Prevention of Obstetric Laceration

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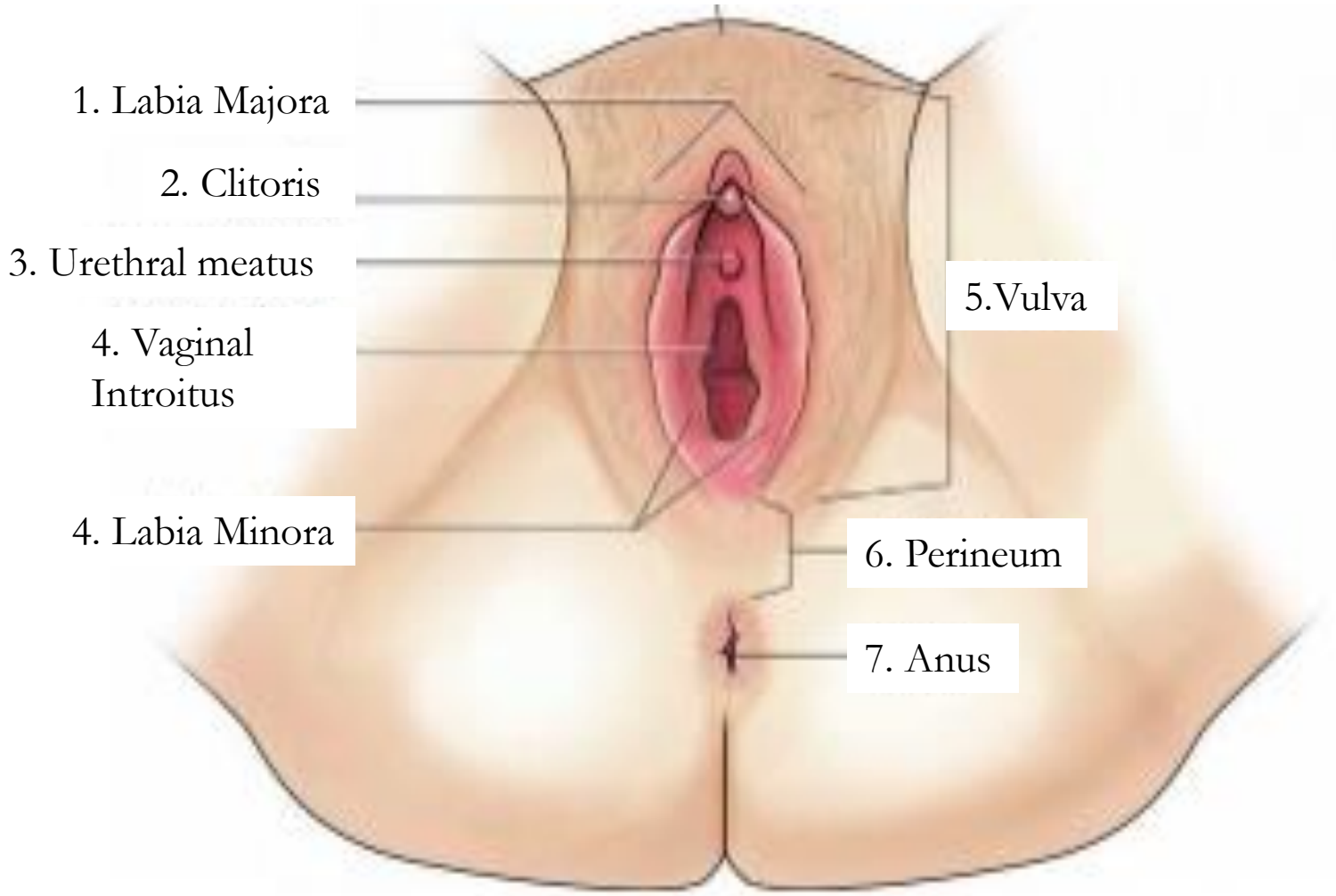
Objectives

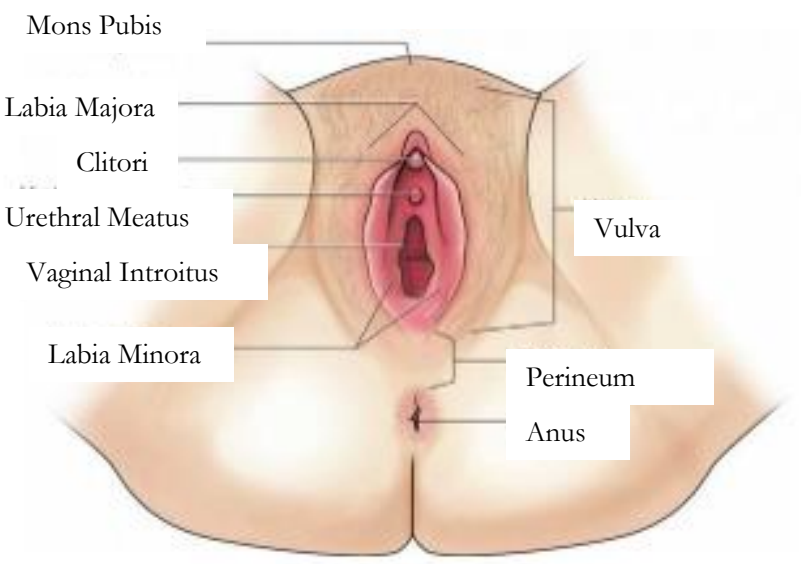
- Revisit anatomy that can be injured during vaginal birth
- Review ACOG terminology for laceration classification
- Identify risk factors for perineal lacerations
- Identify strategies to decrease perineal lacerations

What is the most common site of injury?



Anatomy

- Perineum is the most commonly lacerated site
- Most lacerations are 1st and 2nd degree
- Likely >50% of vaginal deliveries have some form of laceration
  - Great majority are 1st and 2nd degree
  - 3rd degree lacerations reported at 3-4%*
  - 4th degree lacerations reported at 1-2%*



*Likely under reported

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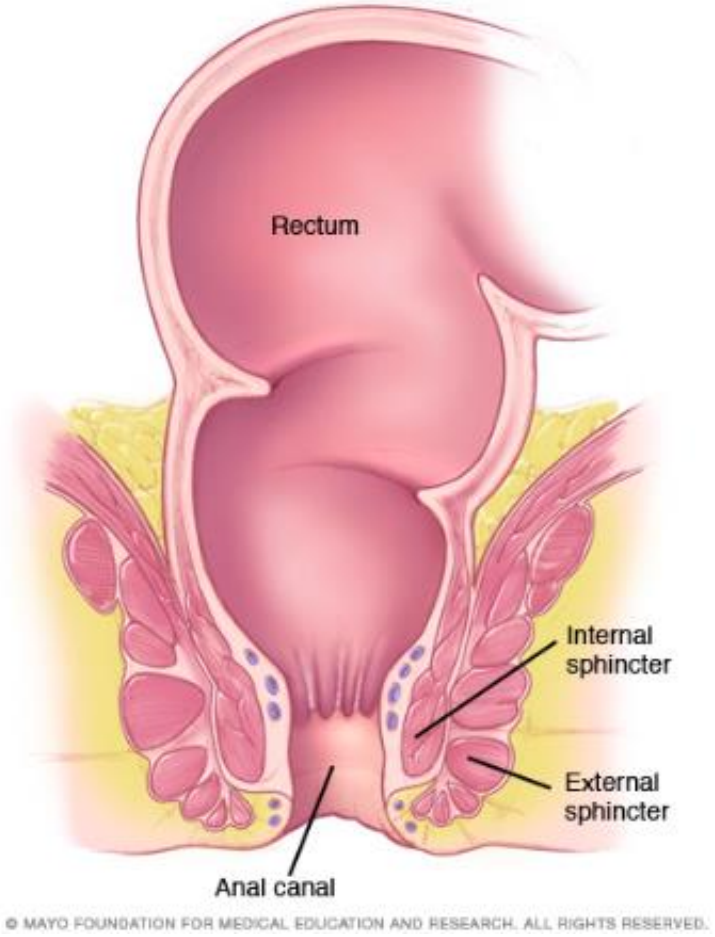
OASIS: Obstetric Anal Sphincter Injury



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- Severe perineal laceration
- Can involve the external and internal sphincters which circle the distal anus
- External=Skeletal
  - Voluntary control
- Internal=Smooth
  - Autonomic
  - Provides up to 80% of the resting pressure of the anal canal

Perineal Laceration Classification ACOG Definition

Laceration	Involvement
First Degree	Injury to skin only
Second Degree	Injury to perineum involving perineal muscles; not sphincter
Third Degree	Injury to perineum including the sphincter
3a	<50% of external anal sphincter lacerated/torn
3b	>50% of external anal sphincter lacerated/torn
3c	External anal sphincter and internal anal sphincter
Fourth Degree	Both external and internal sphincters lacerated and also includes anal epithelium

Risk Factors

Risk Factor	Odds Ratio
Forceps Assist	5.5
Vacuum Assist	4.0
Midline Episiotomy	3.8
Increased Birth Weight	1.3
Forceps + Midline Episiotomy	5.7 (3^{rd} degree); 10.6 (4^{th} degree)
Primiparity	3.2
Asian Ethnicity	2.7
Labor Induction	1.08
Labor Augmentation	1.98
Epidural Anesthesia	1.95
Persistent Occiput Posterior Position	3.09

Why this is Important

Primum non nocere

First, do no harm

- Sexual dysfunction
- Increased utilization of medical care
- Financial reimbursements sought if injury is believed to have been preventable or mitigated by physician behavior

Obstetric Quality Care Measure

Institute of Medicine Dimension of Quality	
Dimension	**Definition**
Safe	Avoiding injury to patients from the care that is intended to help them
Effective	Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding under use and overuse, respectively)
Patient Centered	Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions
Timely	Reducing waits and sometimes harmful delays for both those who receive care and those who give care
Efficient	Avoiding waste, including waste of equipment, supplies, ideas, and energy
Equitable	Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status

Source: Institute of Medicine: *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, D.C.: National Academy Press, 2001.

- Allow comparisons to be made between practices over time or to established "gold" standards
- Facilitate objective evaluation of a quality improvement initiative
- Ensure accountability and identify unacceptable practices
- Measurable and measures can be implemented to provide demonstrable change

Whose Watching?

AMERICAN COLLEGE OF

THELEAPFROGGROUP

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Prevention Strategies

- Antepartum or intrapartum perineal massage
  - Goal is to decrease perineal resistance by "thinning" the perineal bands
  - 4 trials (2500 patients) showed a modest reduction in lacerations with massage from 34 weeks until delivery
  - Meta-analysis of 2nd stage of labor massage (2100 patients reduced 3rd and 4th degree lacerations

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Prevention Strategies

- Warm Compresses
  - 2 studies (1525 women) showed reduced risk of 3rd and 4th degree lacerations
  - Did not increase the rate for intact perineum
  - Acceptable to women in labor
  - Acceptable to the birth attendant
- Technique: 2nd Stage of Labor
  - Sterile metal jug/container is filled with boiling water (44-59C)
  - Perineal pad soaked and wrung out
  - Applied pad between contractions (38-44C)
  - Pad resoaked and wrung at 15 min intervals

Prevention Strategies

Cochrane Library
Cochrane Database of Systematic Reviews

Perineal techniques during the second stage of labour for reducing perineal trauma (Review, 2011)

AasheimV, Nilsen ABV, Lukasse M, Reinar LM

- 11,651 randomized women evaluated
- Goals of review were to assess the effects of perineal techniques during the second stage of labor on the incidence of perineal trauma
  - Significantly reduced risk of 3rd and 4th degree lacerations with warm compresses (1152 women)

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Warm Compresses

Table 2. Distribution of Clinical Outcomes for Women and Babies

Variables	*Warm Pack (n = 360)*	*Standard Care (n = 357)*	p
Duration of second stage (min), mean (SD)	82.09 (61.1)	86.64 (67.6)	0.35
Analgesia, No. (%)			0.36
Nil	57 (16.4)	52 (14.9)	
Nitrous oxide	139 (39.9)	124 (35.3)	
Pethidine	91 (26.1)	93 (26.6)	
Epidural	59 (17.0)	79 (22.6)	
Other	2 (0.6)	1 (0.3)	
Position for birth, No. (%)			0.45
Semiseated	246 (68.3)	263 (73.7)	
Upright (all fours, standing, birth stool, kneeling, squatting)	48 (13.3)	45 (12.6)	
Lateral	33 (9.2)	27 (7.6)	
Supine (lithotomy, cesarean section)	21 (5.8)	14 (3.9)	
Mode of birth, No. (%)			0.64
Spontaneous vaginal birth	305 (84.7)	301 (84.3)	
Forceps	11 (3.1)	9 (2.5)	
Vacuum	32 (8.9)	39 (10.9)	
Cesarean section	12 (3.3)	8 (2.2)	
Infant birthweight (g), mean (SD)	3,365 (447)	3,346 (450)	

Table 3. Genital Tract Trauma by Allocated Group

Outcomes	*Warm Pack (n = 360) No. (%)*	*Standard Care (n = 357) No. (%)*	*OR (95% CI)*
Perineal suturing required*	283 (78.6)	284 (79.9)	1.0 (0.69–1.47)
Degree of trauma			
Minor or no trauma (intact, 1st degree, vaginal, labial tear	144 (41.4)	141 (40.4)	1.04 (0.78–1.41)
Major trauma (2nd, 3rd, 4th degree episiotomy)	204 (58.6)	208 (59.6)	
Episiotomy	39 (10.8)	41 (11.5)	0.94 (0.59–1.5)
Severe perineal trauma (3rd and 4th degree)	15 (4.2)	31 (8.7)	2.16 (1.15–4.10)

**Women who had a cesarean section were removed from this analysis (12 in warm pack group and 8 in standard care group).*

Hannah G. Dahlen, RN, RM, BN(Hons),M(CommN), PhD, Caroline S.E. Homer, RN, RM, PhD, Margaret Cooke, RN, RM, PhD, Alexis M. Upton, RN, RM, RPN, BN, Rosalie Nunn, RN, RM, GradDipAppSc, MMid, and Belinda Brodrick, RN, RM, GradDip(NMan). Perineal Outcomes and Maternal Comfort Related to the Application of Perineal Warm Packs in the Second Stage of Labor: A Randomized Controlled Trial. *Birth* 2007; 34 (4)

Prevention Strategies

- Birthing Position and Delayed Pushing
  - Lateral Positioning
    - Randomized trial compared to lithotomy
    - Decreased rate of laceration
  - Delayed Pushing
    - Jury is still out….
    - Systematic review did not see a difference in the rate of lacerations

Prevention Strategies

- Restricted use of Episiotomy
  - Per ACOG: "Based on the existing evidence, there are no specific situations in which episiotomy is essential, and the decision to perform an episiotomy should be based on clinical considerations. Restrictive use of episiotomy is recommended over routine episiotomy."
- Mediolateral Episiotomy preferred to decrease OASIS

Prevention Strategies

- Midline Episiotomy
  - Consistently shown to be an independent risk factor for OASIS
  - Prospective, nonrandomized observational study revealed that performance of episiotomy lengthened the length of perineal lacerations an average of 3 cm
  - Restrictive use has also been shown to increase rate of anterior laceration

Laceration Repair

- Small superficial lacerations of the labia and vaginal vault that are hemostatic do not benefit from suture repair
- Periclitoral, Periurethral and Labial Lacerations that are bleeding or distort anatomy should be repaired
- Second degree perineal lacerations
  - More often than not are repaired
  - Clinical judgment
- 3rd and 4th degree: ALWAYS

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Laceration Repairs

- Recommend thorough evaluation including rectal examination when there is a significant second degree laceration or short perineum with laceration
- Continuous suturing is preferred over interrupted for 2nd degree lacerations
  - Less early pain and less need for extraneous suture material removal in the postpartum

Laceration Repairs

- Polyglactin suture (absorbable) is preferred
  - Less pain than cat gut
  - Less need for re-repair for breakdown
  - Did have need for more suture removal for unabsorbed suture material
- Anal mucosa repair
  - No comparative trials for technique or suture material
  - Expert opinion for a 3-O or 4-O delayed absorbable or chromic
  - Running or interrupted from a vaginal approach with knots tied in rectal lumen
    - Some advocate for a 2nd layer through rectal muscularis

Laceration Repair

- Internal and External Anal Sphincter (IAS, EAS)
  - If IAS adequately identified, can be repaired as a distal portion of the 2nd layer of anal mucosa repair or repaired independently from EAS with 3-O monofilament polydioxanone
- External Anal Sphincter
  - End to End or Overlap
  - Must also have the sheath and not just the muscle
  - 3-O or 2-O suture

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Adjunct Measures

- Assure appropriate environment and staff to do a good repair
  - Lighting, visual exposure and assistance
- Single dose antibiotics (Cefotetan or Cefoxitin)
  - Not clear if extended dosing postpartum to prevent complications should be done
- Sponge/Needle counts
- Pain control
- Bowel regimen: softeners and laxatives
- Evaluate for urinary retention
- Frequent follow up in postpartum

Future Pregnancy Route of Delivery

- Individualized for women with OASIS
  - 4 x higher rate of recurrence, but absolute risk if low ~3%
  - 67-90% of women will go on to a subsequent vaginal birth attempt
  - Risk/benefits of a cesarean section
    - Should be considered for women with anal incontinence
    - Severe wound complication, repeat repair
    - Psychologically impacted

Summary

- Warm compresses and perineal massage (both antepartum and 2nd stage of labor) can be used to decrease the risk of 3rd and 4th degree lacerations
- Recognize risk factors that contribute to OASIS
- Use best practices for perineal and OASIS repairs
- Single dose antibiotics for repair
- Bowel regimen and close follow up

Questions?