



Postpartum Pelvic Floor Dysfunction

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Objectives

- **To understand the how obstetric delivery impacts pelvic floor function**
- **To appreciate the common pelvic floor disorders experienced by postpartum patients**
- **To discuss the natural history of postpartum pelvic floor disorders**
- **To understand the available treatment options for these conditions**

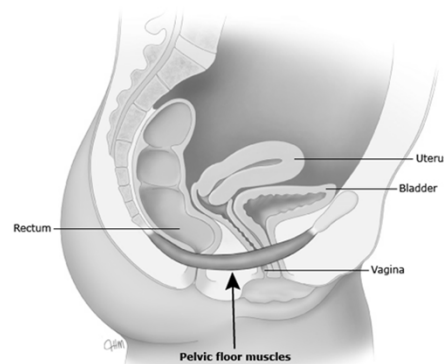
Consider...

Labor has been called, and still is believed by many to be, a normal function ... and yet it is a decidedly pathologic process. Everything, of course, depends on what we define as normal. If a woman falls on a pitchfork, and drives the handle through her perineum, we call that pathologic-abnormal, but if a large baby is driven through the pelvic floor, we say that it is natural, and therefore normal.

-DeLee, 1920

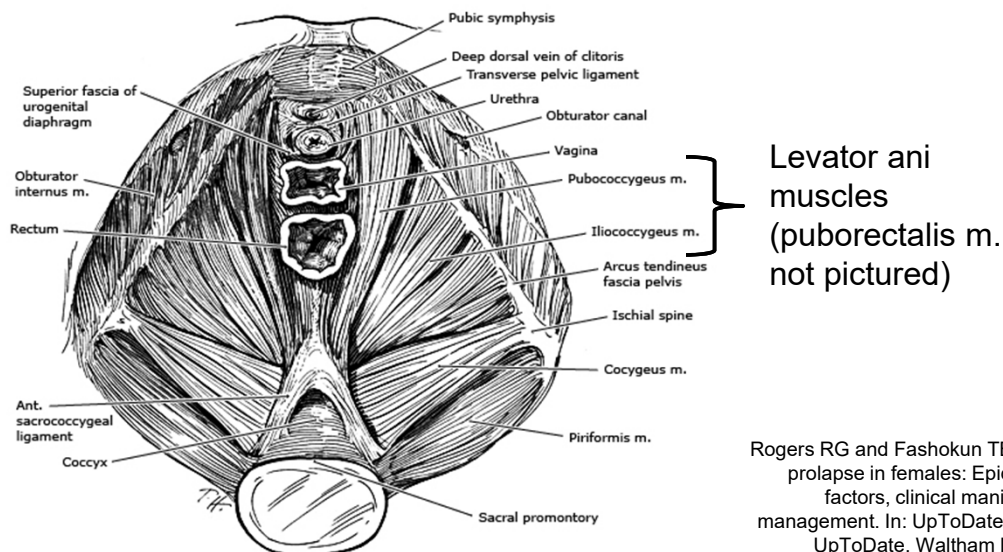
What is the pelvic floor?

- A group of muscles and connective tissue that attaches to the bony pelvis
- Provides support to the pelvic organs
- Defects in this support contribute to variety of pelvic floor disorders:
 - Bladder control issues
 - Bowel control issues
 - Pelvic organ prolapse
 - ...And more!



Brubaker L. Patient education: Pelvic floor muscle exercises (Beyond the Basics). In: UpToDate Post TW (Ed), UpToDate, Waltham MA. (Accessed August 24, 2023)

What is the pelvic floor?



Rogers RG and Fashokun TB. Pelvic organ prolapse in females: Epidemiology, risk factors, clinical manifestations, and management. In: UpToDate Post TW (Ed), UpToDate, Waltham MA. (Accessed August 24, 2023)

So... how common are PFDs?

- NHANES study: 50% of women had at least 1 pelvic floor disorder (PFD)
- 11-19% lifetime risk for undergoing surgery for prolapse or incontinence
- However, this may underestimate prevalence as many women will not elect surgery
 - WHI 41% with a uterus and 38% without had prolapse

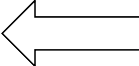
Why do women get PFDs?

Risk factors

- Childbirth (especially vaginal deliveries)
- Obesity
- Aging
- Menopause
- Family history
- Connective tissue disorders
- Chronic stress on the pelvic floor (coughing, constipation, etc)

Why do women get PFDs?

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Impact of pregnancy on pelvic floor...

- In pregnancy, the pelvic floor is placed under increased stress from:
 - Changes in hormonal milieu
 - Weight of the gravid uterus
 - Changes in intra-abdominal pressure
- For many, this translates to:
 - Pelvic and vaginal pressure, heaviness
 - Urinary frequency, urgency, incontinence
 - The first time they have heard of or experienced PFD

And then, delivery

- During delivery, the medial muscles of the levator ani are at greatest risk for injury
 - The pubococcygeus muscle reached a stretch ratio of over 3x, which was an increase in 217%
 - Increasing the fetal head diameter by 9% increased this stretch proportionally

And then, delivery

- An imaging study using MRI and ultrasound of primiparous women after vaginal delivery found 20-36% with abnormalities in the levator ani muscles, such as avulsion from the pubic ramus
- These defects put patients at risk for PFDs

Lien et al, *Obstet Gynecol* 2004; DeLancey et al, *Obstet Gynecol* 2003

And then, delivery

There is also nerve compression/stretching:

- Branches of the pudendal nerve are stretched >30%
 - Supplies the clitoris, vulva/distal vagina and anorectum
- This exceeds thresholds known to cause permanent nerve damage in animals (15-20%)
- This damage can contribute to fecal continence issues and loss of vulvar sensation

Lien et al, *AJOG* 2005

And then, delivery

And direct muscle injury:

- 53-79% of women will have a laceration from a vaginal delivery
- Most are 1st and 2nd degree (tear into the vaginal epithelium, perineal body, and pelvic floor muscles)
- Less than 5% will experience more severe tears into the anal sphincter complex or through into the rectum (3rd and 4th degree tears, respectively)

Smith et al, *BMC Pregnancy Childbirth* 2013; Rogers et al, *BJOG* 2014
Friedman et al, *Obstet Gynecol* 2015; Dudding et al, *Ann Surg* 2008

How common are postpartum PFDs?

For primiparous women who had a vaginal delivery, at 1 year postpartum:

- 41% reported stress urinary incontinence
- 32% reported nocturia
- 23% reported flatus incontinence
- 9% had at least stage 2 prolapse on exam

Hill AJ et al. *Female Pelvic Medicine & Reconstructive Surgery* 2021; 27(8):507-513.

Care of the postpartum mother

- Growing interest in the 4th trimester including enhanced, shorter interval follow-up
- Subspecialty, urogynecology-run peripartum PFD clinics have been growing in number across the U.S.
- These play an essential role for the recovery of women with:
 - Complex or advanced lacerations
 - Wound healing problems
 - Postpartum PFDs

But what can you do?

- Ask the right questions!
 - Many patient will not volunteer bowel or bladder issues without inquiry from their provider
- Remember the 3 B's
 - Bladder
 - Bowel
 - Bulge
- If yes, there are initial treatments you can recommend!

Bladder control definitions

- Urinary incontinence: Involuntary leakage of urine
 - Stress (SUI): Leakage with increases in intra-abdominal pressure (cough, laugh, sneeze, physical activity)
 - Urgency (UUI): Leakage with urgency to void (“gotta go”)
 - Mixed (MUI): Both stress and urgency incontinence are present

Bladder control definitions

- Overactive bladder: Syndrome of frequency (>7 voids per day) and sensory urgency \pm incontinence (≥ 3 episodes/day considered severe)
- Nocturia: Nighttime awakening due to an urge to void immediately preceded by sleep

Bowel control definitions

- Fecal incontinence (FI): Involuntary loss of liquid or solid stool that is a social or hygienic problem
- Anal incontinence (AI): Involuntary loss of flatus, liquid or solid stool that is a social or hygienic problem
- Fecal urgency: Inability to defer an urge to defecate

Pelvic organ prolapse definitions

- Herniation of the pelvic organs to or beyond the vaginal walls
 - Cystocele: Anterior vaginal wall, bladder
 - Rectocele: Posterior vaginal wall, rectum
 - Uterovaginal prolapse: Descent of uterus/cervix
- Can also have vaginal vault prolapse (after hysterectomy)

Lessons learned from my patients

Bladder Control Issues

Case #1

A 30 year old G2P2 presented on postpartum day 17 after spontaneous vaginal delivery with 2nd degree laceration

- **C/o stress and urgency urinary incontinence (MUI)**
- **Also reported h/o SUI in pregnancy**
- **Exam: Healing well, levator squeeze 0/5**
- **Referred to pelvic floor physical therapy (PFPT)**

Case #1

Returned 9 weeks later:

- **Continues to have bothersome SUI, affecting QOL**
- **Completed 4 PFPT sessions, levator squeeze 2/5**
- **Fit with anti-incontinence pessary- declined**
- **Recommended continued PFPT, over the counter incontinence vaginal insert**
- **Discussed surgical management if no improvement**

Postpartum Urinary Incontinence

- Incidence of postpartum UI ranges from 3-40%
- Systematic review found:
 - Mean prevalence of any UI was 33% at 3 months
 - Weekly and daily UI was 12 & 3%, respectively
 - Mean prevalence greater in vaginal versus c-section groups (31% vs 15%)
 - Only small changes in UI occurred over the 1st year
- Cohort study found 41% of primiparous women experienced SUI at 1 year, with only 23% experiencing resolution between 8 weeks and 1 year

Thom & Rortveit Acta Obstetrica et Gynecol 2010; Hill et al FPMRS 2021

Postpartum Urinary Incontinence

Childbearing is an established risk factor for UI

- Parity is associated with increased risk of SUI and UUI; vaginal delivery further increases SUI risk
- Increasing age, BMI and family history of UI are risk factors for UI in pregnancy
- Vaginal birth and UI in pregnancy are risk factors for postpartum UI

Rortveit et al NEJM 2003; Sheng et al FPMRS 2022
Solans-Domenech et al Obstet Gynecol 2010

Postpartum Urinary Incontinence

A longitudinal cohort study that contacted patients starting at 3 months out to 12 years postpartum found:

- **Persistent UI (SUI >> MUI > UUI) in 24% at 6 years and 38% at 12 years**
- **73-76% who reported UI at 3 months continued to report it at 6 and 12 years, respectively**

MacArthur et al BJOG 2006; MacArthur et al BJOG 2016

Postpartum Urinary Incontinence

- **PFPT is effective for treating SUI, UUI and MUI**
- **Cochrane review estimated women with postpartum UI who underwent PFPT were 40% less likely to report UI at 12 months than those receiving no treatment**
- **RCT of PFPT vs education for UI showed decreased UI and bother at 6 months postpartum; patients also had increased muscle strength and duration**
- **Another RCT of PFPT versus education found no difference in UI at 6 months after delivery in primiparous women**

Boyle et al Cochrane 2012; Hilde et al Obstet Gynecol 2013; Sigurdardottir et al AJOG 2020

Postpartum Urinary Incontinence

Other SUI options:

- Diet and lifestyle modifications
- Incontinence pessary, over the counter
- Urethral bulking*
- Mid-urethral sling*
- Retropubic colposuspension (Burch)*



*Would wait until 6 months postpartum before performing this for symptomatic patients

Postpartum Urinary Incontinence

What about mid-urethral sling and subsequent pregnancy?

- **Retrospective case series from Kaiser:**
 - N= 26 patients with h/o sling
 - 14/25 deliveries by c-section (5- elective due to sling)
 - 11 vaginal deliveries
 - No sling-related pregnancy complications
 - Only 1 with recurrent SUI; ended up getting repeat sling with resolution of symptoms

Postpartum Urinary Incontinence

A Swedish population-based cohort study

- **207 women with h/o mid-urethral sling; Matched to 521 controls**
- **SUI rate after delivery was not significantly different between the groups (22% in mid-urethral sling, 17% in control)**
- **Vaginal birth had no impact on risk of SUI compared to c-section**

Bergman et al Obstet Gynecol 2018

Postpartum Urinary Incontinence

UUI initial treatment options:

- **Diet and lifestyle modifications**
- **PFPT**
- **Bladder training**

Postpartum Urinary Incontinence

Anticholinergics:

- **May pass into the breast milk, can cause excitement or irritability in baby**
- **Long-term use might reduce milk production or letdown (monitor for signs of neonatal insatiety)**
- **Single dose unlikely to interfere with breastfeeding**

Beta-3 Agonists:

- **No data on risk of infant harm or impact on milk supply with use during breastfeeding**
- **Possible excretion into milk based on drug properties**

Postpartum Urinary Incontinence

- **Onobotulinum toxin in the bladder is an effective treatment for overactive bladder/UUI, however its use in pregnancy or while lactating is contraindicated**
- **Sacroneuromodulation (SNM), if already present, should be turned off during pregnancy and for OAB/UUI, would not recommend pursuing this option until at least 6 months postpartum**

Bowel Control Issues

Case #2

A 35yo G1P1 presented at 3 weeks postpartum after a forceps-assisted vaginal delivery with 4th degree laceration for evaluation of anal incontinence & fecal urgency

- **Started having fecal urgency immediately postpartum**
- **FI occurred x2 (loose)**
- **Some pain from her laceration, managed with ibuprofen, and continued spotting**

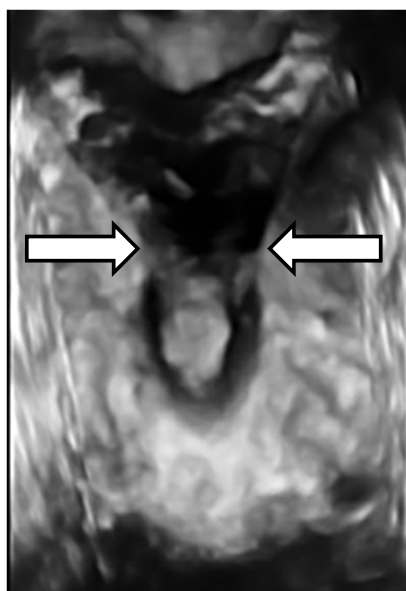
Case #2

- On vaginal exam, wound separation with short perineal body (1.5cm); unable to perform levator squeeze
- On digital rectal exam:
 - Normal resting tone at lateral and posterior portions of sphincter
 - No discernable increase in tone with squeeze anteriorly, so a sphincter defect suspected from 10 to 2 o'clock

Case #2

Transperineal 3D ultrasound performed:

- Mid to distal internal anal sphincter defect from 11 to 1 o'clock
- External anal sphincter defect from 10 to 2 o'clock



Case #2

- **Recommended increasing dietary fiber with option of adding loperamide PRN to bulk stools**
- **Referred to PFPT**
- **Discussed lifestyle modifications and possible surgical intervention**

Fecal Urgency

- **In a multi-center prospective cohort study, at 6 weeks postpartum, fecal urgency was reported in:**
 - **38% of women with obstetric anal sphincter injuries (OASIs)**
 - **28% of women lower degree lacerations**
- **A Canadian prospective cohort study reported fecal urgency in 6-28% after OASIs during a follow up period of 1-30 months**
- **May be as important as stool consistency for FI**

Anal Incontinence

- The frequency of AI after OASIs repair ranges from 15-61%
- Women with OASIs have greater FI, flatal incontinence and FI severity at 6 weeks and 6 months postpartum than women with lesser tears
- Women with 4th degree lacerations reported 10x worse bowel control than those with 3rd degree lacerations (30.8% vs 3.6%, P <0.001)

Evers et al, *AJOG* 2012; Fenner et al, *AJOG* 2003; Handa et al, *Obstet Gynecol* 2012 RCOG
Green-top Guideline No. 29; Borello-France *Obstet Gynecol* 2006

Anal Incontinence

- AI is associated with significantly poorer QOL
- Overall prognosis is good with 60-80% of women reporting no symptoms of AI or significant discomfort at 12 months
- However, women with a history of OASIs reported increased anal incontinence 5 to 10 years after their 1st delivery (OR 2.32, 95% CI 1.27-4.26)

Evers et al, *AJOG* 2012; Fenner et al, *AJOG* 2003; Handa et al, *Obstet Gynecol* 2012 RCOG
Green-top Guideline No. 29; Borello-France *Obstet Gynecol* 2006

Anal Incontinence

- **For women with ≥ 1 vaginal delivery, the 15-year cumulative incidence of AI was 30.6%**
- **Operative vaginal delivery was associated with significantly higher hazard of AI (1.75, 95% CI 1.1-2.7) compared to vaginal and c-section groups**

Blomquist et al JAMA 2018

Anal Incontinence

Management includes:

- **Supportive and lifestyle measures**
 - **Ritualize bowel habits**
 - **Stool deodorants (periwash)**
 - **Avoidance increases in colonic motility (caffeine, brisk activity after meals, insoluble fiber)**
- **Medical:**
 - **Bulking stools (Soluble fiber)**
 - **Loperamide**
 - **Treat underlying disorders**

Anal Incontinence

- **PFPT with biofeedback: Data is mixed!**
 - **RCT compared standard postpartum care to 12 weeks of PFPT in women with OASI→ PFPT resulted in significant reduction in symptoms vs standard care**
 - **Cochrane review demonstrated unclear benefit, but trials were small to moderate, lots of heterogeneity, and no long-term data**
 - **RCT of PFPT/biofeedback vs standard of care in OASI found significant improvement from baseline to 12 weeks, but no differences between the groups**

VonBargen et al FPMRS 2021; Woodley et al. Cochrane Database 2017
Oakley et al FPMRS 2016

Anal Incontinence

- **Secondary sphincteroplasty: Data is lacking...**
 - **Initial success 60-80%, but poor long-term success- as low as 6% at 10 years**
 - **Definition of success in studies varies widely**
 - **Limited well-designed studies with heterogeneous patient populations**
- **Vaginal E-stim: At 13w was associated with more AI symptoms than sham and is not recommended**

Brown et al 2013; Fernando et al 2006; Brown et al 2021
Gutierrez et al 2004; Richter et al 2015

Anal Incontinence

- **Sacroneuromodulation (SNM)**
 - Also FDA approved for FI
 - RCT of SNM versus sphincter collagen injection for FI showed superior efficacy in women with remote h/o OASIs
 - >75% of women with a h/o OASIs had successful outcome with SNM for combined FI and UII
 - Successful for most patients who fail conservative therapy: >80% had a $\geq 50\%$ reduction in FI episodes up to 14 years post-op

Rydningen et al Colorectal Dis 2017, Mellgren et al Dis Colon Rectum 2011

Case #2

3 weeks later:

- Perineum and pain somewhat improved
- Bowel symptoms still present
- Decision was made to proceed with surgical management



Case #2

12 weeks postpartum:

- Underwent transvaginal anal sphincteroplasty, posterior colporrhaphy, perineorrhaphy

6 weeks post-op:

- Excellent bowel control
- Well-healed



Pelvic Organ Prolapse (POP)

Case #3

- **A 29 yo G1P1 presented 6 months after uncomplicated vaginal delivery over intact perineum for evaluation of defecatory dysfunction and vaginal bulge**
- **Started after her delivery. Endorses splinting and a sensation that stool is getting trapped in a pocket. Digitizes to empty. No constipation.**
- **Saw Ob/Gyn and completed course of PFPT, which didn't really help**

Case #3

- **On vaginal exam, she had posterior vaginal wall prolapse that came to the vaginal opening (stage 2 out of 4)**
- **On digital rectal exam: Distal rectocele with pocket, mild perineal body separation**
- **Desired surgical management of posterior vaginal wall prolapse given her significant defecatory dysfunction**

Case #3

- **Underwent uncomplicated posterior colporrhaphy with perineorrhaphy**
- **At her 6-week post-op visit, she reported complete resolution of all defecatory dysfunction**

Pelvic Organ Prolapse

- **Difficult to tease out contributions of vaginal birth, operative vaginal delivery, episiotomy & OASIs on future pelvic floor function**
- **Pelvic organ support defects can appear during pregnancy and before delivery**
- **With vaginal delivery, significant stretching of levator ani muscles can lead to both muscle and nerve stretch injury/damage**

Lien et al, *Obstet Gynecol* 2004;
Dietz & Lanzrone, *Obstet Gynecol* 2005; Handa et al, *Obstet Gynecol* 2012

Pelvic Organ Prolapse

- **Increasing parity and, to a lesser extent, larger babies are associated with increased risk for future POP and POP surgery**
- **In one study, multiple vaginal deliveries with perineal lacerations were associated with POP beyond the hymen (OR 2.34; 95% CI 1.13-4.86)**
 - **Overall impact of parity decreases after 2nd vaginal birth**
- **At 7.5 years from vaginal birth, 13% of women had POP on exam, but only 3% were symptomatic**

Handa et al, Obstet Gynecol 2012; Rinne & Kirken 1999

Pelvic Organ Prolapse

- **Women with a vaginal delivery had a 15-year cumulative POP incidence of 30%**
- **Operative vaginal delivery was associated higher HR than SVD (1.88, 95% CI 1.3-2.8)**
- **Increasing vaginal opening size (>3.5cm, also known as the genital hiatus) also associated with significantly elevated HR (9.0, 95%CI 1.7-5.3) for POP**

Blomquist al, JAMA 2018

Pelvic Organ Prolapse

Management includes:

- **Expectant management: Education, reassurance**
- **PFPT**
- **Pessary**
- **Surgical management for those with persistent symptoms significantly impacting QOL**

Pelvic Organ Prolapse

If a patient elects surgical management, depending on what type of prolapse is involved, she can potentially have:

- **A uterine-sparing prolapse repair**
- **With or without mesh augmentation**

Patients likely have an increased risk of POP recurrence with subsequent pregnancy and delivery

Key Takeaways

- **Pregnancy and vaginal delivery are contributors to PFDs**
- **Postpartum PFDs are common and while for many symptoms initially experienced may resolve, for some, these symptoms persist when still present at 3 to 6 months postpartum**

Key Takeaways

- **There are many conservative treatments you can offer to postpartum patients such as:**
 - **Behavioral modifications**
 - **Pelvic floor physical therapy**
 - **Pessary or vaginal inserts**
 - **Medications (for women who are not breastfeeding)**

Key Takeaways

- **Pelvic floor physical therapists, obstetric providers and urogynecologists can be great resources for patients who are experiencing PFDs**
- **Patients do not need to complete childbearing to be eligible for surgical treatments, but they do need to have significant bother and impact on QOL**

Conclusions

- **Many patients do not know they have a pelvic floor, let alone what a pelvic floor disorder is**
- **Screening for PFDs is an important component of postpartum care (as many will not volunteer!)**
- **Educating patients that this isn't their new "normal" and there are providers who can offer effective treatments is key!**