What are the pelvic floor muscles?

- Muscles spanning pelvis with 3 important functions
  - **Supportive**
    - Maintain support of pelvic contents
  - **Sphincteric**
    - Bowel and bladder control
  - **Sexual**
    - Ejaculation
    - Erection assistance

PRESENTATION OBJECTIVES

- Incontinence After Prostatectomy
- Incontinence After Neobladder
- Pelvic Pain

Key Elements of Patient Presentations

- Appropriate Examination and Evaluation Procedures
- Useful Intervention Options
Prostate Cancer
(CaP)
Prostate Cancer

- 1 out of 6 men diagnosed in lifetime - USA
- 164,690 newly diagnosed men in 2018
- Most frequent cancer diagnosis in men
- 2nd leading cause of cancer death in men (lung 1st)
- Rapid increase in incidence 1995-2001
  - Reflects changes in Prostate cancer screening (PSA)

Prostate Cancer

- Early detection imperative
- 90% discovered in local and regional stages
- 5 year survival rate
  - Local stage – approaches 100%
  - Regional stage – approaches 100%
  - Distant stage - 29%
- Black males have 74% higher risk vs. white males
Treatment Goals

- Removal of cancer – prolong life
- Preserve continence
- Preserve erectile function

Medical Options

- Depends on stage, age, health
  - Surgery – Radical Prostatectomy
  - Radiation
    - Open
    - Laparoscopic
  - Cryotherapy
  - Hormone therapy
  - HOLEP
  - Active surveillance

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Incontinence (Stress)
- Leakage that occurs due to an incompetent urethral closure with an increase of abdominal pressure
- No detrusor contraction

Urinary Incontinence
- 87% chance for temporary incontinence
- 8-40% chance of incontinence beyond 1 year

Rates variable in literature
- Definition of continence between studies
- Outcome measure
- Follow-up method / period

Continence Recovery Timeline
- Catheter Removal
- 4-6 weeks
- 7-8 months
- 12-24 weeks
- One Year
Incontinence

Possible etiologies:

- Sphincter deficiency (60-97%)
- Decreased bladder compliance
- Detrusor instability

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- Sphincter deficiency (60-97%)
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Protective Undergarments
Condom Catheter
Penis Clip/Clamp

How Can Physical Therapy Help?
Recommended Pathways

- Pre-surgery education and training
  (International Consultation on Incontinence held in Paris in July 2008; Parekh, 2003)
  - 22% better continence rates at 3 months post-op
    (Segal, 2010)
  Methods:
  - Group seminar
  - One on one meeting
  - Support group

Recommended Pathways

- Post-operative
  - Early after catheter removal
    (Moore 2008; Overgard 2008; MacDonald 2007)
  - Several months or years
    (Segal 2010)

Evidence Says....

- Supervised PFMT is most widely recommended non-invasive conservative treatment for continence return after RP:
  (Schroder 2010; Bauer 2009; Moore 2008; MacDonald 2007; Dorey 2005)
- BFBR may enhance the PFMT group to be more likely to hasten continence:
  (Segal 2010; Moore 2008; Overgard 2008; MacDonald 2007)
- Pelvic floor re-education should be considered as a first-line option in curing incontinence after radical prostatectomy:
  (Segal 2010; Moore 2008; Overgard 2008; MacDonald 2007)
Evidence Says…

An early supportive PFM rehabilitation program significantly reduces continence recovery time. (Overgard 2008) (Filocamo 2005) (Cornel 2005)

Behavioral therapy is an effective treatment for incontinence from RP persisting more than 1 year. (Goode 2011)

PFMT offers no further benefit 4-6 months after initiation of program. (Parekh 2003)

Behavioral Modification

Pelvic Floor Muscle Exercises

Behavioral

• Scheduled voiding
  • prompting person to urinate at designated time
  • Usually every 2 hours
  • maintain dryness
Behavioral

- Investigate sensitivity to certain fluids:
  - caffeine
  - citrus juices
  - carbonated drinks
  - alcohol

Bladder Cancer

- 81,190 newly diagnosed men and women in 2018
- 62,380 men and 18,810 women
- Incidence rates declined from 2005-2014
- Smokers account for half of all cases in USA
- White men 2x more likely vs. black men

(American Cancer Society 2018 Statistics)
Bladder Cancer

- Early detection imperative
- 51% discovered in local stage
- 5 year survival rate
  - Local stage – 70%
  - Regional stage – 35%
  - Distant stage – 5%

(American Cancer Society 2018 Statistics)

Cystectomy

3 surgical procedure options

- Non-Continent Urinary Diversion
  - Ileal conduit (urostomy)
- Continent Urinary Diversion
  - Pouch
  - Orthotopic neobladder

Urostomy

Image use with permission from Krames Staywell
Background

- Orthotopic urinary diversion (ONB) is considered the gold standard of urinary diversion at USC
- 1965 orthotopic diversions performed at USC from 1986-2017
- 1129 (66%) ONBs form 2002-2017
- Despite improving the quality of life, Continence outcomes: paramount importance for patients
- However, Few studies evaluated continence prospectively & methods to improve or expedite it, like PFPT
Modified Studer Pouch

Side Effects

• Most common:
  • Urinary incontinence (30-60%)
  • Mucus discharge
  • Fecal incontinence
  • Erectile dysfunction

Common Complaints

• Initially constant leakage day and night
• Changing pads routinely at 1 to 2 hours
• Minimal urine flow when voiding
• Leakage with increased abdominal pressure
  • cough, sneeze, sit to stand, bend over
• Abdominal wall not supportive (hernia)
  • Diastasis Recti Abdominis
We prospectively followed our RC-NB patients with a pictorial pad usage questionnaire (Nitti et al. 2014). Questionnaire completed at each routine follow-up (in clinic).

**INCLUDED**
- Male patients
- Orthotopic neobladder

**EXCLUDED**
- History of radiotherapy (4 patients)
- Artificial urinary sphincter (5 patients)

Methods

- Additionally, to shorten time to achieve continence and expedite it, a subgroup underwent pelvic floor physical therapy (PFPT).

  - Routinely offered to everyone after RC-NB
  - Inclusion: Randomly, Per patient choice

• Continence assessed with the same pictorial pad usage forms
• Continence outcomes compared to the rest of cohort (non-PFPT)
Methods

- Frequency of visits (1 hour):
  - Start after catheter removal (3rd week)
  - Once per week over 4-6 weeks
  - Less frequent thereafter: provided with home exercise program to continue weekly

  \[0 \rightarrow 3^{rd} \text{wk} \rightarrow \text{for 4-6 wks} \rightarrow \text{monthly/at home}\]

Pelvic Floor Physical Therapy (PFPT)

- Interventions focused on:
  - \text{behavioral modifications} like dietary changes, bladder re-training, timed voiding, and general bladder and bowel health.
  - \text{improving pelvic floor muscle strength, endurance and coordination} with functional activities that provoked leaks.
  - Manual, visual and surface EMG \text{biofeedback} training to improve \text{neuromuscular re-education} of the pelvic floor

Results

- From September 2012 to August 2017
  - 283 male patients with ONB included
    - 801 questionnaires collected
    - 589 interval distinct questionnaires were defined
  - Median age of 67 yr (range 39-90)
  - Median BMI 27 kg/m² (range 18-50)
Pelvic Floor Physical Therapy

- Subgroup of 35 patients:
  - No significant difference for age, sex, BMI, or cci
  - Daytime continence
    - Shorter median time to first daytime continence
      - (99 days vs 209 days; p=0.001)
  - Nighttime continence
    - Shorter median time to first nighttime continence
      - (median 141 days vs 381; p=0.001)

Kaplan-Meier curves for daytime continence

- Higher continence rates at 1 year in PFPT group (x2 likelihood)
- 81% ± 7 in PFPT vs. 54% ± 3 in non-PFPT (p<.0001)
• Following ONB, continence improves significantly and peaks at 92% of patients achieving daytime continence by 12-18 months
• Nighttime continence rates plateaus at 51% by 18-36 months
• Those who received PFPT have significantly higher chance and faster return of daytime continence and nighttime continence compared to the non-intervention group
• Further research with bigger sample size and randomization is needed to support the value of PFPT and other measures in continence outcomes after RC and ONB

Conclusions

Patient Education

Behavioral Modification

Therapeutic Exercise

Education

• Neobladder
  • Bladder emptying education
    • No bladder muscle to push urine out
    • No sense of filling or fullness
    • Larger capacity than true bladder
    • Normal urinary cycle disrupted
    • Voiding on the clock (2-3 hours)
    • Evacuation strategies (Crede)
**Education**

- Crede Maneuver
  - Assists with neobladder evacuation
  - Helps achieve bladder schedule

**Technique**
- Lean forward on toilet
- Press fist over bladder to empty passively

**Behavioral**

- Scheduled voiding
  - Prompting person to urinate at designated time
  - Usually every 2 hours to start
  - Maintain dryness
  - Increase intervals 15 min/wk
  - Goal is 3-4 hours during day and night
Therapeutic Exercise

Diastasis Recti Abdominis Correction

(Keeler 2012)

- Expert consensus is significant if over 2 fingers width
- Studied primarily in postpartum females

Recommendations for Correction

- Abdominal muscle training (TA and general)
- Pelvic floor muscle training
- Abdominal binder

Pelvic Floor Muscle Exercise Program
Effective conditioning requires proper:

- isolated muscle group
- sufficient load intensity
- duration of exercise
- training within specific activity
- adherence to maintenance program

Pelvic Floor Muscle Awareness Training
Awareness Training

- Quiet treatment area
- Patient education tools
  - Pelvic models / pictures
- Hook lying position / legs up on bolster
- Verbal cues
- Diaphragmatic breathing instruction

Awareness Training

- Verbal cues / responses
  - Holding back gas expulsion
  - Holding urine in during urge
  - Stopping urine stream
  - "Clearing the line"
  - Penis wiggle
  - Contraction during ejaculation

Awareness Training

Other Methods:

- Visual cues / observations
- External palpation
- Biofeedback (video or sEMG)
- Internal palpation
Common errors
- holding breath
- bearing down (Valsalva Maneuver)
- active abdominals
- active gluteals

Awareness Training

• Video Biofeedback

Awareness Training

• sEMG Biofeedback
Electrical Stimulation

- Pre-set (stress) protocol
- Muscle location cue
- Facilitate contraction

Exercise Progression

Supine – Early Phase

Exercise Progression

Sitting Static / Dynamic – Middle Phase
Exercise Progression
Standing / Functional – Late Phase

- Design a 16 week exercise program
  - Supine exercises first 4-6 weeks
  - Static sitting exercises 3-4 weeks
  - Dynamic sitting exercises 3-4 weeks
  - Functional standing exercises 3-4 weeks

Exercise Dosage
- Be aggressive with dosage if tolerable:
  - Focus is on neuromuscular re-education
  - 2-10 second hold time (rest can be same or less)
  - 15-30 reps of each exercise (ex: 120 total)
  - 2-5 exercises per session based on phase
  - Twice daily
Anticipatory Contractions:
• Any time of predicted urine loss
  • Generating motor plan
  • Must be consistent

*Very important component of improvement*

**Additional Education**

- Voiding journal for bowel and bladder
- Reduce stress to pelvic floor by sitting when able instead of long term standing (fatigue)
- Be most active in AM to minimize fatigue of pelvic floor muscles
- Remind about voiding on schedule / fluid modification

**Additional Education**

- Physicians primary goal is to prolong life after a diagnosis of prostate cancer
- Physical Therapists primary goal is the rehabilitation after the medical treatment to restore function
- Team approach is most logical
Pelvic Pain

WHAT WILL A PHYSICAL THERAPIST DO?
Comprehensive subjective and objective examinations
Perform an examination to look for body structure and function deficits in:

- Mobility
  (Vander 2014)
- Flexibility / Pliability
- Muscle Performance
  (Tu 2009, Voorham and Zalm 2008)
- Motor coordination
  (Tu 2009, Voorham and Zalm 2008)

These deficits may be specific pain generators or contributing factors leading to pain from other tissues

WHAT WILL A PHYSICAL THERAPIST DO FOR CP/CPPS?
14 RCTs Published Relevant to CPPS Intervention

Chiantoni et al., 2006
Haugstad et al., 2006
Heyman et al., 2006
Gulbiel et al., 2007
Carrico et al., 2008
Haugstad et al., 2008
Lee et al., 2008
Sikiru et al., 2008
Fitzgerald et al., 2009
Lee and Lee, 2009
Bernardes et al., 2010
Chiantoni et al., 2010
Samhan et al., 2011
Rozanski et al., 2012
A typical interventional skill set will include:

**Manual therapy**
- Joint mobilization (lumbar spine, sacroiliac joint, hip, thoracic spine)
- Soft tissue mobilization (stretching, trigger point release, skin rolling, etc.)

**Neuromuscular reeducation**
- Pelvic floor awareness training
- Respiration training (relaxation, ANS adjustment)
- Biofeedback / down-training

**Patient education / counseling**
- Pain science / behavioral modification / fear reduction / positive thinking / goals

**WHAT WILL A PHYSICAL THERAPIST DO FOR CP/CPPS?**

**GOAL: OBJECTIVELY STRATIFY PATIENTS PRIOR TO TREATMENT**

**WHAT WOULD WE DO IF WE KNEW DISEASE TYPE?**

End Organ Disease
- Central Pain Syndrome
- Manual Therapy
- Neuromuscular Reeducation
- Therapeutic Exercise
- Patient Education / Counseling

Central Pain Syndrome
- End Organ Disease
- Patient-specific combination
- Pain science / behavioral modification / fear reduction / positive thinking / goals
THESE PATIENTS ARE NOT ALONE
CPC/PSP Relaxation / Physical Therapy Outcome Data

Anderson et al., 2005

NIH - Chronic Prostatitis Symptom Index (CPSI)

Pain in the lower abdomen:
4. Which number best describes your AVERAGE pain or discomfort on the days that you had it, over the last week?

0 1 2 3 4 5 6 7 8 9 10
NO PAIN BAD AS YOU CAN IMAGINE

4. Meanings:
pubic or bladder area
**NIH - Chronic Prostatitis Symptom Index (CPSI)**

Scoring the NIH-Chronic Prostatitis Symptom Index Domains

**Pain:** Total of items 1a, 1b, 1c, 1d, 2a, 2b, 3, and 4 = ____

**Urinary Symptoms:** Total of items 5 and 6 = ____

**Quality of Life Impact:** Total of items 7, 8, and 9 = ____

**Total Score:** 0-43

**Minimal Detectable Change:** 4 points


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**The Role of Physical Therapy in CP/CPPS**

VS

---

**Can it really be my muscles?**

- PFM tenderness noted in 51% of patients with CP/CPPS and only in 7% of those without. *(Source: Shoskes, 2008)*

- Actual pain site reproduction is highly correlated with muscle palpation. *(Source: Shoskes, 2008)*

- Reduced PFM mobility (bladder base movement) in those with CP/CPPS vs non-CPPS using US measures. *(Source: Khorasani, 2012)*

- Significant symptom reduction noted in 79.2% of men with CP/CPPS after muscle specific interventions. *(Source: Polackwich, 2015)*
What are the symptoms of muscle related CP/CPPS?

- Full range of annoying to severe
- Variety of patterns
- Variety of aggravating factors
- Acute or chronic

Descriptions of Pain

- "It feels like a knot between my legs."
- "I feel like I am sitting on a golf ball."
- "The tip of my penis burns."
- "I have pain after ejaculation."
- "Burning feeling in my groin area."

• Sitting
• Physical Activity
• Emotional Stress
• Holding or evacuating bowel / bladder
• Ejaculation

• Urinary frequency
• Weak stream
• Post-void dribble
• Straining to void
• Fragmented stools
• Thin stools
• Fullness in rectum
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Manual Therapy

- Desensitization of local tissue for restoring tolerance to pressure and touch.
  - Medial / posterior thigh
  - Inguinal region
  - Perineum / anal region
  - Suprapubic
  - Gluteals

Goals
- Restore pliability
- Restore circulation
- Increase tolerance to pressure
- Restore neural mobility
- Reduce referred symptoms

- Medial / posterior thigh
- Inguinal region
- Perineum / anal region
- Suprapubic
- Gluteals

Manual Therapy

- Soft tissue mobilization for soft tissue restrictions in associated muscle groups:
  - External and/or internal regions treated
  - Multiple techniques used:
    - Contract / Relax
    -Dragging
    - Strumming
    - Static hold

Nerve Mobility

- Pudendal nerve branches:
  - dorsal
  - perineal
  - inferior rectal
  - Continuous nervous system (Slump)
Pelvic Floor Training

- Re-educate phases of contraction/relaxation
- 10-20% contraction intensity concentrically
- Eccentric lengthening also very important
- Rhythmic contract/relax method (full ROM)

Nervous System Quieting

- High anxiety personality
- Sympathetic nervous system overdrive (storage)
- Relaxation techniques
  - diaphragmatic breathing
  - relaxation audio tape/CD
  - coping mechanism changes
  - stress avoidance
Why is it difficult to find a PT who knows how to treat CP/CPPS?

- Minimal exposure in PT school
- APTA governance of pelvic health is within the Section on Women’s Health
- Requires PT to be comfortable with pelvic region
- Thought of as super specialized care
- Expensive continuing education courses usually not local