

Delivery related pelvic floor trauma – lessons from ultrasound imaging

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DeLancey 2012



Anatomy





Posterior vaginal wall support



Pelvic Floor Ultrasound – 2D





3D - Volume processing





Tomographic ultrasound imaging - TUI

























Vaginal Childbirth and Pelvic Damage







Anal sphincter assessment/ Obstetric anal sphincter injury/OASI





Classification of 3rd / 4th degree tears



Sultan Thakar et al



Ultrasound Obstet Gynecol 2010; 36: 368–374 Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/uog.7512

Outcome of primary repair of obstetric anal sphincter injuries (OASIS): does the grade of tear matter?

A.-M. ROOS, R. THAKAR and A. H. SULTAN Department of Obstetrics and Gynaecology, Mayday University Hospital, Croydon, Surrey, UK

- 531 women, seen at 8-12 weeks postpartum
- 39% anorectal symptoms
- Minor tears: 3a and 3b
- Major tears: 3c and 4
- In major:
 - more symptoms, worse Qol, worse outcomes
 - more endosonographic defects:
 - IAS, IAS+EAS (39%)
 - combined defects associated with loose fecal incontinence
- 27% missed IAS tears at delivery



Normal sphincter























Fecal incontinence – risk factors

- Obstetric injury
 - Disruption of the sphincter muscle
 - Trauma to the pudendal nerve

Factors associated with sphincter injury:

- First labor
- Midline episiotomies
- Instrumental vaginal delivery, especially forceps
- Macrosomia
- Occiput posterior position at delivery
- Prolonged 2nd stage
- Prior sphincter lacerations





- Symptoms increase with time
- Prediction or prevention is not possible
- Underestimation (and under-diagnosis)
- Not all grade 3 are the same
- Impact on CS rate is marginal

Cesarean section for all grade 3??



Perineal tears

		Primiparous%	Parous%	Possible Sequelae
IMAGE	No tear or episiotomy	6.4	33.9	
	First Degree	33.8	19.6	 Longer and more intense pain during recovery Higher infection rates Longer dyspareunia
	Second Degree	37.4	39.2	 Higher rates of urinary incontinence Higher rates of vaginal prolapse
	Episiotomy	17.5	5.5	· Permanent disfigurement to anatomy
	Third Degree	4.6	1.7	 Fecal incontinence, Flatulence Significantly longer recovery from pain
4th Anal sphincter (bon)	Fourth Degree	0.4	0.1	 Permanent disfigurement Permanent loss of sensation during sex

Something else must be happening there



Vaginal Childbirth and Pelvic Damage Frontal section of pelvis





Levator trauma



Puborectalis tear

Simple vaginal tear



Levator trauma



Dietz HP, Ultrasound Obstet Gynecol 2007; 29: 329-334; Dietz et al. Int Urogynecol J 2011; 22: 699-705

The levator by mode of delivery



Forceps





Vacuum





Risk factors for levator avulsion

- Vaginal childbirth
- Age at first delivery
- Instrumental delivery (forceps)
- 3rd and 4th degree tears
- Prolonged 2nd stage
- Large fetal weight
- Fetal head circumference (HC≥35.5)
- Genetic factors
- Tissue factors



Figure 4: The relationship between maternal age at first delivery and levator trauma. The dotted lines represent the risk of avulsion injury in patients with one or two vaginal operative deliveries (trom: Dietz and Simpson, ANZJOC 2007; 491-495)



Natural course

- Many are asymptomatic
- Symptoms may develop over time
- Compensation by the illiococcygeus muscle
- Life style influences, genetic contribution
- Major levator defects are a risk factor for "ballooning" (Dietz 2008)
- Hiatus ≥ 25cm² is abnormal and is associated with symptomatic prolapse and intussusceptions



Ballooning



Prolapse quantification - POPQ





Clinical assessment



Dynamic transperineal ultrasound – 4D

3



Can levator avulsion be repaired?



Primary repair – not practical Secondary

- Direct
- Mesh
- Fascia

Compensatory procedures

- Anterior compartment mesh
- Hiatal reduction



Primary prevention

- Can we stop tears from happening?
- Early identification of high risk women:
 Offer C/S in high risk women?
- Epi-No study: altering biomechanics
- Modification of obstetric practice
- Pelvic floor physiotherapy

The future: primary prevention?

Int Urogynecol J

DOI 10.1007/s00192-011-1517-x

ORIGINAL ARTICLE

Does the Epi-No® Birth Trainer reduce levator trauma? A randomised controlled trial

Ka Lai Shek · Varisara Chantarasorn · Susanne Langer · Hala Phipps · Hans Peter Dietz

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Table 3 Incidence of levator trauma in the control and Epi-No®groups (modified intention to treat analysis)

	Control	Epi-No®	Relative risk	P value
Avulsion (N=13)	8/64 (13%)	5/81 (6%)	0.49 (CI 0.17–1.44)	0.19
Microtrauma $(N=31)$	14/53 (26%)	17/73 (23%)	0.88 (CI 0.48–1.63)	0.69
Any trauma (N=44)	22/61 (36%)	22/78 (28%)	0.78 (CI 0.48–1.27)	0.32

Denominators are not the same for all analyses due to missing data (see text)



Controversies

- Prenatal prevention or screening in high risk cases:
 - Elderly primiparity
 - Macrosomia new standards for low BMI?
 - Instrumental delivery
 - Prolonged second stage (>120?)
 - Prior sphincter laceration what to recommend for repeat deliveries
- Consider when intervention is needed, offer elective C/S?
- Enhance counseling ability
- Prevention methods are helpful (PFE)



Thank you



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Bladder neck mobility

