



# 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

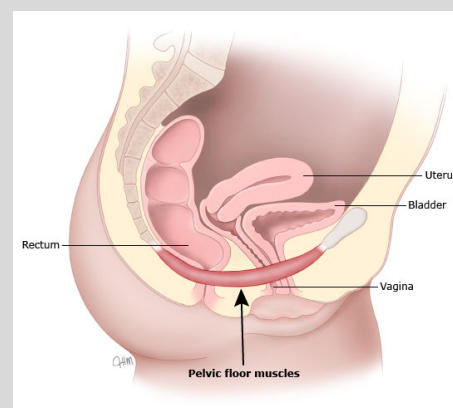
## Consider...

*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

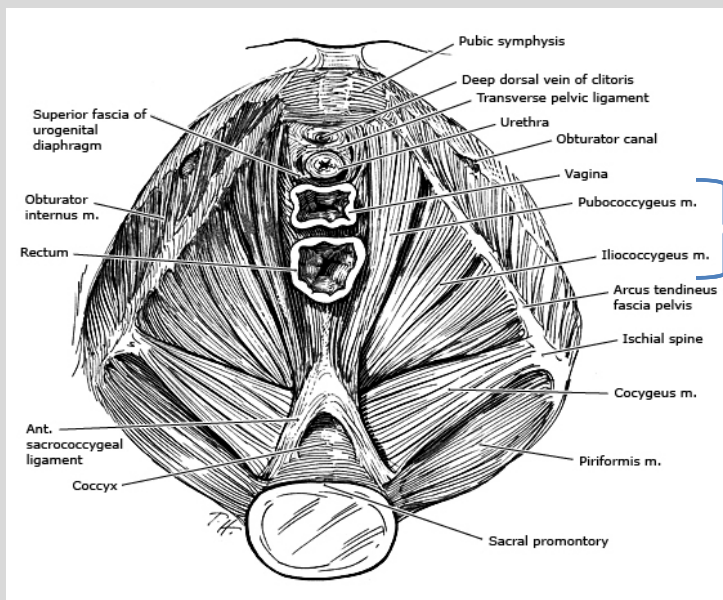
## What is the pelvic floor?

- 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?



Levator ani  
muscles  
(puborectalis m.  
not pictured)

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?

### Risk factors

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- Family history
- Connective tissue disorders
- Chronic stress on the pelvic floor (coughing, constipation, etc)

## 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 1<sup>st</sup> and 2<sup>nd</sup> 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 (3<sup>rd</sup> and 4<sup>th</sup> 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 4<sup>th</sup> 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 ( $\geq 3$  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 2<sup>nd</sup> 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 1<sup>st</sup> 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

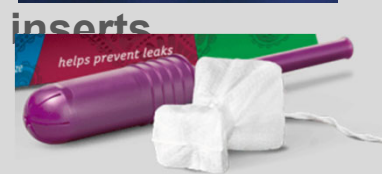
- PFPT is effective for treating SUI, UUI and MUI
- Cochrane review estimated women with postpartum UI who underwent PFPT were 40% less likely to report UI at 12 months than those receiving no treatment
- RCT of PFPT vs education for UI showed decreased UI and bother at 6 months postpartum; patients 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**

- Onabotulinum 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 4<sup>th</sup> 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

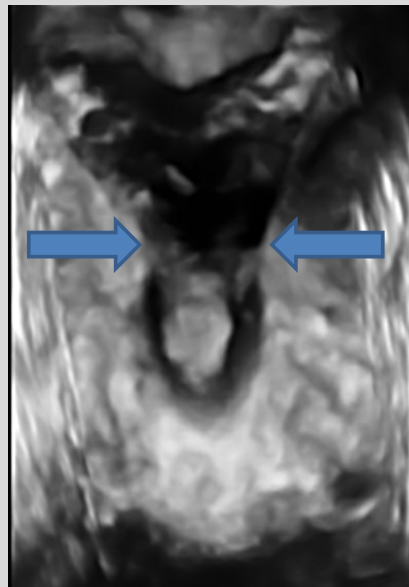
## Case #2

- 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 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 4<sup>th</sup> degree lacerations reported 10x worse bowel control than those with 3<sup>rd</sup> 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 1<sup>st</sup> 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  $\geq 1$  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 UUI
  - 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 2<sup>nd</sup> 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!