retraction cavernous nerves/neuropraxia
- Transected nerves in non nerve sparing procedures
- Adjuvant therapy (ex. RT) will further harm nerve pathways

Therefore, critical to implement erectile function rehab ASAP

- Increases oxygenation
- Increases blood flow
- Decreases fibrosis, scar tissue

7

Post Prostate Ca Erection Rehab

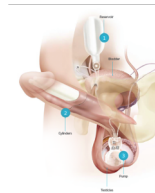
- Oral PDE 5 inhibitor at 1 week post-op; low dose, daily
- Penile pump/vacuum therapy at 6 weeks post-op
 - Fully engorge x 15 mins daily
 - Increases blood flow/oxygenation, decreasing fibrosis or penile length loss
 - Covered by most insurance
 - Can also be used for sexual relations (some come with constriction rings)
- OK to attempt sexual relations 3 weeks post-op



8

Erectile Dysfunction Treatment Options

- Oral PDE 5 Inhibitors
- Constrictions Rings
- Vacuum Erection Devices
- Intraurethral suppositories, topicals (alprostadil, Muse)
- Intracavernosal injections (trimix, quadmix, Caverject)
- Penile Implant Surgery (IPP- inflatable penile prosthesis)



9

ED Interventions


Treatment	Role	Efficacy
Physical Therapy	1st	26-46%
Oral Medication	2nd	70-80% ns 0-15% non ns
Suppositories	3rd	20-40%
Injections	4th	85-90%
Vacuum device	5th	90-100%
Penile implants	6th	95-100%

Burnett, 2005

10

Erectile Dysfunction Treatment Options

Coupons!!!



11

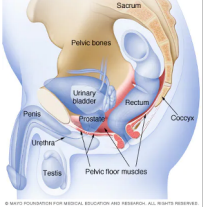
Expected Recovery in Uncomplicated case

- Incontinence up to 1 year
 - ED 6 months to 1 year; could be up to 2 years
 - Erectile pump to improve circulation for anastomosis
- Foley Cath 7 days: prepare patient they will most likely have stress incontinence for 1-6 weeks. Will likely improve 6 wks- 3 months without intervention.
- 1st marker: 3 months should be dry overnight.
- 2nd marker: Will be able to wake up, hold pelvic contraction with full bladder or walk short distance without leakage
- Will have less leakage in the morning, worse as the day progresses.
 - Postural muscle fatigue
- 3rd marker: Dry in the morning, will leak only at night.
- 4th marker: Will leak with increased intra-abdominal pressure
 - Cough, sneeze
 - Sports activities, lifting, yard work

12

Benefits of Pre-op Training


- Learn control of muscles when pain-free and sensation normal
- Combined with post-op therapy can result in earlier return to continence
- Education: anatomy/physiology, surgical procedure, potential complications, post-op sequelae, activity modifications, fluids, PFM training/muscle memory, cardiovascular exercise
 - Up to 1 year to regain continence
 - 2 years erectile function



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13

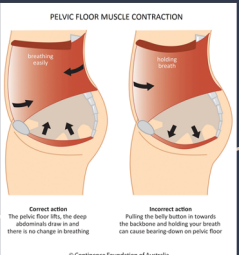
Post-Prostatectomy Guidelines



- Walk 30 mins/day
 - Improves circulation and helps to strengthen PFM
 - Initially, may experience increase in leakage which will decrease as muscle strength improves
- Monitor Fluid Intake (bladder irritants)
 - Limit bladder irritants (caffeine, alcohol, carbonated drinks, citrus, artificial sugars)
 - These may increase urinary urgency and lead to urge incontinence
- Drink about 1.5 L a day
 - Sip throughout day
 - Reduces chance of constipation
- Go to the bathroom when you have the urge
 - Normal voiding every 2-4 hours during the day and 0-2/night
 - Avoid going to the bathroom "just in case" unless it will be unavailable for an extended period of time
 - This helps to train bladder capacity
 - Delay the urge in 15 min increments until frequency goal is reached
 - Stand still or sit down
 - Relax abdominal muscles
 - Do not rush to the bathroom mid-urge
- Pelvic Floor Muscle Training
 - Perform Kegels until the day of surgery
 - Can initiate exercises again once catheter is removed. If pain is experienced, stop and report to provider.
- Avoid saddle activities for 8 weeks

14

Pelvic Floor Muscle Training



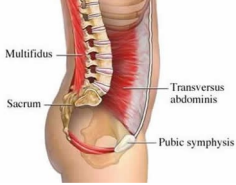
- Begin upon catheter removal
- Most effective during first 4 months after surgery, provides early return to continence
- No research on exact volume or frequency of strength training, patient specific
 - Varies in literature from 18-300 contractions/day
 - Dependent on patient's sensory awareness and motor control, motivation of patient, and adherence to HEP
- Quick twitch fibers: 8-12 max hold quick contractions
 - Max contractions for hypertrophy and increased strength
- Endurance fibers: 8-12 submax hold endurance contractions
 - Rest time- hold time to allow muscle to recover from exertion
 - Stress importance of relaxation between reps
- Hold 3-10 seconds
 - assess strength and endurance to establish baseline for HEP
 - If patient displays proper motor control (relaxation between reps and isolation of PFM), prescribe 10 x 3 quick flicks and long holds 5x/day.
- Isolation more important than frequency
- Perform in multiple positions (hook-lying, supine, side-lying, sitting, sitting on swiss ball, standing)

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15

Progression into Functional Training


- Coordination of diaphragm, pelvic floor, deep core (TA), and multifidus engagement during functional tasks
- First must master co-contraction in supine, sidelying, sitting, and standing.
- Incorporating pelvic brace into various exercises
- Return to function
 - Patient specific
 - Squatting, lunging, lifting, carrying
 - Sport-related training
 - Use of unstable surfaces
 - Impact training if appropriate
- Focus to re-train reflex co-contraction of PFM/deep core to respond to changes in IAP
- Exhale with PFM contraction



16

Clinical Pearls

- Pelvic floor range of motion
- Guards come in different sizes. Hospital issued guard may not be comfortable fit.
 - Total Care
 - ActiveCare
 - ActiveCare (disposable, tight to avoid leakage)
 - Reusable
 - Reusable and depends with attitude
- Walk 20 minutes/day
 - Prolonged circulation/healing
- Pelvic brace: kegel and deep core engagement during activities that increase IAP
 - Coughing, sneezing, laughing
 - Transitional: handling water
 - Lifting, carrying, pushing
- Wear pads during sport activities.
- Continue PFM strengthening for life
 - Can provide strength by performing 20 quick flicks and long holds at least 2x/week
- Electrical Stimulation: quicker restoration of continence and sexual potency following radical prostatectomy.
- Biofeedback for strengthening or slowtraining
- Thermostat: decrease pressure if experiencing pain when sitting
- Pelvic Floor Muscle Strengthening Programs
 - www.pfmstrong.com
 - www.kegel.com
 - www.kegel.com (specific to ED)



17

Post-Micturition Dribble

This is a lower urinary tract symptom that is common after prostate surgery. Residual urine becomes trapped in the urethra after voiding due to weakness of PFM. Teach these techniques to decrease dribbling after voiding:

- After voiding, strongly perform PFM contraction/kegel 4-5x
- Then perform urethral milking by placing fingers and flat hand under the scrotum and gently push up and forward to the base of the penis. Perform 2-3x.
- 1-2x slightly stretch the penis and shake gently. Perform 4-5 kegels

18

Ano-rectal Assessment in PT

Patient typically in side-lying position (some therapists assess initially in hook-lying or prone)

External Assessment: observation of skin, muscle function (contract, relax, bulge, and cough), anal wink reflex, external rim palpation (warmth, pain, tightness, decreased sensation)

Internal Assessment: assess pelvic floor tone, symmetry, strength, and function

Internal muscle assessment:

- External Sphincter: assess tone, MMT power and endurance
- Internal sphincter: assess tone
- Puborectalis, iliococcygeus, coccygeus, piriformis, obturator internus
- Quality of PFM contraction: ability to co-contract PFM with TA, coordination, and compensations of other muscles
- Teach patients how to isolate PFM contract, relax, and lengthen

19

Isolation of PFM is Important

Cues to contract PFM/kegel:

- Cut off stream of urine
- Lift your penis
- Walk into a cold lake
- Imagine penis as turtle head and pull into shell
- Imagine penis as straw and gently suck liquid into straw

Focus is isolation and to reduce compensation of gluteals, adductors, overactivity of abdominals

Cues to lengthen PFM/ reverse kegel:

- Pass gas in a crowded elevator
- Open the hammock
- Gently push sit bones apart
- Gently bulge out muscles
- Drop the pelvic floor

A great way to improve isolation and improved motor awareness of these muscles: PF ROM with towel roll

- Sit in neutral spine position with shoulders relaxed
- Cues to contract, fully relax, and lengthen (3-5 secs). Repeat for 2 mins 3-5x/day

20

Components of Physical Therapy Plan of Care

- Manual techniques
 - Primary focus to decrease PFM tension, tone, trigger points, and soft tissue restrictions to decrease spasm and restore muscle length. Teach patient to lengthen PFM to restore resting tone. Cannot effectively strengthen a tight/shortened muscle.
 - MFR to 3 layers of PFM with focus on scar tissue and addressing myofascial restrictions
 - Especially near bladder and along urethra (bladder neck obstruction by scar tissue at bladder neck)
 - Radiation
 - PFM via internal and external techniques, ribcage (diaphragm efficiency), abdomen, hips, and back
- Restoration of bladder and bowel function
 - Education (bladder irritants, body scanning, PFM resting tone, meditation)
 - Bladder training: scheduled voiding if urge never present (decreased bladder compliance)
 - Breathing strategies/exercises
 - Strength training (SUJ) or downtraining (UUI)
 - Toileting mechanics
- Restoration of sexual function
 - Next slide
- 1x/wk for 6-8 weeks
 - Patient specific. Expect longer plan of care if significant bladder dysfunction or pelvic pain present
- Ideal to have 3 month and 6 month follow-up (limitations with insurance)


21

Restoration of Sexual Function

- Despite extensive pre-op counseling, patients tend to have overly optimistic expectations regarding UI and ED post-prostatectomy
 - 81% of patients expected same or better sexual function after 1 year post-op (Wittman 2011)
- Manual techniques to maximize healing and circulation to PFM (especially layer 1)
- Educate sexual health including expectations, vacuum device, nighttime erections
 - Cavernous nerves maintain erectile function (functionally inactive for 2 years)
 - Ischemic injury, traction, thermal injury, dissection, or transection during surgery
 - Use it or lose it: penile hypoxia due to absence of erections post-op
 - Cavernosal smooth muscle structural damage can occur without use of vacuum device
- Vacuum constriction device: blood flow cycling. Start at 6 weeks, 1x/day. Empty bladder before use to reduce leakage. Walking and diaphragmatic breathing before use to attain full erection.
 - Early induced sexual stimulation and penile blood flow facilitate return of natural erectile function
- Return of erections:
 - 1. Nighttime erections
 - 2. Morning erections
 - 3. Erections with arousal
 - 4. Sufficient for intercourse
- Tips during intercourse:
 - Rhythmically to achieve and maintain penile rigidity
 - Slow thrusting movements generate higher pressures inside the penis
 - Delay ejaculation

22

When kegels aren't cutting it




- Tight and weak PFM
 - Overactive pelvic floor muscles cannot be treated the same
 - Guarding, scars/restrictions, pain, overzealous with kegels, gluteal clenching
- If hypertonicity present in PFM, focus for 1-4 sessions will be on downtraining/lengthening PFM. Tight muscles are not effective for sphincteric closure and support of bladder.
- If constipated, sign that they may not be performing kegel correctly due to overactive or shortened muscles.
 - Magnesium and stool softener
- Along with extensive manual techniques and downtraining, will recommend use of home biofeedback unit if patient has poor sensory and motor awareness or poor ability to relax
 - Measures motor recruitment, not strength
 - Can improve compliance to MEP
 - Uptraining: improves ability to identify and isolate PFM when performing exercises
 - Downtraining: reduce engagement of overactivity muscle and improves relaxation between or after PFM contraction.

23

Lifestyle and Nutrition

- Pomegranate juice or extract
 - Slows rate of PSA change
- Flaxseed
- Turmeric
 - Anti-inflammatory
 - Heat as you cook
- Vegan diet
- Frequent exercise
- Pelvic Floor Muscle Strengthening Programs
 - Yourpaceyoga.com
 - Joga4Men
 - Private Gym for Men (specific to ED)
- Support groups



24

Illustration Sources

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- Slide 8: <https://www.erecaldoumns.com/>
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