Pelvic Floor Health: Beyond Kegels

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Disclosures

❖ None
Pelvic Floor: More than Kegels

Intro/Outline

❖ Pelvic anatomy
❖ Definitions of key terms
❖ Approach to evaluation
❖ Reason for referral
❖ PT Evaluation and treatment
  ❖ Incontinence and Prolapse
  ❖ Chronic pelvic pain
Pelvis: skeletal system

- Pelvis
- Ilium
- Ishium
- Pubis
- Sacrum
- Coccyx
Pelvis-ligaments

- Sacrospinus ligament
- Sacroiliac ligament
- Pubis symphysis
Pelvis-Muscles

- Obturator internus
- Levator ani muscle
- Piriformis
Vulva—superficial layer

- Labia minora
- Labia majora
- Clitoral hood
- Hymenal remnant
- Perineum
Vulva—deeper layer

- Bulbocavernosus muscle
- Superficial transverse perineal
Abdominal view—muscles

- Rectus abdominus
- External obliques
- Internal obliques
- Transversus abdominis
Abdominal view—pelvic organs
Definitions

- Pelvic floor dysfunction refers to a wide range of conditions that can occur due to muscle weakness, hypertonicity or joint dysfunction

- Can be related to:
  - Incontinence, Pelvic organ prolapse
  - Pelvic pain
Toll for an auto, driver, and 4 passengers was 50 cents. Each extra rider was 5 cents. Sort of a reverse car-pool concept! Tolls were collected in both north and southbound directions. Times were different on opening day of the Golden Gate Bridge, May 27, 1937.
Definitinos

- Incontinence
- Urge
  - “key in the door”
- Stress
  - Cough, sneeze, laugh
- Mixed
  - combination
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Definitions

- Chronic Pelvic pain
- Pain below the umbilicus
- Duration >6 mos
- Differentiate from acute
Non-gynecologic causes

Differential Dx

GI: IBS, IBD, hernia
Urinary: IC, recurrent UTI, nephrolithiasis
MSK: myofascial pain, lower back muscle strain, pelvic osteoarthritis
Neuro: post op neuropathy, lumbar-sacral neuropathy
Psychiatric: depression, anxiety, somatization
Gynecologic causes

Differential Dx

❖ Cyclic:
  ❖ Mittleschmertz, dysmenorrhea, endometriosis, adenomyosis, hemorrhagic corpus luteum cyst
❖ Non-cyclic:
  ❖ Pelvic adhesions, endometriosis, adenomyosis vulvodynia, vulvar vestibulitis
History

❖ Characterize pain
   ❖ Timing of pain
   ❖ Inciting events
   ❖ Associated symptoms
❖ Incontinence
   ❖ Timing
   ❖ Inciting factors
   ❖ Dysuria / Nocturia
   ❖ Diet / Fluid intake
❖ PMHx
❖ PSurgHx
❖ PSocHx: hx of DV, sexual or physical abuse
Approach to Exam

❖ Key: relationship
❖ Targeted exam
❖ Abdomen/Back—Carnett’s sign
❖ Vulva
❖ Pelvic floor
❖ Gyn exam
Vulva—Cotton Swab Test
Pelvic floor exam

- Bulbocavernosus
- Transverse perineal
- Levator
- Obturator
- Piriformis
Gyn exam

- Cervix
- Uterus
- Ovaries
- Bladder
- CMT
Pelvic Floor: More than Kegels

Urogyn exam prolapse
Additional Tests

Urinalysis, Urine Culture, Pelvic Ultrasound, Diagnostic Laparoscopy

**Today, we will focus on pelvic floor etiologies**
Reasons I refer to PT:

- Musculoskeletal findings for CPP
- Kegel muscle training
- Conservative / initial / multimodal treatment for incontinence
What do Pelvic PT’s treat?

- Stress Urinary Incontinence
- Urge urinary incontinence
- Mixed Urinary Incontinence
- Pelvic organ Prolapse
- Fecal Incontinence
- Bladder dysfunction: Frequency, urgency
- Constipation
- Pelvic pain
- Dyspareunia
- Pregnancy related pain / postpartum
Role of the Pelvic Floor

- Support
- Stabilization
- Sphincteric
- Sexual
Pelvic Floor Dysfunction – The Basics

Underactive muscles
- Incontinence
- Prolapse

Overactive muscles
- Pelvic pain
- Difficulty voiding
Pelvic Floor Dysfunction - The Beyond

Underactive muscles
Incontinence
Prolapse

Overactive muscles
Pelvic pain
Difficulty voiding
Types of incontinence

1. Stress Urinary Incontinence (SUI) - laugh, cough, sneeze

2. Urge Urinary Incontinence (UUI) - urgency triggers - running water, key in the door

3. Mixed Incontinence - Combination of SUI and UUI
Prevalence & Who’s at Risk (Hannestad et al. 2000)

- 25% of the 35,000 women surveyed

- Prevalence of incontinence increases with age
  - 12% of women < 30
  - 40% of women > 90

- Only 26% of those incontinent had consulted their Doctor
What is Pelvic Organ Prolapse?
Stages of Prolapse

Table 1. Pelvic Organ Prolapse Quantification (POPQ) Staging System

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>No prolapse (apex can descend within 2 cm of hymen)</td>
</tr>
<tr>
<td>Stage I</td>
<td>Leading edge descends to 1 cm above hymen</td>
</tr>
<tr>
<td>Stage II</td>
<td>Leading edge descends to within 1 cm of the hymen</td>
</tr>
<tr>
<td>Stage III</td>
<td>Leading edge extends &gt;1 cm beyond hymen but &lt;2 cm of total vaginal length</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Complete eversion, leading edge &gt;2 cm of total vaginal length</td>
</tr>
</tbody>
</table>
Physical Therapy Assessment

**SUBJECTIVE**

- Bladder, Bowel and Sexual function Q’s
- Fluid intake
- Voiding frequency
- Episodes of Incontinence
Physical Therapy Assessment

SUBJECTIVE:

❖ Regular exercise
❖ Past Medical history
❖ Menopause related Q’s
❖ Hx of pregnancies and complications
❖ Goals
❖ Questionnaire
Physical Therapy Assessment

OBJECTIVE

❖ Postural
❖ Lower extremity strength
❖ Peripheral nerve testing
❖ External pelvic floor
Physical Therapy Assessment

**OBJECTIVE:**

- Trigger points in abdominal wall, inner thighs
- Intravaginal or rectal exam: Tone, trigger points, extensibility, endurance, strength
- Stage of prolapse
Treatment Options- Kegels & Beyond

- Pelvic Floor Contractions vs. Kegels
- Manual therapy
- Biofeedback training
- Education on bladder irritants
- Education on urge suppression
- Education on normal bladder habits, toileting posture
- “The Knack”
- Address posture, strength, alignment
- Restoring the “inner can” of the core
Pelvic Floor Muscle Training vs. Kegels

❖ Proper technique!
  ◦ Lifting vs clamping
  ◦ Coordination with breathing
  ◦ Isolation of PFM

❖ Exercise prescription

❖ Positioning

❖ Equipment – electrical stim as adjunct
Pelvic Floor Muscle Training- Evidence

- Positive effects demonstrated with pelvic floor muscle training in women with SUI and UUI (Dumoulin, Cochrane Review, 2010; Hay-Smith, Cochrane Review, 2006)
  - Decreased frequency and amount of leaking, and improved quality of life.
  - 35–80 repetitions / day

- Pelvic floor muscle training results in anatomical and systematic changes in women with pelvic organ prolapse (Hagen, Cochrane Review, 2011)
What is biofeedback?

- Provides visual feedback to improve pelvic floor contractions
- Helpful to work on isolation and coordination
- Found to be an important adjunct for pelvic muscle training (Weatherall 1999)
- Home units
Bladder Irritants

- Alcoholic beverages
- Carbonated beverages
- Caffeine
- Spicy foods
- Citrus foods
- Artificial sweeteners
- Tomatoes
- Chocolate
- B vitamins
Urge Suppression Techniques

- **Normal bladder habits**: Voiding every 2-4 hours, no nocturia

- For *abnormal* urge we teach:
  - Sit down or apply pressure to the perineal region
  - Think of mental distraction techniques
  - Perform kegels to help inhibit the bladder urge
  - Walk slowly to the bathroom
  - Remember that using the bathroom is not an emergency!
Kegels for urge?

(a) Bladder at rest
- Bladder (filling) state
- Relaxed (filling) state
- Internal sphincter (smooth muscle) passively contracted
- External sphincter (skeletal muscle) stays contracted

(b) Micturition
- Stretch receptors
- Sensory neuron
- Higher CNS input may facilitate or inhibit reflex
- Stretch receptors fire.
- Parasympathetic neurons fire. Motor neurons stop firing.
“The knack”

- Squeeze before you sneeze
- Kick starting the PFM contraction
Toileting posture

- Can decrease constipation, hemorrhoids and some voiding difficulty
Core and pelvic stabilization
“The inner can”
What is normal pelvic floor muscle function?

- Strong contraction
- Complete relaxation
- Movement in coordination with diaphragm
- Functional MRI: Talasz H. 2011
  - Used with permission
Pelvic floor muscle dysfunction

Increased pelvic floor muscle tone and weakness, and impaired relaxation found among women with vulvar pain compared to non-affected women. Reissing et al. 2004

Kuo et al. 2015
Extent of the problem

- Rate of pelvic pain as high as 28%  Harlow et al 2003
- Rate of urinary frequency is 25%  Coyne et al. 2009
- 39% of women who suffer from chronic vulvar pain fail to seek treatment  Harlow et al 2003
Causes of pelvic floor muscle dysfunction

❖ Musculoskeletal – fall on tailbone, postural
❖ Childbirth
❖ Stress/tension
❖ Chronic holding (e.g. to avoid leaking)
❖ Chronic straining (constipation)
❖ Irritable bowel syndrome (diarrhea, constipation)
❖ Hormonal
❖ Endometriosis
❖ Chronic cystitis
❖ Prior pelvic surgery
❖ Sexual abuse

Hartmann et al 2014
Pelvic Pain Diagnoses

- Provoked vestibulodynia
- Generalized vulvodynia
- Pelvic floor dysfunction
- Pudendal neuralgia
- Dyspareunia
- Vaginissimus
- Interstitial cystitis
- Atrophic Vaginitis
PT Treatment

- Education
- Exercise/posture
- Biofeedback/dilators
- Manual/hands on
Address constipation

- High rates of constipation among women with chronic pelvic pain Montenegro et al. 2010
- Toilet positioning: knees higher than hips
- Water / fiber intake
Vulvar care www.nva.org

❖ Clothing / laundry
  ❖ All white cotton underwear
  ❖ Avoid panty hose (thigh or knee highs instead)
  ❖ Mild detergents and avoid fabric softeners

❖ Hygiene
  ❖ Unscented toilet paper
  ❖ Sitz bath
  ❖ Avoid all perfumed soaps / products
  ❖ Rinse the vulva with water after urination
  ❖ Urinate before the bladder is full
  ❖ Prevent constipation with fiber and water intake
  ❖ 100% cotton menstrual pads / tampons
Vulvar care www.nva.org

❖ Intercourse
  ❖ Water based lubricant, glycerin free
  ❖ Apply ice after intercourse
  ❖ Urinate and rinse with cool water after intercourse

❖ Physical activity / every day activity
  ❖ Avoid bicycle riding
  ❖ Avoid highly chlorinated pools
  ❖ Take regular standing breaks from sitting
Pelvic floor relaxation/stretching

Diaphragmatic breathing
Pelvic floor muscle training

- May need to delay strength training
- Train normal movement of the pelvic floor muscles: contraction and relaxation
- Coordinate with diaphragmatic breathing
- Biofeedback for visual feedback
With inhalation, the pelvic muscles descend
With exhalation, the pelvic muscles lift
Musculoskeletal treatment

- Address postural impairments and muscle imbalances at the spine and hips
- “pelvic pain posture” – excessive lumbar lordosis, anterior pelvic tilt; short hip flexors; loss of hip IR
  King 1991
Musculoskeletal treatment

- Address postural impairments and muscle imbalances at the spine and hips
- Posterior pelvic tilt; short hamstring muscles; tight gluteal and pelvic floor muscles
Manual treatment

- Treat pelvic floor myofascial trigger points with sustained manual pressure (90 seconds)
  - Trigger points: focal hyperirritable area in fascia associated with taut bands of muscle fibers
  - Local and referred pain Travell 1999
Manual treatment

- Treat myofascial restrictions at the lower abdominal wall / hips / spine
  - Skin rolling
  - Sustained pressure
- Colon massage
  - Decreased constipation and abdominal pain, and improved frequency of bowel movements
  - Lamas et al. 2009
Vaginal dilators

- Used for vaginal stretching
- Decreased pain with intercourse among women with vestibulodynia who used dilators 10-15 minutes 3x/week  Murina et al. 2008
Crystal Wand

- Used for self trigger point release
- Decrease in trigger point sensitivity with manual release, self trigger point work with the crystal wand and relaxation training Anderson et al 2015
**Multimodal approach**

Bergeron et al 2002
- Patient education
- Myofascial manual therapy
- PFM exercises
- Biofeedback
- Electrical stimulation
- Dilator/self manual stretching

Gentilcore-Saulnier et al 2010
- Patient education
- Myofascial manual therapy
- PFM exercises
- Biofeedback
- Electrical stimulation
- Dilator
Multimodal approach

Bergeron et al 2002
- 71% reported decreased pain
- Decreased pain with intercourse and pelvic exam
- Increased frequency in intercourse

Gentilcore-Saulnier 2010
- Decreased pain responsiveness in the PFM
- Reduced pressure sensitivity at the vaginal opening
- Decreased pain with vaginal penetration
Resources

❖ UCSF Women’s health Center at Mt Zion
   2356 Sutter St. 5th floor; 415-885-7788
   UCSF Women’s Continence Center
   http://coe.ucsf.edu/wcc/

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   Nikita Shah, PT, DPT, OCS
   Bevin Daniels, PT, DPT, OCS

❖ UCSF Department of Physical Therapy and Rehabilitation Science
   1500 Owens, Suite 400; 415-353-7598
   http://ptrehab.ucsf.edu/

❖ American Physical Therapy Association Pelvic PT Locator
   http://www.womenshealthapta.org/pt-locator/
Mixed UI Case

- 65y old F G2P2 presents with urinary leakage.
  - Chronic issue since she had her children
  - Worsened when she was recently ill w/ cough and cold
  - Bothersome—wears pantyliners every day
  - 3/wk she will “soak” a pantyliner
  - Tried Kegels in the past but felt they were not helpful
  - No bowel sx—regular BM
  - Abdominal pain 5/10 w/ urgency

- Fluid intake: 4 glasses water, 2 large thermoses of coffee, 2 glasses of coconut water, 1 cup apple juice
Mixed UI Case

- **PGynHx:** not currently SA, menopausal at 41, vaginal atrophy for which she uses estrogen
- **POBHx:** G2P2, 1 NSVD, 1 C/S
- **PMHx:** Rt breast cancer
- **PSurgHx:** right lumpectomy, appendectomy, hysterectomy, right ovarian cystectomy
- **PSocHx:** Busy sedentary job, married to husband, exercises regularly 3/wk
Mixed UI

- Exam:
  - Gen: well appearing
  - Abd: soft mildly tender with palpation, no focal tenderness
- Gyn:
  - Mild vulvar atrophy
  - No MSK tenderness
  - Poor control with Kegel exercises
- Refer to PT
Mixed UI Case: PT Physical Exam

- PF Strength 2/5
- Endurance 6sec hold
- Quick reps: 2s x10 reps
- Abnormal breathing pattern with kegel
- Soft tissue restrictions in superficial layer of PFM
- Weak hip muscles
Mixed UI case: PT Treatment

- 3 visits thus far over 1.5 months
- Education: normal bladder habits, fill out bladder diary, increase water / decrease coffee, urge suppression
- STM to layer 1
- Diaphragmatic breathing and coordination of the “inner can”
- PF contraction with breathing 4son / 4soft, 4x / day
- Added hip abductor strengthening and inner thigh stretching
Mixed UI case: Outcome

- Lower abdominal pain is resolved
- Only 1 small leak of few drops in past 2 weeks
- PF strength = 3/5
- Improved coordination of PF and diaphragm
- Increased water intake
- Listens to normal urge, uses urge suppression for abnormal urge
- Mild STR’s in PF still present
Pelvic pain case

- 42 yo G0 presents with pain with intercourse
- HPI:
  - Rates 8/10 w/ initial and deep penetration.
  - On further discussion, pain started 6 months ago, after a fall while snow boarding
  - No bladder symptoms
  - No bowel symptoms
  - No hx of STI/ trauma
  - In monogamous relationship with partner x 3 yrs
- PMHx: irritable bowel syndrome
- PSurgHx: none
Pelvic Pain case: MD Physical Exam

- Examination
  - Abdomen: soft, NT, ND
  - Nl external genitalia
  - Cotton Swab test negative
  - Good bulbocavernosus control
  - Tender at levator ani, obturator internus R>L
  - Worse pain with abduction
  - No CMT, no bladder pain
  - Small antevolved uterus, nontender
  - Normal ovaries

- Referred to PT
Pelvic Pain case: PT Physical Exam

- Examination
  - Tenderness/hypertonicity at R>L levator ani, obturator internus, and superficial PFM
  - Poor PFM relaxation; 2-/5 strength with poor quality of contraction
  - Right ilial upslip
  - Stands in excessive anterior pelvic tilt
  - Short hip flexors
  - Weak lower abdominal muscles
Pelvic pain case: PT treatment

- Treatment (7 visits over 6 month period)
  - Correction of ilial upslip; posture training
  - Myofascial treatment to superficial and deep PFM layers
  - Diaphragmatic breathing / relaxation training
  - Stretches: hip flexor, adductor, hamstring, glut
  - PFM coordination training
  - Biofeedback
  - Lower abdominal strengthening
  - Declines self stretching with dilators / crystal wand

- Outcomes
  - Minimal vaginal tightness following intercourse, but no pain
  - Isolated tenderness to right obturator internus muscle with pelvic exam; otherwise no tenderness
  - 4-/5 pelvic floor muscle strength
Pelvic pain case

❖ 72 yo G2P2 who presents w/ painful intercourse and urinary urgency x 6 mos.
❖ HPI: pain was intermittent in nature
  ❖ increased pain w/ intercourse—currently not SA
  ❖ Feels mildly bloated
  ❖ Aggravated by walking, tight clothing
  ❖ Sx began sx months after being rear ended in golf cart with her grandkids
  ❖ Sx improved w/ massage, tylenol
❖ HPI: urinary urgency, frequency
  ❖ Voids every 1-2 hours at work
  ❖ Leaks on the way to the bathroom/barely makes it
  ❖ Has 3 lattes/day, carbonated water
❖ POBHX: 2 vaginal deliveries
❖ PMedHx: none
❖ PSocHx: semi retired, works in bookstore, stands for long periods of time
Pelvic pain case: MD exam/Treatment

- Examination
  - Gen: thin, well appearing female
  - Abdomen: soft, mildly tender + Carnett’s sign, not distended
  - Vulva: atrophic vulva, with pallor of vulvar skin
  - Vagina: decreased rugation
  - Cervix: normal appearing, no lesions
  - Pelvic floor: Tenderness at bulbocavernosis and superficial perineum, mod tenderness at levator and obturator, mod discomfort with exam
  - No CMT, no bladder tenderness
  - Urgency symptoms increased with exam
  - Small mid uterus, no adnexal masses palpated

- Labs: normal urinalysis, negative urine culture, normal ultrasound

- Treatment
  - Estrogen cream for vaginal atrophy
  - Lubricants
  - Referral to PT
Pelvic pain case: PT exam/treatment

- **Examination**
  - Pelvic mal-alignment (ilial upslip)
  - Paleness of vulvar skin
  - Tenderness at L>R psoas/lower abdominal tissues
  - Marked increased tone and tenderness PFM superficial layers L>R, tender at deep PFM, particularly pubococygeus
  - Unable to relax PFM
  - Urgency symptoms increased with manual exam
  - Short psoas; decreased glut strength

- **Treatment**
  - Patient ed: bladder irritants; increase water; urge suppression drill
  - Diaphragmatic breathing with visual imagery
  - Correction of pelvic mal-alignment with muscle energy technique
  - PFM manual myofascial release to superficial muscles (bulbocarenosus, compressor urethra), and pubococygeus
  - Hip flexor/adductor/glut stretching
  - Vaginal cool water cone; dilator self stretching
  - Glut strengthening
Pelvic pain case: outcomes

❖ Outcomes (4 visits)
  ❖ Improvement in urinary urgency with decreased coffee/carbonated water and urge suppression drill
  ❖ Reports benefit from diaphragmatic breathing and cool water cone (immediate relief), and manual work
  ❖ Recurrent flare ups with stressful life events and overdoing activity
  ❖ Recognizes necessity of long term management, emotional impact of pelvic pain, and role that stress plays in exacerbating pain
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