OASIS
ומה אחרי?

דר' רונן גולד

היחידה לאורוגניקולגיה ורצפת האגן

בי"ח ליס

מרכז רפואי תל אביב

- מה המשמעות של OASIS ?
- אחרי מה לעקוב ?
- מתי לעקוב ?
- איפה לעקוב ?
- מה המשמעות לגבי הלידה הבאה ?

AI - Definition

- *1995 - Royal College of Physicians*

  "Involuntary or inappropriate passage of feces"

  - **Clear**
  - **No mention of urgency or flatus incontinence**
  - **No address the effect that the symptoms may have on the woman**

- *2002 - International Continence Society*

  "Involuntary loss of flatus, liquid or solid stool that is a social or hygienic problem"

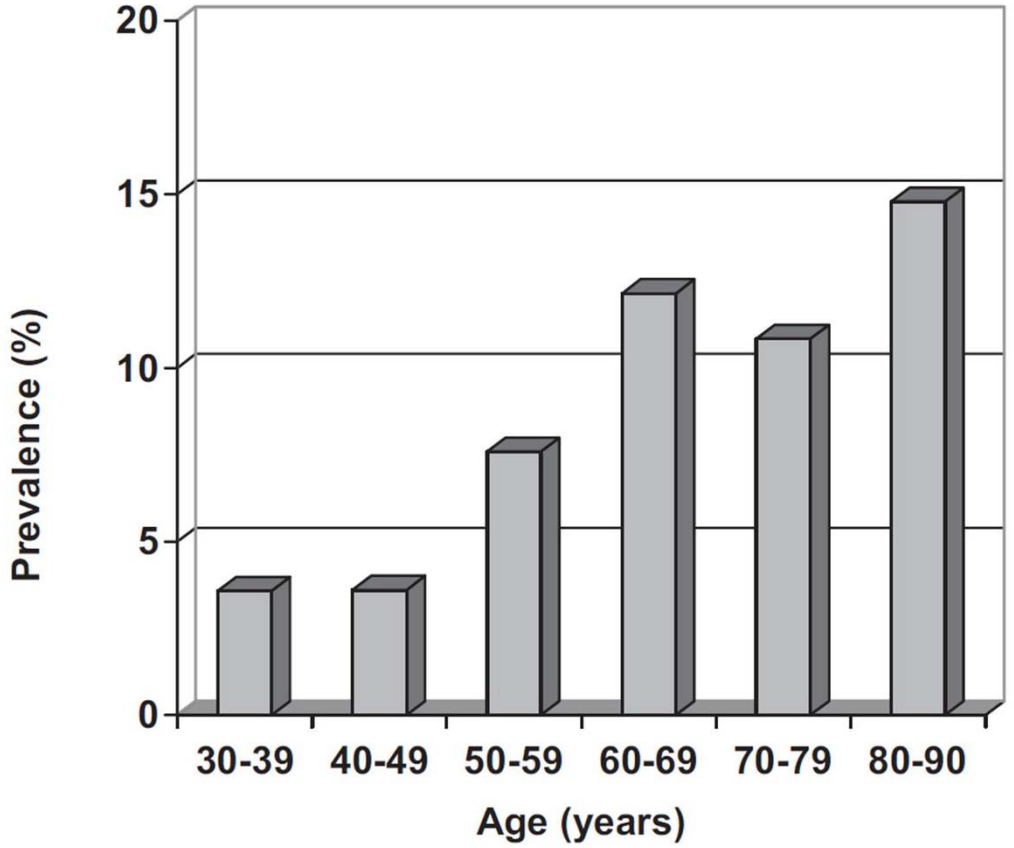
  - **Include incontinence of flatus**
  - **Acknowledge that different women may react in very different ways to what appear to be the same symptoms**

Anal Incontinence: Relationship to Pregnancy, Vaginal Delivery, and Cesarean Section

Dee Fenner, MD

Department of Obstetrics and Gynecology, University of Michigan

Semin Perinatol 30:261-266 © 2006



Prevalence of fecal incontinence by decade of age

A systematic review of etiological factors for postpartum fecal incontinence

ESTHER M.J. BOLS[1,2], ERIK J.M. HENDRIKS[1,2], BARY C.M. BERGHMANS[3], COR G.M.I. BAETEN[4], JAN G. NIJHUIS[5] & ROB A. DE BIE[1,2]

Acta Obstetricia et Gynecologica. 2010; 89: 302–314

[1]*Department of Epidemiology, Maastricht University/CAPHRI School for Public Health and Primary Care, Maastricht, The Netherlands,* [2]*Centre for Evidence Based Physiotherapy, Maastricht University, Maastricht, The Netherlands,* [3]*Pelvic care Center Maastricht, University Hospital Maastricht, Maastricht, The Netherlands,* [4]*Department of Surgery, University Hospital Maastricht, Maastricht, The Netherlands, and* [5]*Department of Obstetrics and Gynecology, University Hospital Maastricht, Maastricht, AZ, The Netherlands*

- **3rd or 4th degree sphincter rupture was the only etiological factor associated with postpartum FI**
- **No association with other postulated risk factors was found: age, instrumental delivery, birth weight, prolonged labor, epidural anesthesia, episiotomy**

Obstetric anal sphincter injury in the UK and its effect on bowel, bladder and sexual function

Marsh Fiona[a,*], Rogerson Lynne[a], Landon Christine[a], Wright Alison[b]

[a] Department of Urogynaecology, Level 2, Chancellor Wing, St. James's University Hospital, Beckett Street, Leeds LS9 7TF, United Kingdom
[b] Department of Obstetrics and Gynaecology, Royal Free Hospital, Pond Street, London NW3 2QG, United Kingdom

European Journal of Obstetrics & Gynecology and Reproductive Biology 154 (2011) 223–227

- 5y period (2004 – 2009)
- 435 women – OASI
- F/U up to 3 m postpartum

Faecal symptoms following oasis.

Faecal incontinence	
Yes	3.7% (15)
No	96.3% (392)
Faecal urgency	
Frequently	7.4% (28)
Sometimes	26.8% (101)
Never	65.8% (248)
Control of flatus	
Good	75.2% (306)
Variable	20.1% (82)
Poor	4.7% (19)
Pain on defaecation	
None	70.9% (258)
Anal	24.7% (90)
Abdominal	4.4% (16)

The prevalence of anal incontinence in post-partum women following obstetrical anal sphincter injury

Rainbow Y. T. Tin · Jane Schulz · Beth Gunn · Cathy Flood · Rhonda J. Rosychuk

Department of Obstetrics and Gynecology, University of Alberta, Edmonton, Canada

Int Urogynecol J (2010) 21:927–932

- **OASI, 2000 – 2005**
- **Survey response rate $^{325}/_{1,383}$ (25%)**
  - **Pelvic Floor Distress Inventory (PFDI-20)**
  - **Pelvic Floor Impact Questionnaire (PFIQ-7)**

Colorectal Anal Distress Inventory (CRADI)	*n*	Percentage	95% CI (%)
Strained bowel movement	138	42.5	37.1-48
Incomplete bowel emptying	141	43.4	38-49
Solid stool incontinence	25	7.7	5.1-11.3
Loose stool incontinence	64	19.7	15.6-24.5
Flatus incontinence	124	38.2	32.9-43.7
Pain when passing stool	78	24	19.5-29.1
Bowel movement urgency	129	39.7	34.4-45.3
Rectal mucosal prolapse	34	10.5	7.5-14.4

Assessment of the Predictive Value of a Bowel Symptom Questionnaire in Identifying Perianal and Anal Sphincter Trauma After Vaginal Delivery

Andrea Frudinger, M.D.,*†§ Steve Halligan, M.D., M.R.C.P., F.R.C.R.,* Clive I. Bartram, F.R.C.P., F.R.C.R., F.R.C.S.,* John Spencer, B.Sc., F.R.C.O.G.,‡ Michael A. Kamm, M.D., F.R.C.P., F.R.A.C.P.,† Raimund Winter, M.D.§

*From the *Intestinal Imaging Centre, †Physiology Unit, ‡Department of Obstetrics and Gynaecology, Northwick Park and St. Mark's Hospitals, Northwick Park, London, United Kingdom, and §Department of Obstetrics and Gynaecology, University Graz, Graz, Austria*

Dis Colon Rectum 2003;46:742–747

The Natural History of Clinically Unrecognized Anal Sphincter Tears Over 10 Years After First Vaginal Delivery

Andrea Frudinger, MD, Martina Ballon, MD, Stuart A. Taylor, MRCP, FRCR, and Steve Halligan, FRCP, FRCR

From the Department of Obstetrics and Gynaecology, Medical University of Graz, Graz, Austria; and Department of Specialist Radiology, University College Hospital and University College London (UCLH/UCL), London, United Kingdom.

Obstet Gynecol 2008;111:1058–64

- **134 PP, VD, No clinical evidence of a 3rd degree tear**
- **AI questionnaire + anal US before (3rd tr.) and after (3-8m) delivery**
- **After delivery:**
  - **Anal continence deteriorated: $^{37}/_{134}$ (27.6%)**
  - **Evidence of sonographic trauma (EAS): $^{14}/_{134}$ (10.4%) → No AI deterioration: $^{6}/_{97}$ (6.2%)**
    → AI deterioration: $^{8}/_{37}$ (21.6%) *p=0.02*

Effect of a Sphincter Tear Upon Change in Anal Continence Score From Baseline to 10 Years in 107 Women

	Unadjusted		Adjusted	
Group	Effect (95% CI)	*P*	Effect (95% CI)	*P*
All women	0.1 (−1.0 to 1.2)	.87	0.3 (−0.9 to 1.6)	.61
No deterioration	−1.1 (−2.4 to 0.2)	.09	−1.5 (−3.1 to 0.1)	.07
Deterioration	2.1 (0.3 to 3.8)	.02	2.8 (0.9 to 4.7)	.005

Ultrasonographic anal sphincter defects w/o postpartum incontinence <u>not</u> associated with deterioration in continence over the following decade

Obstetrical anal sphincter laceration and anal incontinence 5-10 years after childbirth

Emily C. Evers, MPH; Joan L. Blomquist, MD; Kelly C. McDermott, BS; Victoria L. Handa, MD, MHS

Department of Gynecology and Obstetrics, Johns Hopkins School of Medicine
Department of Obstetrics and Gynecology, Greater Baltimore Medical Center
Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health Baltimore, MD.

Am J Obstet Gynecol 2012;207:425.e1-6

- 5-10 y after 1st delivery
- Anal incontinence, QOL: - EPIC = Epidemiology of Prolapse and Incontinence Questionnaire
  - CAIQ7 = Colorectal Anal Impact Questionnaire
- 90 women: at least 1 anal sphincter laceration
- 320 women: VD without sphincter laceration
- 527 women: CS
- Women with anal sphincter laceration reported:
  - Anal incontinence (OR, 2.32; 95% CI, 1.27-4.26)
  - Negative impact on QOL: Exercise, Entertainment & social activities, travel >30min

Complete rupture of anal sphincter in primiparas: long-term effects and subsequent delivery

GISELA WEGNELIUS[1] & MARGARETA HAMMARSTRÖM[2]

[1]*Södersjukhuset, Division of Obstetrics and Gynecology, Stockholm, Sweden, and* [2]*Karolinska Institute, Department of Clinical Science and Education, Södersjukhuset, Section of Obstetrics and Gynecology, Stockholm, Sweden*

Acta Obstetricia et Gynecologica Scandinavica **90** (2011) 258–263

- **1991 – 1994**
- **134 PP, 29.5y (20–40)**
- **OASI grade 3c /4**
- **end-to-end**

	AI	No AI
	↓	↓
3-4m	31% $^{41}/_{134}$	69% $^{93}/_{134}$
	↓	↓
3-8y	78% $^{29}/_{37}$	43% $^{37}/_{86}$ 57% $^{49}/_{86}$

Outcomes and follow-up after obstetric anal sphincter injuries

K. Ramalingam · A. K. Monga

Kingston Hospital NHS trust, Galsworthy Road, Kingston, Surrey KT2 7QB, UK
Princess Anne Hospital, University of Southampton Hospital, Southampton, UK

Int Urogynecol J (2013) 24:1495–1500

Type of tear	Total (n=255)	6m F/U (n=175)	Any Symptom	
3a	132	92	8	8.7%
3b	81	56	7	12.5%
3c	27	18	3	16.7%
4	15	9	5	55.6%

Severity of the tear and the symptoms at follow-up

Type of tear	Any symptom	Urgency	Flatus	Liquid	Solid
3a	8	7	1	0	0
3b	7	3	0	3	1
3c	3	0	1	1	1
4	5	1	2	2	0

53%

Obstetric Anal Sphincter Injury

Incidence, Risk Factors, and Management

Thomas C. Dudding, MRCS, Carolynne J. Vaizey, MD, FRCS, FCS(SA), and Michael A. Kamm, MD, FRCP, FRACP

Ann Surg 2008;247: 224–237

Physiology Unit, St. Mark's Hospital, London

- **~44% of women after VD – new symptoms of alterations in bowel continence**

  (Fecal urgency, Flatus incontinence, Soiling, Solid fecal incontinence)

- **Damage to anal sphincters – common, but under diagnosed at the time of delivery**
- **⅓ - ⅔ with recognized 3rd degree tear during VD → fecal incontinence**
- **In women with symptoms of postpartum / late onset fecal incontinence → ↑ sphincter injury rate: EAS – 90%, IAS – 65%**
- **True incidence of persistent incontinence to solid stool ~ 3%**

Anal sphincter defects and anal incontinence symptoms after repair of obstetric anal sphincter lacerations in primiparous women

Christine Vaccaro, Int Urogynecol J 2008

- Incidence of anal incontinence symptoms at 8–12 weeks - 43%.
- The incidence of IAS and EAS defects - 32% and 77%, respectively.
- IAS defects ≥45 degrees were predictive of symptoms (p=0.02).
- After 18 months mean follow-up, 11% reported chronic symptoms.
- Anal incontinence symptoms are associated with increasing IAS defect size.

איפה לעקוב

- במרפאה מתמחה- מולטידיספלינרית
- מרפאה פרינאלית
- שילוב: אורוגיניקולוגים, כירורגים קולורקטליים, גסטרואנטרולוגים, פיזיותרפיסטיות
- המטרה – זיהוי בעיות והתערבות מהירה

Symptoms

Perineal pain

Dyspareunia

Incontinence of flatus and/or feces

Fecal urgency

Signs

Fecal soiling

Asymmetry of anus with voluntary or reflex contraction

Little or no anal sphincter tone on rectal examination

Complications

Short term

Wound hematoma

Wound breakdown

Abscess formation

Anal incontinence

Long term

Anal incontinence

Rectovaginal fistulas

מתי לעקוב

- מעקב מידי
- מעקב טווח בינוני
- מעקב ארוך טווח
- מעקב לפני הריון הבא
- מעקב בהריון

מעקב מידי

- לאחר לידה- הסבר
  אנטיביוטיקה
  מרככי צואה
- בשחרור-
  שלילת המטומה
  שלילת זיהומים
  טיפול בעצירות
  טיפול בכאב
  הסבר

ביקורת 3- 4 שבועות

- החלמת תפרים
- שלילת המטומה
- שלילת זיהומים
- שלילת פיסטולות
- שלילת תפרים ברקטום
- הערכת סימפטומים
- טיפול בכאב
- הסבר חוזר
- תכנון מעקב
- הפניות מתאימות- גסטרו, פיזיו וכו'

חצי שנה-שנה מלידה

- TRUS
- מנומטריה
- הערכת סימפטומים
- בהתאם הפניה ל: פיזיותרפיה, כירורג, גסטרואנטרולוג
- טיפול בכאב
- סיכום המלצות למעקב, טפול וניהול הלידות הבאות

Follow-up after OASIS

- **Immediate**
  - **After delivery:**
    - **Antibiotics**
    - **Stool softeners**
  - **Before discharge :**
    - **R/O hematoma or infection**
    - **Treat constipation and pain**
    - **Explanation and counselling**
- **4 – 6 w after delivery**
  - **Symptoms**
  - **Wound healing**
  - **Hematoma / Infection**
  - **R/O fistula**
  - **Investigate for symptoms**
  - **Treat pain**
  - **PFMT**
- **6 – 12 m after delivery**
  - **TRUS**
  - **Ano-rectal manometry**
  - **Refer: Colorectal, PFMT, GE**
  - **Counselling: mode of delivery during next pregnancy**

תכנון לידה הבאה

האם נזק לספינקטר מחייב לידה בניתוח קיסרי?!

Once OASIS always CS ?!

a questionnaire survey amongst obstetricians and colorectal surgeons in the UK (Fernando BMC2002) following previous OASIS more than 70% of colorectal surgeons but only 22% of obstetric consultants and 14% of obstetric trainees would recommend an elective caesarean section for a subsequent delivery after previous OASIS.

In a prospective study of 120 women after previous OASIS, (*Faltin Neurorurol Urodyn 2005*)

65% opted for vaginal delivery, 11% for caesarean section and 23% were uncertain.

		Repeat OASI		Risk Factors								
Peleg D, 1999	*(USA, Iowa)*	$^{58}/_{774}$	(7.5%)	VE	OF	ME						
Payne TN, 1999	*(USA, Oklahoma)*	$^{19}/_{178}$	(10.7%)	VE	OF	ME						
Dandolu V, 2005	*(USA, Philadelphia)*	$^{864}/_{14,990}$	(5.8%)	VE	OF	ME	Age					
Edwards H, 2006	*(USA, Philadelphia)*	$^{6}/_{249}$	(2.4%)	VE	OF	ME	Age					
Lowder Jl, 2007	*(USA, Pittsburgh)*	$^{76}/_{1,054}$	(7.2%)			ME		LGA		OP	SD	
Harkin R, 2003	*(Ireland)*	$^{2}/_{45}$	(4.4%)									
Elfaghi I, 2004	*(Sweden)*	$^{956}/_{21,614}$	(4.4%)				Age		4th			
Spydslaug A, 2005	*(Norway)*	$^{357}/_{8,968}$	(4.0%)	VE	OF		Age					Epid
Scheer I, 2009	*(UK)*	$^{3}/_{41}$	(6.8%)									
Wegnelius G, 2011	*(Sweden)*	$^{3}/_{38}$	(7.9%)									
Baghestan E, 2012	*(Norway)*	$^{750}/_{13,305}$	(5.6%)	VE	OF		Age	LGA				
Jangö H, 2012	*(Denmark)*	$^{521}/_{7,336}$	(7.1%)	VE	OF			LGA	4th	OP	SD	
Yariv Y, 2013	*(Israel)*	$^{4}/_{166}$	(2.4%)	VE	OF			LGA	4th			

Women who sustained recurrent lacerations were

- older
- more obese (mean weight 92 kg vs. 82 kg)
- larger babies (3506 g vs. 3227 g)
- more likely to have episiotomies (66.7% vs. 7%)
- instrumental deliveries (33.3 vs. 6.5%).

The Natural History of Clinically Unrecognized Anal Sphincter Tears Over 10 Years After First Vaginal Delivery

Andrea Frudinger, OBSTETRICS & GYNECOLOGY 111: 2008

Ultrasonographic anal sphincter defects without postpartum incontinence are not associated with deterioration in continence over the following decade.

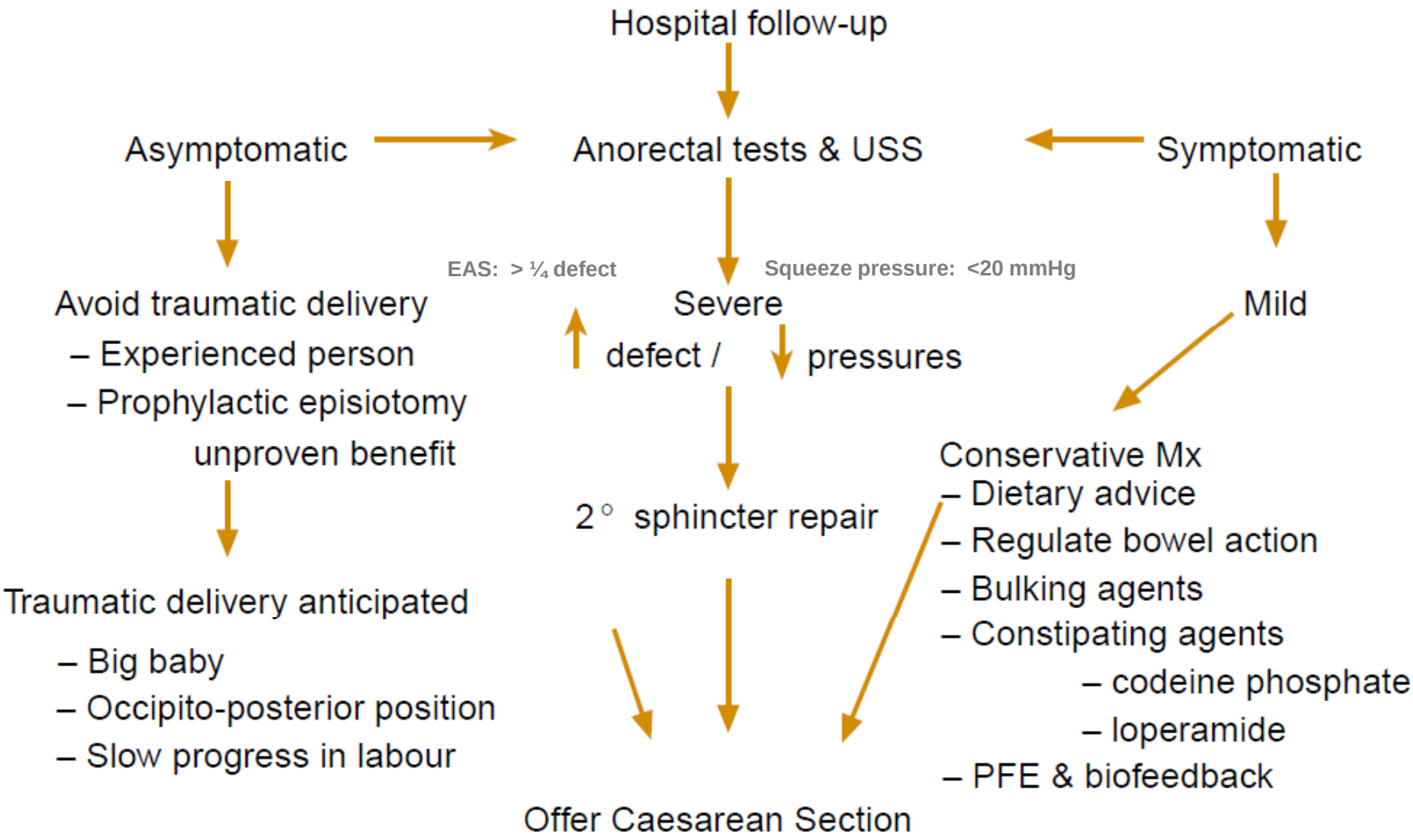
המלצות

- נשים לאחר OASIS אסימפטומטיות ללא עדות לנזק ספינקטרי- ניתן לאפשר לידה וגינלית.
- סיכון חזרה של כ 5%
- דיון והסכמה משותפת עם היולדת
- רופא בכיר/מילדת בכירה
- להימנע מלידות מכשירניות, משקל עד 3500, אפיזיוטומיה רק שנחוץ.
- נשים אסימפטומטיות+ עדות לנזק סונוגרפי- כנראה אין סיכון מוגבר
- כל השאר להמליץ על ניתוח קיסרי

THE MANAGEMENT OF THIRD- AND FOURTH-DEGREE PERINEAL TEARS

Royal College of Obstetricians and Gynaecologists

Green-top Guideline No. 29
March 2007



Mode of delivery after previous obstetric anal sphincter injuries

Dilemma in women who suffer from fecal incontinence but wish further pregnancies.

These women can avoid a cesarean section and undergo a vaginal delivery followed by a secondary sphincter repair at a later date; however, the long-term outcome of secondary sphincter repair is suboptimal.

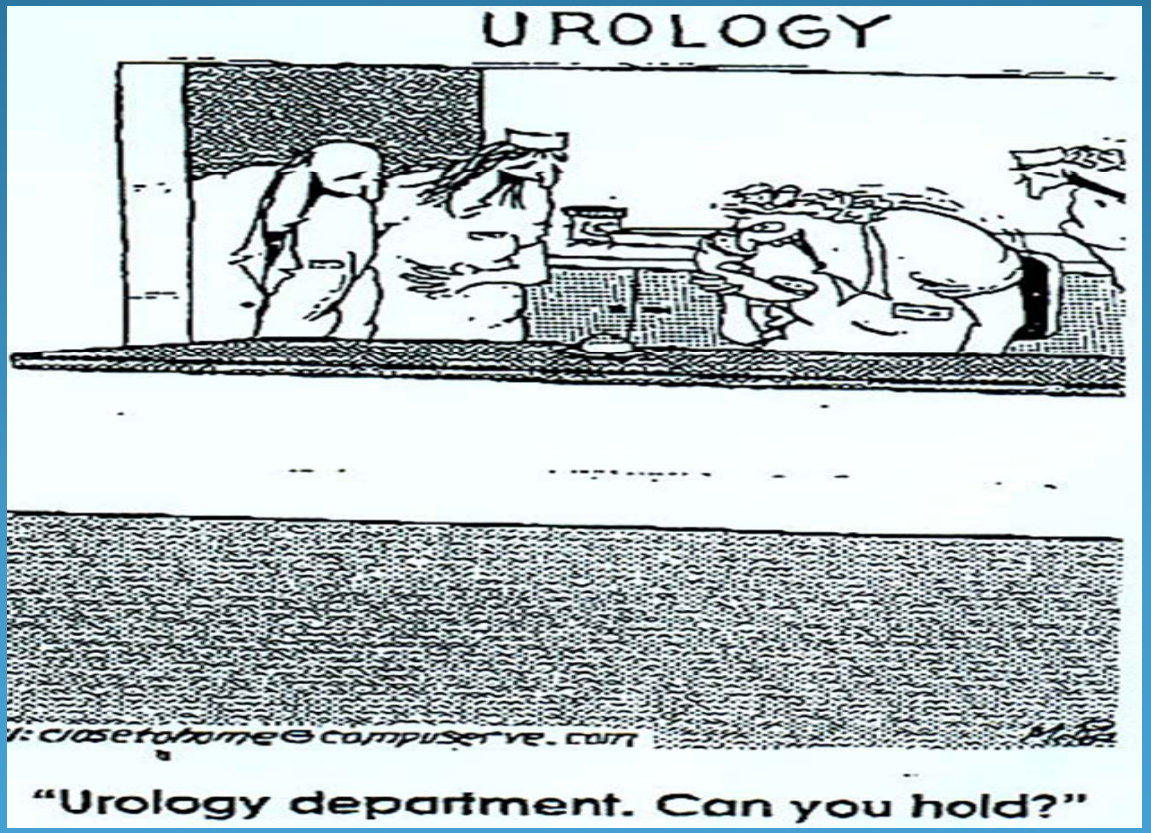
The rationale : most of damage that occurs during first vaginal delivery.

There is a risk of deteriorating pudendal neuropathy

Counseling does play an important role in the decision-making process

Management of delivery after previous 3rd/4th degree tear

- All woman with a history of a 3rd/4th degree tear should be referred to a perineal clinic for follow-up and management in subsequent pregnancies.
- The risk of recurrence of a 3rd/4th degree tear is **5%**
- All women will have anal ultrasound and manometry
- Continent women who have no evidence of significant anal sphincter compromise would be allowed to have a normal vaginal delivery by a senior midwife/doctor.
- Women with mild anal incontinence with evidence of anal sphincter compromise would be counselled and offered cesarean section.
- Women with significant fecal incontinence need to be counselled about a secondary sphincter repair.
- No evidence that prophylactic episiotomy prevents recurrence of sphincter rupture .an episiotomy should only be performed if there are predisposing factors such as big baby, OP position, shoulder dystocia, fibrotic band or inelastic perineum.


UROLOGY
"Urology department. Can you hold?"

Hospital		Total Deliveries*	3rd Degree Tears		4th Degree Tears		3rd+4th Degree Tears		Change
			n	Rate	n	Rate	n	Rate	
1	1 Year Before Workshop	2,699	25	0.93%	4	0.15%	29	1.07%	
	1 Year After Workshop	2,527	16	0.63%	2	0.08%	18	0.71%	-33.7%
2	1 Year Before Workshop	8,906	10	0.11%	4	0.04%	14	0.16%	
	1 Year After Workshop	9,666	15	0.16%	1	0.01%	16	0.17%	+5.3%
3	1 Year Before Workshop	2,604	7	0.27%	0	0.00%	7	0.27%	
	1 Year After Workshop	2,831	23	0.81%	1	0.04%	24	0.85%	+215.4%
4	1 Year Before Workshop	3,275	13	0.40%	1	0.03%	14	0.43%	
	1 Year After Workshop	3,642	18	0.49%	4	0.11%	22	0.60%	+41.3%
5	1 Year Before Workshop	6,424	12	0.19%	2	0.03%	14	0.22%	
	1 Year After Workshop	6,918	21	0.30%	1	0.01%	22	0.32%	+45.9%
6	1 Year Before Workshop	7,277	32	0.44%	3	0.04%	35	0.48%	
	1 Year After Workshop	7,191	51	0.71%	2	0.03%	53	0.74%	+53.2%
7	1 Year Before Workshop	8,735	38	0.44%	2	0.02%	40	0.46%	
	1 Year After Workshop	8,436	39	0.46%	3	0.04%	42	0.50%	+8.7%
8	1 Year Before Workshop	2,126	3	0.14%	1	0.05%	4	0.19%	
	1 Year After Workshop	2,508	6	0.24%	1	0.04%	7	0.28%	+48.3%
Total	1 Year Before Workshop	42,046	140	0.33%	17	0.04%	157	0.37%	
	1 Year After Workshop	43,719	189	0.43%	15	0.03%	204	0.47%	+25.0%
				p = 0.022		*p = 0.774*		*p = 0.04*	

*Total No. of vaginal singleton deliveries

Fecal symptoms following oasis

anal sphincter injury in the UK and its effect on bowel ,bladder and sexual function

Marsh Fionaa. European Journal of Obstetrics & Gynecology and Reproductive Biology 2010

Consistency of motion

- Normal 90.9%
- Hard 7.6%
- Sloppy 1.2%
- Unsure 0.2%

Warning of need to defecate

- Always 92%
- Sometimes 3.5%
- Never 4.5%

Blood when defecating

- Frequently 15.5%
- Sometimes 13.7%
- Never 70.8%

Mucus when defecating

- Frequently 6.3%
- Sometimes 6.3%
- Never 87.4%

Fecal incontinence

- Yes 3.7%
- No 96.3%

Fecal urgency

- Frequently 7.4%
- Sometimes 26.8%
- Never 65.8%

Control of flatus

- Good 75.2%(
- Variable 20.1%
- Poor 4.7%

Pain on defecation

- None 70.9%
- Anal 24.7%
- Abdominal 4.4%

Risk factors for primary and subsequent anal sphincter lacerations: a comparison of cohorts by parity and prior mode of delivery

Jerry L. Lowder, American Journal of Obstetrics & Gynecology APRIL 2007

7.2% (76 of 1054) had recurrent laceration .

episiotomy, OR 8.5, 95% CI 4.1, 17.7;
Vertex malpresentation (primarily occiput posterior), OR 4.3, 95% CI 1.4, 12.6
shoulder dystocia, OR 2.7, 95% CI 1.2, 5.8
birth weight 3500 g or greater, OR 1.7, 95% CI 1.1, 2.7.

Is severe perineal damage increased in women with prior anal sphincter injury?

HEATHER EDWARDS Journal of Maternal-Fetal Neonatal Medicine,2006

- 23 451 vaginal deliveries
- Anal sphincter laceration -778 subjects
- Subsequent deliveries- 271.
- Six (2.4%) patients - recurrence of anal sphincter lacerations, and five of them were third degree lacerations.
- rate of recurrent lacerations was not significantly different from the rate of initial lacerations (2.4% vs. 3.3%).

Risk of Recurrence of Anal Sphincter Lacerations

Dandolu Obstet Gynecol 2005

- rate of anal sphincter lacerations was 7.31% (n 18,888)
- 14,990 subsequent vaginal deliveries, 864 (5.76%) had a recurrence
- Women with prior fourth-degree lacerations had a much higher rate of recurrence than those with prior third-degree laceration (7.73% versus 4.69%)
- rate for recurrent lacerations was significantly lower than the rate for initial lacerations (odds ratio 1.29, 95% confidence interval CI 1.2–1.4)
- Forceps delivery with episiotomy had the highest risk for recurrent laceration (17.7%, odds ratio 3.6, 95% CI 2.6 –5.1)
- vacuum use without episiotomy had the lowest risk (5.88%, odds ratio 1.0,95% CI 0.6 –1.7).

Anal sphincter disruption at vaginal delivery: is recurrence predictable?

Rosemary Harkin. European Journal of Obstetrics & Gynecology and Reproductive Biology 2003

- 20,111 consecutive vaginal deliveries.
- 342 (1.7%) third degree tears occurred.
- 56 of 342 women delivered again.
- Eleven of 56 women were delivered by caesarean in next pregnancy.
- Third degree tears recurred in 2 (4.4%).
- recurrent injuries occurred in asymptomatic women with normal antepartum manometry.
- Although anal sphincter injury was increased five-fold at next delivery, compared with all multipara, 95% of women delivering vaginally after previous third degree tear did not sustain further overt sphincter damage. Recurrence was not predictable using pre-delivery anal physiology testing

Mode of delivery after previous obstetric anal sphincter injuries (OASIS)—a reappraisal?

Inka Scheer Int Urogynecol J 2009

- 73 women with previous OASIS were seen during a subsequent pregnancy.
- 59 were reviewed 13 weeks following delivery.
- Anal manometry findings did not change significantly following
- a subsequent vaginal delivery or caesarean section.
- Only one new defect (internal sphincter) occurred after a vaginal
- delivery.
- There was no significant change in symptoms or QoL.
- 3/41 (6.8%) sustained repeat OASIS.

CONCLUSION:

Prior anal sphincter laceration does not appear

to be a significant risk factor for recurrence of laceration.

Operative vaginal delivery, particularly with episiotomy, increases the risk of recurrent laceration as it does for initial laceration.

Complete rupture of anal sphincter in primiparas: long-term effects and subsequent delivery

GISELA WEGNELIUS[1] & MARGARETA HAMMARSTRÖM[2]

[1]*Södersjukhuset, Division of Obstetrics and Gynecology, Stockholm, Sweden, and* [2]*Karolinska Institute, Department of Clinical Science and Education, Södersjukhuset, Section of Obstetrics and Gynecology, Stockholm, Sweden*

Acta Obstetricia et Gynecologica Scandinavica **90** (2011) 258–263

Reported complaints when answering the questionnaire 3–8 years after the first delivery.
Case group (complete ruptures grade 3c and 4) compared to control groups.

	Case group, $n = 125$		Cesarean group, $n = 121$		Normal delivery group, $n = 211$		p-value
	n	%	n	%	n	%	
Anal incontinence	67	54	25	21	48	23	
Cases vs. cesarean OR (95% CI)	3.72 (2.07–6.90)						<0.0001
Cases vs. normal delivery OR (95% CI)	3.34 (2.02–5.62)						<0.0001

The prevalence of anal incontinence in post-partum women following obstetrical anal sphincter injury

Rainbow Y. Int Urogynecol J (2010) 21:927–932

Abdominal pressure	29.5%	24.7-34.9
Pelvic heaviness/dullness	28%	23.3-33.3
Vaginal bulge	12.9%	9.6-17.2
Reduce vagina to defecate	19.4%	15.3-24.2
Incomplete bladder emptying	38.2%	32.9-43.7
Reduce vagina to urinate	3.4%	1.8-6.2
Strained bowel movement	42.5%	37.1-48
Incomplete bowel emptying	43.4%	38-49
Solid stool incontinence	7.7%	5.1-11.3
Loose stool incontinence	19.7%	15.6-24.5
Flatus incontinence	38.2%	32.9-43.7
Pain when passing stool	24%	19.5-29.1
Bowel movement urgency	39.7%	34.4-45.3
Rectal mucosal prolapse	10.5%	7.5-14.4
Frequent urination	42.5%	37.1-48
Urge urinary incontinence	40%	34.7-45.6
Stress urinary incontinence	60.9%	55.4-66.2
Small urine leakage	44.6%	39.2-50.2
Emptying bladder with difficulty	18.2%	14.2-22.9
Abdominal or genital pain or discomfort	26.8%	22.1-32

Management of women with persistent symptoms after primary repair

- All women should be referred to secondary care for further investigation to detect persistent anal sphincter defects.
- Avoidance high fiber foods, spicy foods, caffeine. Treatment with bulking agents and constipating agents
- Use of anal plugs
- Physiotherapy to increase the strength of pelvic floor muscles and increase the anorectal angle, which contributes to bowel control
- Bowel training
- Biofeedback retraining
- Sacral nerve stimulation via an implantable pulse generator, can be used for women with an intact or repaired sphincter complex
- Surgical approaches: dynamic graciloplasty, artificial anal sphincter.
- Secondary repair by a specialist colorectal surgeon