The Pelvic Floor:
What She Can Expect After Expecting (and Delivering!)

Susan Barr, MD
Assistant Professor
Saint Louis University
Division of Urogynecology
Objectives

• Understand risk factors and treatment of post-partum urinary retention

• Explore urogynecologic problems immediately post-partum; including urogenital atrophy, breakdown of episiotomies, rectovaginal fistulas, and sexual function

• Contrast treatments of urinary incontinence while a patient is still pregnant or immediately post-partum to that of a patient remote from delivery

• Compare and contrast the effect of mode of delivery on pelvic floor disorders
Acute Changes

• Bladder Management
• Effects of breastfeeding
• Lacerations/episiotomies
• Rectovaginal fistulas
• Sexual function
• Incontinence
Bladder Function

• Third month of pregnancy, bladder capacity increases

• 1st sensation often 250-400, Max urge 1000-1200ml in supine position

• Standing position, the pregnant uterus exerts pressure on the bladder

• Doubling of bladder pressure by 38wks

• Once delivery occurs, without weight of pregnant uterus, postpartum bladder can be hypotonic
Bladder Function

• What is normal PVR in obstetric population?
  – Third trimester 152+/−44mL
  – Postpartum 110+/−130mL

• Non-obstetric population
  – Agency for Health Care Policy and Research
  – <50mL normal
  – >200mL abnormal PVR

Postpartum Urinary Retention

- Single episode of postpartum bladder overdistension
  - May cause persistent urinary retention
  - Irreversible damage to the detrusor muscle
  - Recurrent UTIs
  - Permanent voiding difficulties

- Early detection decreases proportion of women who require long-term catheterization

- At 4 years, those with postpartum urinary retention did not have higher prevalence of urinary stress incontinence

Postpartum Urinary Retention

• Definition of abnormal postpartum post-void residual is controversial

• **Functional definition**
  – Absence of spontaneous micturition in the first 6 hours following vaginal delivery
  – 6 hours after removal of indwelling catheter in cases of Cesarean delivery

• **Incidence**: 0.7-4.9% (both vaginal and Cesarean deliveries)
Postpartum Urinary Retention

- **Risk factors:**
  - Instrumented delivery
  - Primiparity
  - Episiotomy
  - Sphincter disruption
  - Larger lacerations
  - Protracted labor -
    - Increased 1\textsuperscript{st} or 2\textsuperscript{nd} stage, $\geq 800$ minutes
  - Regional anesthesia -
    - Epidural increases risk up to 3x \cite{musselwhite2007}

- Morphine related postoperative anesthesia (in those with cesarean section) \cite{liang2007, glavind2003}

\cite{musselwhite2007, liang2007, glavind2003}
Postpartum Urinary Retention: The Silent Type

- 100 patients within 48 hours from delivery or removal of indwelling catheter

- Residual urine was estimated using a portable bladder scanner
  - 37 had PVR>150mL
  - 26 had PVR between 151-200mL
  - 11 had PVR>200mL

- Clinical significance?

- Silent retention affects a significant proportion of patients after delivery- needs further investigation

Postpartum Urinary Retention

How do we prevent it?

• Timing and measuring the first postpartum voided volume and potentially checking the first PVR(1)

• Ultrasonographic volume estimation gives reasonable bladder volume assessment-transabdominal as good as transvaginal(2)

• Measurement by ultrasound found to be fairly accurate when compared to volume from catheterization (within 10%)

Postpartum Urinary Retention

How do we treat it?
- Oral analgesics, patient mobilization, providing privacy

How do we ask the right questions?
- How are they voiding?
- Specifically do they have a slow stream, intermittency, hesitancy, straining, or a feeling of incomplete emptying of the bladder?

Postpartum Urinary Retention

Treatment:
• Investigate those you suspect
  – Abdominal ultrasound reliable

• Indwelling catheter
  – 12-48 hours, based on post-void residual volume

• Intermittent bladder catheterization
  – Every 4-6 hours until PVR<150cc

• Suprapubic catheter

• Prophylactic antibiotics
Yup, that's my job... pretty disgusting, huh? I can't think of anything more humiliating. I'm so ashamed. By the way, what do you do?
Breastfeeding

• Link of urogenital atrophy and breastfeeding

• Hypoestrogenic state following delivery and lasting until ovulation resumes

• Patient presents with dyspareunia, pelvic pressure, and stress incontinence

• **Treatment:** small amounts of topical estrogen applied daily for several weeks and vaginal lubricants with coitus (olive oil and vegetable shortening)
Lacerations/Episiotomies

- More common with operative vaginal deliveries

- Up to 13% rate of 3rd and 4th degree episiotomy extensions and vaginal lacerations with outlet forceps

- Station and degree of instrument rotation correlate with morbidity
Episiotomy

• Dehiscence
  – Infection concern
  – 0.5% of episiotomy wounds dehisce and 80% of these are due to infection

• Other risk factors: smoking, HPV infection, and coagulation disorders

• Symptoms
  – Pain(65%), purulent discharge(65%) and fever(44%)
Episiotomy

- Treatment of infection
  - Establish drainage, cut and remove sutures, treat with appropriate antibiotics

- Dehiscence
  - Timing of repair
    - Surgical wound must be properly cleaned and free of infection
    - **Early versus late repair:** Repair may take place as long as patient is afebrile and pink, healthy granulation tissue is present
Fistulas

- Rectovaginal
- Mainly in undeveloped countries
- 90% of those in developed countries due to childbirth
- Tissues of birth canal lying between the leading part and the pelvic wall may be subjected to excessive pressure → necrosis → fistula formation
- Risk factors:
  - Operative vaginal delivery
  - Episiotomy
  - Prolonged second stage
  - Dystocia
Rectovaginal Fistula

Present with uncontrollable passage of gas or feces from the vagina, malodorous vaginal discharge, or fecal soiling of undergarment
Rectovaginal Fistula

Most are located in the distal third of the vagina just above the hymen.

Delay repair until inflammation and induration have resolved.

Transvaginal approach: excise fistulous track, mobilize the planes, and perform layered closure
Repaired Rectovaginal Fistula
Sexual Function

• Cross-sectional study using obstetric records and a postnatal survey 6 months after delivery

• **Main outcome measures:** self-reported sexual behaviors and sexual problems including vaginal dryness, painful penetration, pain during sexual intercourse, pain on orgasm, vaginal tightness, vaginal looseness, bleeding/irritation after sex, and loss of sexual desire
Sexual Function

• 484 respondents (61% response rate)

• 89% resumed sexual activity within six months of the birth

• Sexual morbidity increased after the birth:
  – 38% report pre-pregnancy sexual problems
  – 83% of women reported sexual problems within the first 3 months after delivery
  – Declined to 64% at six months

Sexual Function

• Dyspareunia in the first 3 months was associated with vaginal delivery (P=0.01) and previous experience of dyspareunia (P=0.03)

• At 6 months, delivery route was not significant. Only experience of dyspareunia prior to pregnancy (P<0.0001) and current breastfeeding (P=0.0006) were significant

• Only 15% of patients with a postnatal sexual problem discussed it with a health professional
Sexual Function

- Sphincter laceration: 270% increase in sexual pain postpartum when compared to women without perineal laceration

- Spontaneous lacerations versus Episiotomy
  - It is better to tear than be cut
  - Those with spontaneous lacerations report less pain with intercourse than do women who undergo episiotomy
Sexual Function

- Retrospective cohort study

- Six months postpartum
  - 35% primiparous women complain of decreased sexual sensation
  - 24% express decreased sexual satisfaction
  - 22% complain of dyspareunia
Sexual Function

• Intercourse related problems can persist 12-18 months following delivery

• Best thing we can do is ask!
Urinary Incontinence


- Urinary incontinence after forceps delivery was more likely to persist than that associated with vacuum or SVD (Arya LA, Jackson ND, Myers DL, et al. Risk of new-onset urinary incontinence after forceps and vacuum delivery in primiparous women. Am J Obstet Gynecol 185:1318,2001)
Urinary Incontinence

- **Post-partum Treatment Options:**
  - Timed Voids
  - Avoid Bladder Irritants
  - Pelvic Floor Exercises
  - Pessaries
Urge Urinary Incontinence

• May occur as commonly as stress incontinence after childbirth

• Up to 30%

• Increased association with forceps delivery and episiotomy

• *Mainstay of treatment: anticholinergics

Urinary Incontinence

- Women with persistent stress incontinence at 3 months postpartum have a 92% chance of having stress urinary incontinence at 5 years.

Chronic or Long Term Changes

• Incontinence

• Prolapse

• Cesarean delivery vs. SVD vs. Operative Vaginal Delivery
Pelvic Floor Dysfunction; What have we been trained to prevent?

- Anal sphincter injury?
- Anterior damage and stress incontinence?
- Levator ani damage and pelvic organ prolapse?

What should we worry about?
What latent injuries occur during birth that lay dormant leading to prolapse later in life?

What is the disease process?
- Muscle Rupture?
- Connective tissue detachment?
- Nerve injury?
Distribution of Pelvic Floor Disorders

% Affected

Urinary Incontinence

- Effect of one vaginal delivery on the prevalence of stress urinary incontinence
  - Prospective trial
  - Showing one interval vaginal delivery did not increase risk of stress urinary incontinence up to 4 years after the delivery (28.6% in controls, 21.1% in vaginal delivery patients)

Urinary Incontinence

• Comparing vaginal deliveries to Cesarean deliveries
  – Higher prevalence of stress incontinence in women who have had vaginal deliveries
  – Differences significant only in the young
  – In older women age and obesity outweigh the method of delivery
  – Women having Cesarean after labor have similar incidence of stress incontinence to those having vaginal delivery -> suggests labor process not the birth itself
Urinary Incontinence

• Women who had Cesarean section reported less urinary incontinence than women who delivered vaginally at:

  – **3 months**: relative risk 0.62, 95% CI (0.41-0.93)

  – **2 years postpartum**: difference did not persist

Urinary Incontinence

- Levator ani injuries associated with stress urinary incontinence
- It is unclear if the defect is responsible or marker for global pelvic floor injury
Urinary Incontinence

- **Treatments:**
  - Same options as immediately post-partum
  - Plus suburethral slings
Anal Incontinence

- Up to 40% of women with an anal sphincter laceration (including 3rd or 4th degrees) complain of anal incontinence
- Range of 20-50%

Anal Incontinence (chronic)

- Up to 2 years after delivery, >25% of women with fecal incontinence report negative quality of life.

- Despite this, few women seek treatment or even discuss with their physician:
  - 10% at 6 months
  - 13.5% at 1 year
  - 16.7% at 2 years

Anal Incontinence

- Most common cause of anal incontinence in young women is anal sphincter injury at childbirth

- Muscle injury responsible for most anal dysfunction but pudendal nerve damage plays a role

- Vaginal birth leads to overt anal sphincter lacerations in up to 6% of women

- Up to 30% of sphincter injuries are covert
  - Only detectable by ultrasound of the anal sphincter complex; not associated with perineal laceration

- Risk factors:
  - Episiotomy
  - Operative vaginal delivery-vacuum less than forceps

Anal Incontinence

Short-term versus Long-term effects

– 6 year follow up after delivery
  • 3.6% prevalence of anal incontinence
  • First delivery by forceps associated with double risk of anal incontinence relative to spontaneous vaginal delivery

– 34yr follow up after forceps delivery
  • Significant fecal or urinary incontinence was no more likely after forceps than after vaginal (Bollard RC, Gardiner A, Duthie GS, et al. Anal sphincter injury, fecal and urinary incontinence: A 34 year follow up after forceps delivery. Dis Colon Rectum 46:1083, 2003)
Anal Incontinence

• Treatment:
  – Dietary
  – Anal Sphincteroplasty
Pelvic Organ Prolapse

- 300,000 pelvic organ prolapse surgeries per year in the United States

- Outnumber surgeries for stress incontinence 2:1 ratio

- 1 in 9 women will have surgery for pelvic floor disorders by age 80, 30% will require re-operation
Pelvic Organ Prolapse

• Vaginal delivery risk factor most commonly cited for development of pelvic organ prolapse

• 2 vaginal deliveries: 8.4 times more likely to have surgery for prolapse compared to women with no deliveries

• When comparing vaginal delivery to cesarean delivery, increased odds ratio for prolapse in vaginal delivery group 1.82 (95% CI 1.04-3.19)
Pelvic Organ Prolapse

- **Treatment:**
  - Pelvic Floor Physical Therapy
  - Pessaries
  - Surgical Correction
What about birth?
Which Route?

- Does elective cesarean delivery prevent the development of pelvic floor disorders?
- National Institute of Health’s conference “Cesarean Delivery on Maternal Request”-quality of evidence in support of this is weak
- When comparing women with 3 SVDs to 3 Cesarean sections: comparable rates of stress urinary incontinence (how many years later?)
- Impact seems more significant in the short term. As patients age, impact of delivery route becomes less significant

Not all vaginal deliveries are created equal!

- Incidence of pelvic floor dysfunction symptoms are increased with:
  - Birthweight >4000gms
  - Episiotomy
Cesarean Delivery for Maternal Request

- 2.5% of all births in the United States in 2003

  - 30% expressed preference for an elective cesarean delivery rather than vaginal delivery
  - Sited avoidance of pelvic floor injury as explanation for their choice