W1: Management of Bowel Dysfunction Following Obstetric Anal Sphincter Injury (OASIS)

Workshop Chair: Paula Igualada-Martinez, United Kingdom
06 October 2015 09:00 - 10:30

Start	End	Topic	Speakers
09:00	09:05	Introduction to the workshop	Paula Igualada-Martinez
09:05	09:15	OASIS	Rufus Cartwright
09:15	09:25	Anorectal anatomy and physiology	Alexis Schizas
09:25	09:40	Anorectal evaluation following OASIS	Alexis Schizas
09:40	09:55	Bowel dysfunction following OASIS	Heidi Brown Alexis Schizas
09:55	10:10	Physiotherapy following OASIS	Paula Igualada-Martinez
10:10	10:20	The dedicated OASIS clinic and management of subsequent pregnancies	Heidi Brown Paula Igualada-Martinez
10:20	10:30	Discussion	All

Aims of course/workshop

Aim:
The aim of this course is to learn how to evaluate and manage bowel dysfunction following obstetric anal sphincter injury (OASIS).

Objectives:
At the end of the workshop the participants should be able to:

- Understand the anatomy and physiology of the pelvic floor including the anal sphincter complex.
- Recognise and classify OASIS following endoanal ultrasound assessment
- Understand anorectal physiology following OASIS
- Identify and evaluate bowel dysfunction following OASIS
- Learn how to set up a dedicated one-stop OASIS clinic and manage subsequent deliveries
- Learn about the role of Physiotherapy management of bowel dysfunction following OASIS
- Understand the long-term consequences of OASIS

Learning Objectives

1. Understand the pathophysiology and subsequent pelvic floor complications of OASIS

2. Learn and understand anorectal ultrasound and physiology investigations following OASIS

3. Learn and understand conservative management of bowel dysfunction following OASIS

Management of bowel dysfunction following obstetric anal sphincter injury (OASIS)

Tuesday 6th October 2015

International Continence Society Annual Scientific Meeting

Montreal, Canada

We hope that you will find this workshop stimulating and that it will add to your clinical practice ensuring a safe and effective assessment and treatment of Bowel Dysfunction following Obstetric Anal Sphincter Injury (OASIS).

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Chair

Faculty

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Obstetric Anal Sphincter Injury: An Introduction

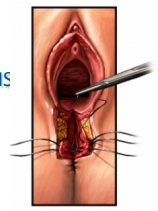
Rufus Cartwright MD (res) MRCOG

Department of Urogynaecology, and Department of Epidemiology & Biostatistics,

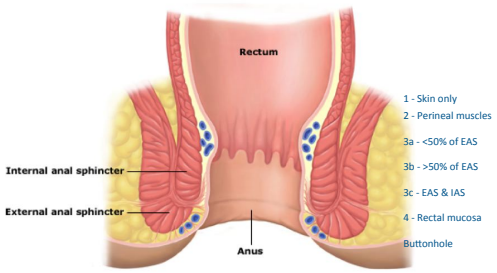
Imperial College, London, UK

Aims

- Review definitions for perineal trauma
- Assess trends in incidence of OASIS
- Consider in detail the risk factors for OASIS

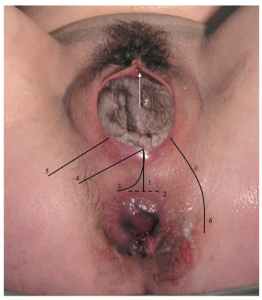


Grading of Perineal Trauma



Sultan, 1999; ICI, 2004; RCOG, 2004

Classification of Episiotomy

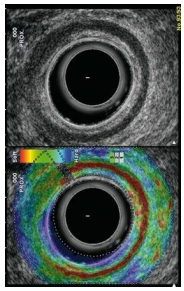


1 – Median / midline
2 – modified median
3 – J shaped
4 – mediolateral
5 – lateral
6 – radical lateral
7 – anterior

Kalis et al, BJOG 2012

Incidence

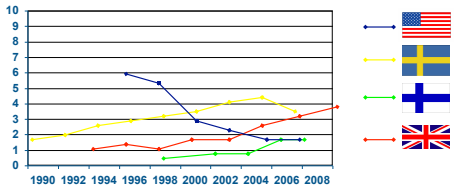
- "True" incidence of OASIS is 11%-35.4% using endoanal ultrasound
  Williams et al, 2001; Sultan et al, 1993
- 98.8% of injuries can be detected at the time of delivery without ultrasound
  Andrews et al, 2006
- The overall incidence is increasing



Incidence

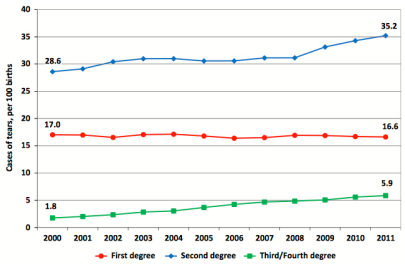
- Rates of recognised injury vary widely
  - between countries 0.4% (Italy) - 9.2 % (Sweden)
    Prager et al, 2008
  - between hospitals 1.3% - 4.7 % (Norway)
    Valbø et al, 2008
- Impossible to directly compare different studies, because of acquisition bias
- Midwives miss 87% of injuries, doctors miss 28%
  Andrews et al, 2006

Changing incidence or changing recognition?



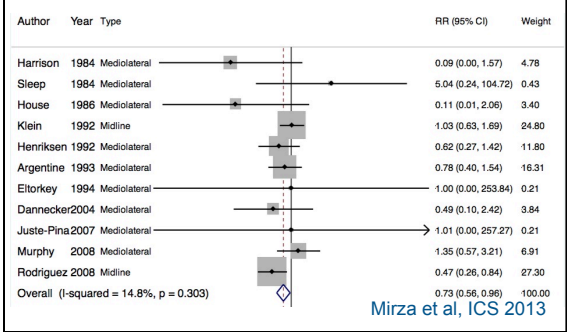
Kudish et al, 2008; Laine et al, 2009; Raisanen et al, 2009

Changing incidence or changing recognition?



Gurol-Urganci et al, 2013

Episiotomy and OASIS – The RCTs



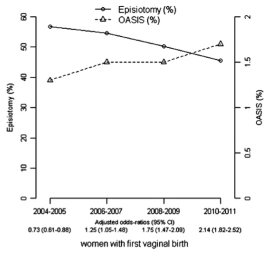
Mirza et al, ICS 2013

Unmeasured Confounding

As OASIS has increased in Finland, use of episiotomy h decreased

The measured association has reversed in direction!

Caution about unmeasured confounding in observationa studies



Raisanen et al, BMJ Open 2013

The "Established" Risk Factors

Forceps or ventouse,

Nulliparity

Birthweight

Identified as major risk factors – little inconsistency in literature

Sultan et al, 1994; de Leeuw et al, 2001; Christianson et al, 2003; Williams et al, 2005; de Leeuw et al 2008; Ekeus et al, 2008

Can we predict birthweight – and prevent OASIS antenatally?

Prospective multi-centre cohort

40-42 weeks gestation

- enriched sample at highest risk of OASIS
- limited interval between estimation of weight and delivery

Ultrasound EFW using Hadlock's formula

- abdominal and head circumference, femur length

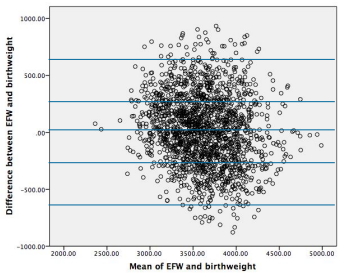
Maternal height, weight, parity, ethnicity

Fetomaternal BMI = EFW / maternal height2

N=1,707

Cartwright et al, 2008

EFW vs. actual birthweight



Bias = 23g

Mean error = 251g

95%LOA = -601g to +624g

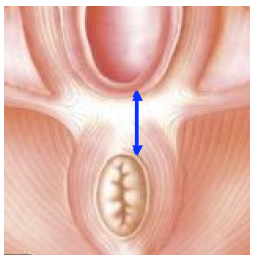
Fetomaternal BMI and OASIS risk

Multivariate logistic regression models controlling for maternal ethnicity, maternal weight and study centre

Risk Factor	Adjusted OR	*p*
Parity	0.27	.002
Actual birth weight	2.89 / kg	.007
Estimated fetal weight	2.28 / kg	.05
Fetomaternal BMI	7.97 / kg / m^2	.027

- Only a small proportion of variation in OASIS is explained by maternal height and estimated fetal weight
- Not likely ever to be able to predict OASIS
- Need to focus on prevention

Perineal Length and Episiotomy Angle



Angle of mediolateral episiotomy is significantly narrower in women who sustain OASIS

Eogan et al, 2006; Andrews et al 2006; Kallis et al, 2008

Perineal length is significantly shorter in women who sustain tears, and OASIS (after adjustment for birthweight)

Rizk et al, 2000; Dua et al 2009; Stendenfeldt, 2013

Risk of Asian Ethnicity

Authors	Year	Country	n	Adjusted OR
Ekeus et al	2008	Sweden	365,886	1.51
Dahlen et al	2007	Australia	6,595	1.83
Hopkins et al	2005	USA	17,216	1.41
Goldberg et al	2003	USA	34,048	2.01

Asian women may be at increased risk of obstetric anal sphincter injury compared to Caucasian women
Only data from Asia reports absolute risk of just 1.7%

Nakai et al, 2006

Familial Risk

Table 2. Aggregation of obstetric anal sphincter injuries (OASIS) across generations, Norway, 1967–2005

Intergenerational aggregation of OASIS	OASIS in first generation	Second generation (daughters/partners of sons)			
		Total no. of deliveries in second generation	No. (%) of OASIS	Crude RR (95% CI)	Adjusted RR (95% CI)*
Mother and daughter	No OASIS	392 370	13 158 (3.4)	Reference	Reference
	OASIS	1486	106 (7.1)	2.1 (1.7–2.6)	1.9 (1.6–2.3)
Mother and partner of son	No OASIS	263 455	9572 (3.6)	Reference	Reference
	OASIS	1220	68 (5.6)	1.5 (1.2–2.0)	1.4 (1.1–1.7)

*Adjusted for period of delivery (before 1996, 1996–2000, 2001–2005), maternal age (<20, 20–29, 30–34, 35–39, 40 years or older), instrumental delivery (yes or no), and birthweight (<2500, 2500–2999, 3000–3499, 3500–3999, 4000–4449, 4500 g or greater) in second generation.

- Suggests genetic factors
- Must be acting both on maternal and fetal causal pathways
- But could there be unmeasured confounding?

Baghestan et al, BJOG 2013

Prior caesarean and OASIS

Characteristic	First vaginal delivery, n=221,347 (in 2004–2007, n=49,327–74,220)		p value
	With a prior CS	Without a prior CS	
Mean maternal height, cm (±SD)[a]	165.2 (±5.9)	166.0 (±5.9)	≤0.001
Mean maternal weight, kg (±SD)[a]	67.1 (±13.6)	64.7 (±12.7)	≤0.001
Mean birthweight, g (±SD)	3577.7 (±515.1)	3448.0 (±502.7)	≤0.001
Mean head circumference, cm (±SD)[a]	35.1 (±1.6)	34.7 (±1.6)	≤0.001

Raisanen et al, IUJ 2013

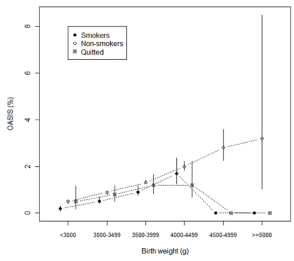
- VBAC associated with OR 1.42 for OASIS
- Even after "maximal" adjustment
- What are these unmeasured factors?

Smoking and OASIS

Smoking is strongly protective (aOR 0.72)

Effect is only apparent for women with big babies

Other more important reasons not to smoke during pregnancy!



Socioeconomic Status

	Model 1, crude	Model 2, adjusted by SES and age		Model 3, adjusted by Model 2 and smoking		Model 4, adjusted by Model 2 and birthweight	
	OR (95% CI)	OR (95% CI)	Diff. with 1 (%)*	OR (95% CI)	Diff. with 2 (%)*	OR (95% CI)	Diff. with 2 (%)*
SES							
Upper white-collar	1.57 (1.39–1.78)	1.38 (1.23–1.44)	33.3	1.21 (1.07–1.38)	44.7	1.24 (1.10–1.41)	36.8
Lower white-collar	1.23 (1.12–1.35)	1.12 (1.02–1.23)	47.8	1.08 (0.98–1.18)	33.3	1.10 (1.00–1.21)	16.7
Blue-collar	1	1	-	1	-	1	-
Other [a]	1.35 (1.22–1.48)	1.32 (1.20–1.46)	8.6	1.28 (1.16–1.41)	12.5	1.31 (1.19–1.44)	3.1
Missing	1.64 (1.48–1.82)	1.58 (1.42–1.75)	9.4	1.55 (1.39–1.72)	5.2	1.59 (1.43–1.76)	-

High socioeconomic status women at increased risk of OASIS
May reflect "better" care

Raisanen et al, PLoSONE 2013

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Conclusions

- OASIS is common – and getting more common
- Major risk factors are nulliparity, birthweight and use of forceps
- Strong observed effects of
  - current smoking
  - SES
  - Prior CS
  - Asian ethnicity
- Clearly unexplained causal mechanisms that deserve attention
- Focus should be on population-wide measures to prevent OASIS
  - Prediction remains impossible
  - Many risk factors are not modifiable

Anorectal Anatomy and Physiology

Alexis Schizas

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Guy's and St Thomas' NHS Foundation Trust

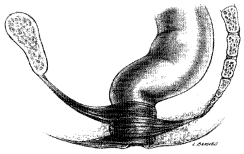
GUY'S & ST THOMAS' CHARITY

Levator ani

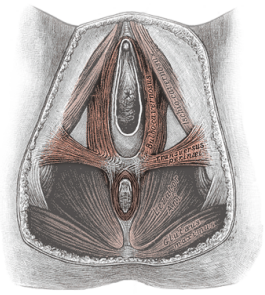
- Anterior
  - Pubis + anterior part of tendinous arch
    - muscle>fascia
  - Superficial
  - Deep - puborectalis
- Posterior
  - tendinous arch, anococcygeal ligament and coccyx
    - fascia>muscle

Puborectalis

- U-shaped, medial most located levator ani muscle
- Pulls the anorectal junction anteriorly, forming the anorectal angle
- Pelvic floor muscle vs. sphincter muscle?



Perineal Muscles



Bulbospongiosus

Transverse Perinei

Puboanalis

Perineal Body

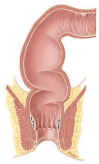
Anal Sphincters

Anal Canal

- Approx. 2-4cm long
- Commences at level of puborectalis muscle
- Upper canal - mucous membrane
  - anal sinuses/valves
  - anal glands at bottom of sinuses (crypts)
- Dentate Line is junction between upper and lower canal
- Lower Canal
  - anal skin or pecten
  - ends at junction between perianal skin and buttock

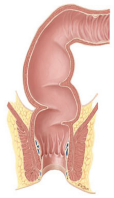
Internal Anal Sphincter

- Extension of the circular muscle layer of the rectum
- Constant maximal contraction
- 50-85% of resting anal tone
- Autonomic innervation
  - Parasympathetic.....S2-4
  - Sympathetic.....thoracolumbar ganglia (L5)



External Anal Sphincter

- Multiple layers of striated muscle
- Voluntary contractions to prevent fecal leak
- 25-30% of resting anal tone
- Somatic innervation from the inferior rectal branch of the pudendal nerve (S2-3) and the perineal branch of S4



Nerves involved in continence

- External Sphincter
  - Pudendal nerve S2,3,4
- Internal sphincter
  - sympathetic contraction
  - parasympathetic relaxation
- Puborectalis
  - S3,4, direct
  - Pudendal
- Sensation
  - pudendal nerve

Functional Anatomy

- Puborectalis and the anorectal angle allow for gross fecal continence
- Relieves pressure from the sphincter process
- The sphincter complex is responsible for gas and liquid continence
- Defecation
  - Relaxation of the puborectalis
  - Contraction of the other levator muscles

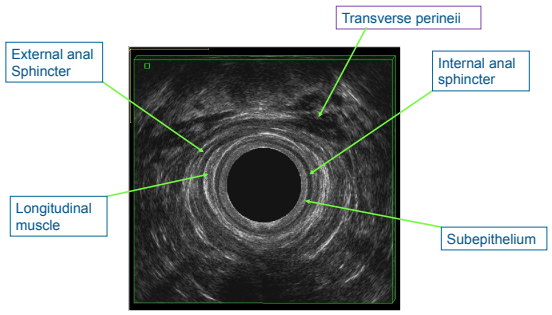
Gender Differences

- The anal canal is longer in men than women
- This difference is due to men having a longer external anal sphincter
- Puborectalis occupies a greater proportion of the anal canal length in women
- The muscular components of the anal canal contribute to resting and squeeze pressure to the same extent in men and women

Normal Anal Canal Anatomy

- The basic 4 layer pattern
  - subepithelium
  - internal anal sphincter
  - longitudinal muscle
  - external anal sphincter

Normal Anal Canal Anatomy on AES



Anal Manometry

- Resting pressure
  - Internal anal sphincter function.
- Squeeze pressure
  - External anal sphincter function.
  - Puborectalis

Anal Canal Pressure

- Maximal squeeze pressure is associated with the overlap of the puborectalis and external anal sphincter
- Puborectalis, where present on its own, is associated with the same squeeze pressure as the pressure where the external sphincter is present on its own
- Puborectalis plays an important part in the development of squeeze pressure in normal individuals

Summary

- Faecal continence and defaecatory disorders
  - Multi-factorial aetiology
    - Stool volume and consistency
    - Rectal reservoir
    - Rectal sensation
    - Puborectalis and angle between rectum and anal canal
    - Anal sphincter function
    - Recto-anal inhibitory reflex
    - Anal cushion

Anorectal Evaluation Following OASIS

Alexis Schizas
MD FRCS (Gen Surg) Pelvic floor unit and Colorectal Department,
Guy's and St Thomas' NHS Foundation Trust, London, UK

Guy's and St Thomas' NHS Foundation Trust

OASIS on AES

- 29% of women had ultrasound evidence of postpartum trauma after vaginal delivery
  - 11% involving the external sphincter
  - 20 % involving puboanalis
  - 7% involving transverse perineii
- External sphincter trauma was associated with
  - a significant decrease in squeeze pressure
  - an increase in incontinence score
- Tears to the puboanalis or transverse perineii only did not affect pressure or incontinence scores

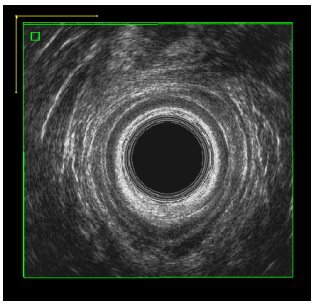
OASIS

- Positive correlation between the extent of sphincter defect and the degree of anal incontinence following primary repair
- Internal anal sphincter injury is significantly related to faecal incontinence.

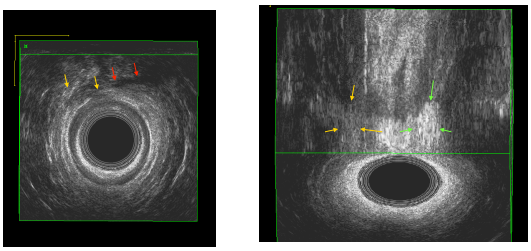
Investigations

- Anal canal anatomy
  - Anal Endosonography
  - MRI
- Function
  - Anorectal Physiology

Scarring to Right Transverse Perineii

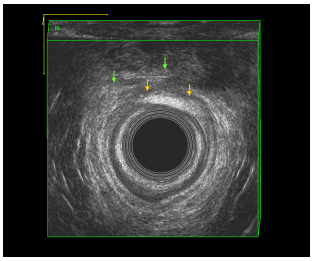


External Anal Sphincter Defect



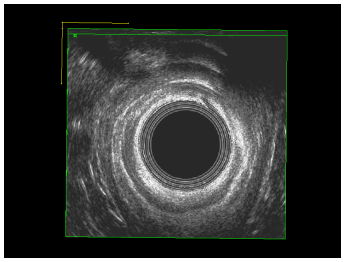
Axial view. The course of the tear is marked by the red arrows and a defect in the external sphincter is seen (yellow arrow).
Coronal view. The external sphincter can be seen on the left (green) and the defect is seen along the entire length of the external sphincter on the right (yellow).

Overlapping Sphincter Repair



The two ends of the external sphincter are marked with yellow and green arrows.

Internal and External Sphincter Defect



External sphincter defect between 11 and 2 o'clock and internal sphincter defect between 10 and 3 o'clock.

Anorectal Physiology

- Physiology of the anorectal region is complex
- Aim of investigations
  - Give a clearer picture of the mechanisms of anorectal disease
  - Demonstrate pathophysiologic abnormalities
  - Therapeutic recommendations
    - best when the anatomy and the physiology are understood

Anal Manometry

- Caesarean section
  - No change in anal pressure
- Vaginal delivery
  - Reduced in rest and squeeze pressure
- Instrumental delivery
  - Further decrease in squeeze
  - Reduction in pressure is greatest after a third or fourth degree tear
  - Decrease in anal canal symmetry

Anal Manometry

- Maximum resting pressure
  - Higher in nulliparous women than in multiparous
- Maximal squeeze pressure lower post partum
- Anterior sphincter defect repair
  - Anal manometry and symptoms improved
    - Increase in functional anal sphincter length
    - Increase in resting and squeeze pressure

Summary

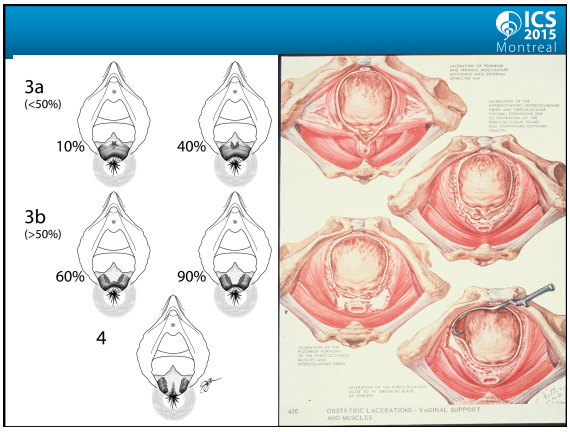
- Severity of OASIS correlates with symptoms and physiology
- Risk factors
  - Instrumentation
  - Duration of second stage of labour
  - Epidural
  - Birth weight
- Risk of injury higher with first delivery
- Significant risk of incontinence with second delivery
  - injury sustained with first
  - Incontinence symptoms

Bowel Dysfunction following OASIS

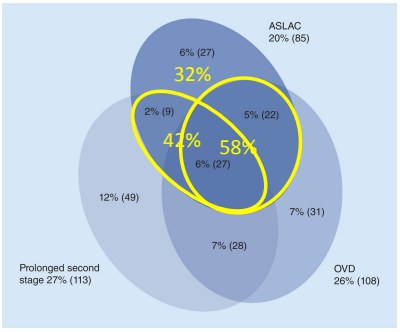
Heidi Brown, MD, MAS
Assistant Professor, Female Pelvic Medicine & Reconstructive Surgery
Departments of Obstetrics & Gynecology and Urology
University of Wisconsin School of Medicine & Public Health

Aims

- Review the context in which OASIS occurs
- Summarize relationship between obstetrics & bowel dysfunction
  - Pregnancy
  - Delivery
- Short-term and long-term bowel symptoms following OASIS
- Review principles of treatment of OASIS



OASIS co-occurs with OVD / prolonged labor



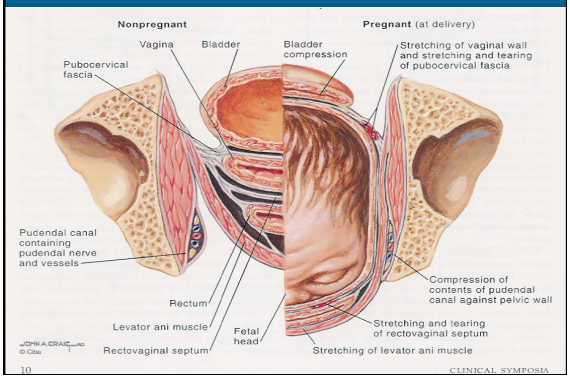
ASLAC: Anal sphincter laceration

OVD: Operative vaginal delivery

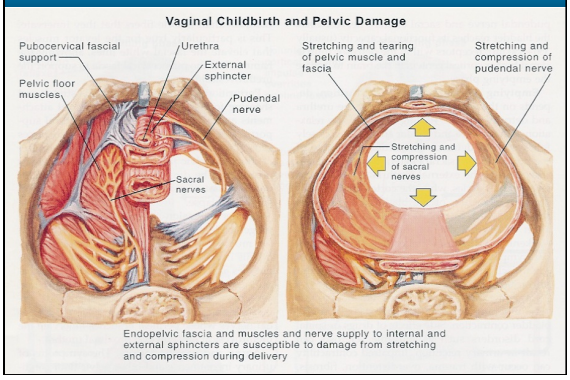
Less than one-third happen in isolation

Memon & Handa. Womens Health, May 2013

Trauma is not limited to the AS complex



Stretching, Compression and Ischemia



Vaginal Birth & Nerve Function

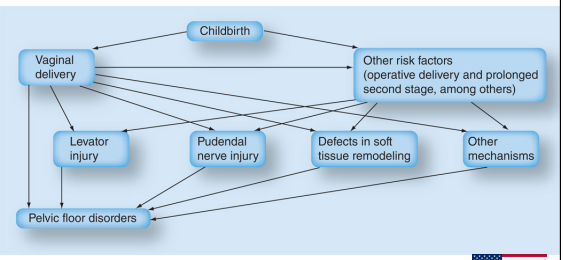
- Compression → ischemia (Rempen, J Perinat Med,1991)
  - 20-30 mmHg → microvascular flow stops
  - 80 mmHg → complete cessation of blood flow
  - 100 mmHg = average force during labor
- Stretching → neuropraxic injury (Allen, BJOG,1990)
- *Denervation* followed by re-innervation occurs in up to 80% of women after first vaginal delivery

Impaired Anorectal Function after SVD

- More perineal descent- Increasing parity is associated with perineal descent (r=0.26) and perineal descent with straining (r=0.24) (Ryhammer, Dis Col R 1996)
- Reduced anal function -Parous women have a significantly reduced voluntary anal squeeze (75cm) compared to their nulliparous counterparts (105 cm) (Jameson Br J Surg 1994)
- Decreased anal sensation-Parity significantly decreases anal mucosal electrosensitivity (both of above references)

Obstetrical Trauma & Pelvic floor Disorders

Etiology of bowel dysfunction after OASIS is multifactorial



Memon & Handa. Womens Health. May 2013

Aims

- Review the context in which OASIS occurs
- Summarize relationship between obstetrics & bowel dysfunction
  - Pregnancy
  - Delivery
- Short-term and long-term bowel symptoms following OASIS
- Review principles of treatment of OASIS

Bowel dysfunction and pregnancy

- Kaiser Permanente Continence Associated Risk Epidemiology Study (KP CARES)
  - Mail survey
  - >4,000 women: 25-39, 40-54, 55-69, 70-84 yo
  - 19% nulliparous
  - 10% C-section only
  - 71% vaginally parous
- Evaluated prevalence of pelvic floor disorders in each birth group

Lukacz ES, Intl Urogyn J 2005

KP CARES: PFD by Birth Group

	NP = 787	CS = 389	VP = 2927
POP	4% (29/774)	4% (16/386)	8%*† (223/2883)
SUI	8% (64/771)	11% (43/387)	18%*† (505/2885)
OAB	9% (70/773)	9% (36/381)	15%*† (427/2852)
AI	19% (143/766)	16% (60/365)	28%*† (786/2823)
PFD	27% (201/750)	27% (98/369)	42%*† (1153/2767)

*† p < 0.05 VP compared to CS AND NP

Lukacz ES, Intl Urogyn J 2005

KP CARES - Conclusions

Pregnancy
- Does not increase the odds of AI

Vaginal delivery
- Associated with an increased risk of AI compared to nulliparity or Cesarean section

Cesarean section
- Protective effect on AI
- Vaginal parity has a nearly 2 fold (72%) increased odds of AI compared to Cesarean section

Number needed to treat
- 7 Cesarean sections need to be performed to prevent one individual from developing a pelvic floor disorder

Impact – risk / benefit ratio needs to be considered

Bowel dysfunction and delivery

DOI: 10.1111/j.1471-0528.2007.01553.x
www.blackwellpublishing.com/bjog

Systematic review

Does the mode of delivery predispose women to anal incontinence in the first year postpartum? A comparative systematic review

SJ Pretlove,[a] PJ Thompson,[a] PM Toozs-Hobson,[a] S Radley,[b] KS Khan[a]

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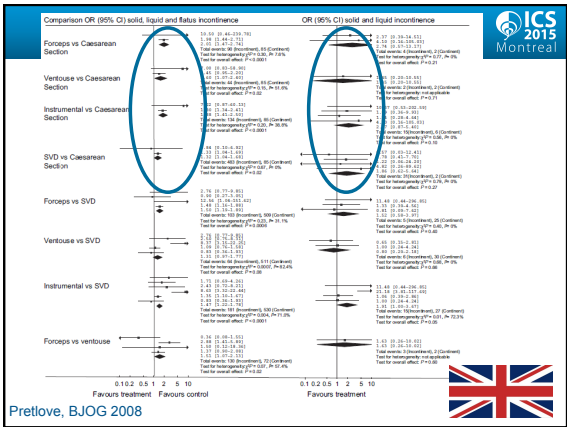
Correspondence: Dr SJ Pretlove, Birmingham Women's Hospital, Metchley Park Road, Edgbaston, Birmingham B15 2TG, UK.
Email sampretlove@doctors.net.uk

Accepted 16 September 2007.

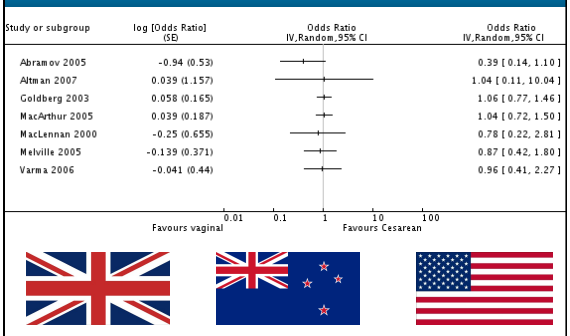
Prevalence of AI:
OVD > SVD > C-section

Pretlove, BJOG 2008



Pretlove, BJOG 2008

Bowel Dysfunction and delivery



Nelson, Cochrane Database of Systematic Reviews, 2010.

Bowel dysfunction and delivery

Mothers' Outcomes After Delivery (MOAD) Study

- >1,000 women recruited 5- 10 years p/ first birth
- 19% C-section without labor
- 23% C-section with labor
- 14% C-section @ 10cm
- 32% SVD
- 12% OVD

Evaluated prevalence of pelvic floor disorders in each birth group with validated questionnaires & POP-Q

Handa, Obstet Gynecol

MOAD Study: Results

Table 3. Relative Odds for Each Pelvic Floor Disorder 5–10 Years From First Delivery by Obstetric Exposure

Pelvic Floor Disorder	All Births Cesarean Before Active Labor (n=192)	All Cesarean Births Before Complete Cervical Dilation (n=228)	At Least One Cesarean Delivery After Complete Cervical Dilation (n=140)	No Operative Vaginal Births (n=325)	At Least One Operative Vaginal Birth (n=126)
AI	CS s/ labor	CS - labor	CS- 10cm	SVD	OVD
OR (95% CI)	1 (ref)	1.07 (.53-2.17)	1.63 (.79-3.39)	1.52 (.81-2.84)	2.10 (1.02-4.30)
AOR (95% CI)	1 (ref)	1.12 (.55-2.29)	1.48 (.70-3.11)	1.62 (.85-3.10)	2.22 (1.06-4.64)
Adjusted*	1 (referent)	0.72 (0.12–4.42)	0.99 (0.16–6.13)	2.80 (0.73–10.81)	**6.83 (1.68–27.80)**
Prolapse to or beyond the hymen on examination					
Unadjusted	1 (referent)	0.50 (0.12–2.12)	0.82 (0.19–3.49)	**5.70 (2.22–14.66)**	**7.48 (2.74–20.42)**
Adjusted*	1 (referent)	0.53 (0.13–2.27)	0.73 (0.17–3.13)	**5.64 (2.16–14.70)**	**7.50 (2.70–20.87)**

Data are odds ratio (95% confidence interval).
Bold indicates those ratios that are significantly different from 1.
* Adjusted for African American race, maternal age older than 35 years at first delivery, multiparity, smoking, and obesity.

Handa, Obstet Gynecol 2011

MOAD: VB

Subanalysis of VB MOAD cohort: no significant association of AI with mode of operative delivery, episiotomy, or number of spontaneous lacerations

	Stress Urinary	Overactive Bladder	Anal Incontinence	POP_{stage}
Operative Birth*	AI	VAVD		FCP
Vacuum: Unadjusted	OR (95% CI)	0.88 (0.33-2.36)		1.75 (0.89-3.44)
Adjusted†				
Forceps: Unadjusted	AOR (95% CI)	0.90 (0.34-2.43)		1.66 (0.84-3.28)
Adjusted†				
Episiotomy‡	AI	1 epis		>2 epis
One episiotomy: Unadjusted	OR (95% CI)	1.12 (0.61-2.06)		0.98 (0.41-2.34)
Adjusted§				
More than two episiot Unadjusted	AOR (95% CI)	0.98 (0.52-1.85)		1.01 (0.41-2.48)
Adjusted*				
Spontaneous Laceratio	AI	1 lac		>2 lac
One laceration: Unadjusted	OR (95% CI)	0.75 (0.40-1.40)		0.67 (0.30-1.49)
Adjusted†				
More than two lacerati Unadjusted	AOR (95% CI)	0.84 (0.44-1.60)		0.80 (0.34-1.90)
Adjusted*				

Handa, Obstet Gynecol 2012

Aims

- Review the context in which OASIS occurs
- Summarize relationship between obstetrics & bowel dysfunction
  - Pregnancy
  - Delivery
- Short-term and long-term bowel symptoms following OASIS
- Review principles of treatment of OASIS

Bowel dysfunction 3 mos after OASIS

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

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[a]Department of Urogynaecology, Level 2, Chancellor Wing, St. James's University Hospital, Beckett Street, Leeds LS9 7TF, United Kingdom
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Urinary symptoms
Sexual function
Forceps

ABSTRACT

Objective: To determine the incidence and factors associated with the development of bowel, urinary and sexual symptoms following obstetric anal sphincter injury (OASIS).
Study design: A prospective cohort study involving 435 women who sustained OASIS, over a five-year period, in a large UK teaching hospital. Details of bowel, urinary and sexual function were documented using a structured questionnaire. The outcome measures included the incidence of symptoms following OASIS and factors which modify the risk of developing symptoms.
Results: The majority (96%) of women were faecally continent three months after primary OASIS repair. Nevertheless, 34.2% reported faecal urgency, 25% suffered poor flatal control, and nearly 30% reported pain and bleeding on defaecation. Sixteen percent of women reported stress urinary incontinence, 15% experienced urgency and 20% reported urinary frequency. Fifty-seven percent of women had resumed intercourse but 32% of those women reported dyspareunia. Women who developed faecal symptoms were significantly more likely to develop urinary symptoms. Advancing maternal age and the use of forceps, in particular rotational forceps, significantly increase the risk of developing faecal and urinary symptoms.
Conclusions: Obstetric anal sphincter injuries continue to be responsible for significant morbidity, with approximately 30% of women reporting faecal, urinary or sexual symptoms, three months postpartum. This large prospective UK study provides up-to-date information relating to factors which increase the likelihood of such symptoms occurring. These data are useful for counselling and targeting more intensive follow up to women at higher risk of developing symptoms.

Marsh, Eur J Obstet Gynecol Reprod Bio May 2013

Cohort of 435 women with OASIS

Table 1: Sample Description	
Mean age	29.5 years (17-42)
Primiparous	82 % (n=357)
Spontaneous vaginal delivery	57.2% (n = 247)
Forceps	34.2% (n = 148)
Ventouse	8.6% (n = 37)
Anal sphincter injury Classification	
3a (<50% of EAS)	40.1% (n = 132)
3b (>50% of EAS)	40.7% (n = 134)
3c (both IAS & EAS)	14.3% (n = 47)
4	4.9% (n = 16)
Type of repair	
End to end	25.9% (n = 73)
Overlapping	74.1% (n = 209)

Marsh, Eur J Obstet Gynecol Reprod Bio May 2013

Bowel dysfunction 3 mos after OASIS

Prevalence of Symptoms

- 4% fecal incontinence
- 34% fecal urgency
- 25% pain w/ defecation
- 25% variable or poor flatal control

23% ≤ 35 yo
37% > 35 yo
(p = 0.038)

Associated Factors

- No difference with EAS alone vs IAS & EAS injury
- No difference with mode of repair
- Poor flatal control associated with maternal age
- Bowel sx associated with OVD

Marsh et al, Euro J Ob Gyn Repro Bio 154 (2011) 223-227

Bowel dysfunction 3 mos after OASIS

Patients with OASIS & OVD at highest risk!

Fecal urgency:
41% FCP, 30% SVD/VAVD (p=0.04)

Incomplete bowel emptying:
43% FCP, 28% SVD (p=0.03)

Highest rates of bowel symptoms in patients with rotational forceps compared to all others

- Fecal Urgency: 61% vs. 32% (p = 0.001)
- Fecal Incontinence: 9% vs. 3% (p = 0.1)

Marsh et al, Euro J Ob Gyn Repro Bio 154 (2011) 223-227

Bowel dysfunction 6 mos after OASIS

Case-control study of 136 Swedish primips matched with 2 controls (C-section, VD)

Of 134 women with OASIS, at 6 mos:

8% (*n*=11) faecal incontinence (mainly "soiling")
29% (n=39) flatal incontinence
10% (*n* = 13) faecal urgency
31% (*n*=41) anal incontinence

Wegnelius, Acta Obstet Gynecol Scand 2011

Bowel dysfunction 4-12 mos postpartum

Maternal Health Study: cohort of 1,507 UK nullips (48 had OASIS, 23% of those had FI)

Table 3. Fecal Incontinence 4 to 12 Months Postpartum by Maternal, Pregnancy, Labor, and Birth Factors* (n=1,244†) (*continued*)

Factor	Data Collected	Total	Continent	Incontinent	Odds Ratio (95% Confidence Interval)
Posterior perineal tear**	Medical record				
No tear		407	352 (86.5)	55 (13.5)	1.00 (reference)
First-degree		92	80 (87.0)	12 (13.0)	0.96 (0.49–1.88)
Second-degree		334	300 (89.8)	34 (10.2)	0.73 (0.46–1.14)
Third- or fourth-degree		48	37 (77.1)	11 (22.9)	1.90 (0.92–3.95)
Perineal trauma‡	Medical record				
Intact perineum		204	181 (88.7)	23 (11.3)	1.00 (reference)
Unsutured tear		71	62 (87.3)	9 (12.7)	1.14 (0.50–2.60)
Sutured tear		404	361 (89.4)	43 (10.6)	0.94 (0.55–1.60)
Episiotomy		270	222 (82.2)	48 (17.8)	1.70 (1.00–2.90)
Neonatal birth weight (g)	3 mo postpartum				
Less than 2,500		60	51 (85.0)	9 (15.0)	1.23 (0.59–2.56)
2,500–3,999		1,013	886 (87.5)	127 (12.5)	1.00 (reference)
4,000 or more		144	123 (85.4)	21 (14.6)	1.19 (0.72–1.96)
Total		1,244	1,085 (87.2)	159 (12.8)	

Brown, Obstet Gynecol 2012

Bowel dysfunction 1 year p/ delivery

Cohort of 1030 Norwegian primips surveyed about bowel symptoms 1 year PP

Loss of formed stool at least monthly: 5%

Loss of loose stool at least monthly: 9%

Loss of flatus at least weekly: 6%

Fecal urgency: 16%

At least one symptom: 19%; >2 symptoms: 2%

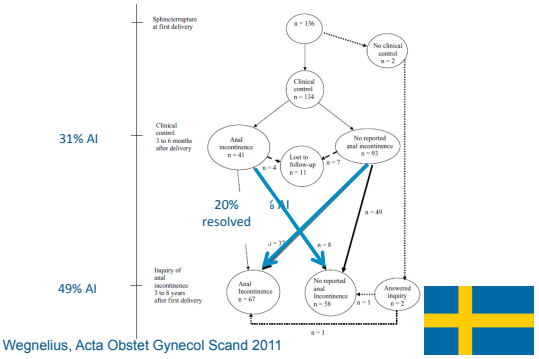
OVD → Fecal urgency (OR 2.0, 1.3 – 2.9)

OASIS → Loss of flatus or stool (OR 4.1, 1.7–9.6)

AI in pregnancy → Loss of stool (OR 13.3, 6.8-25.9)

Johannessen, BJOG, 2014

Bowel dysfunction 3-8 years after OASIS



Wegnelius, Acta Obstet Gynecol Scand 2011

Bowel dysfunction 3-8 years after OASIS

Case-control study of 136 Swedish primips with OASIS matched with 2 controls (C-section, VD)

Table 2. Reported complaints when answering the questionnaire 3–8 years after the first delivery. Case group 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
Vaginal pain	33	26	19	16	30	14	
Cases vs. cesarean OR (95%CI)	1.90 (0.97–3.85)						0.063
Cases vs. normal delivery OR (95%CI)	2.02 (1.11–3.68)						0.019
Urinary incontinence	35	28	23	19	74	35	
Cases vs. cesarean OR (95% CI)	1.55 (0.80–3.02)						0.211
Cases vs. normal delivery OR (95% CI)	0.69 (0.40–1.17)						0.181

Wegnelius, Acta Obstet Gynecol Scand 2011

Bowel Dysfunction 5 years p/ OASIS

Cohort of 66 women ~ 5 years p/ OASIS repair

- Incontinence:
  - 63% flatus
  - 50% liquid stool
  - 20% solid stool
- Sexual dysfunction in majority (more pronounced in larger OASI)
- Combined IAS and EAS OASI → worse FI & lower anal pressures than women with isolated EAS

Visscher, Int Urogynecol J 2014

Bowel dysfunction 5-10 years p/ OASIS

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

OBJECTIVE: The purpose of this study was to investigate the long-term impact of anal sphincter laceration on anal incontinence.

STUDY DESIGN: Five to 10 years after first delivery, anal incontinence and other bowel symptoms were measured with the Epidemiology of Prolapse and Incontinence Questionnaire and the short form of the Colorectal-Anal Impact Questionnaire. Obstetric exposures were assessed with review of hospital records. Symptoms and quality-of-life impact were compared among 90 women with at least 1 anal sphincter laceration, 320 women who delivered vaginally without sphincter laceration, and 527 women who delivered by cesarean delivery.

RESULTS: Women who sustained an anal sphincter laceration were most likely to report anal incontinence (odds ratio, 2.32; 95% confidence interval, 1.27–4.26) and reported the greatest negative impact on quality of life. Anal incontinence and quality-of-life scores were similar between women who delivered by cesarean section and those who delivered vaginally without sphincter laceration.

CONCLUSION: Anal sphincter laceration is associated with anal incontinence 5-10 years after delivery.

Key words: anal incontinence, cesarean delivery, obstetrical anal sphincter laceration, quality of life

Cite this article as: Evers EC, Blomquist JL, McDermott KC, et al. Obstetrical anal sphincter laceration and anal incontinence 5-10 years after childbirth. Am J Obstet Gynecol 2012;207:425.e1-6.

90 women with OASIS compared to 320 women who underwent VB and 527 women who underwent CS

Evers, AJOG 2012

Bowel Dysfunction 5-10 years p/ OASI

	OASI (N=90)	VB (N=320)	CS (N=527)
Anal Incontinence	19%	10%	9%
Operative Delivery	42%	13%	
Incontinence Score	2.3 (1.3-4.3)	1.1 (.7-1.7)	1 (ref)
Flatus	2.5 (1.5-4.2)	1.7 (1.2-2.4)	1 (ref)
Liquid Stool	2.5 (1.3-4.8)	1.0 (.0-1.7)	1 (ref)
Solid Stool	4.0 (1.1-14.6)	NA	1 (ref)
Wear Pads	3.9 (1.6-9.6)	1.0 (.4-2.5)	1 (ref)

- For those with OASI, AI risk higher if OVD than SVD
- AI similar in group with VB regardless of OVD or SVD
- Only 9% with AI seek care
- Poor maternal recall about OASIS

Evers, AJOG 2012

TABLE 3
Quality of life among 449 women with at least 1 bowel symptom at baseline, by exposure group

Variable	Sphincter tear	Control by delivery type: Vaginal	Cesarean section	*P* value[a]
Women with bowel symptoms, n (%)	48 (53)	146 (46)	255 (48)	.417[a]
"Have your bowel/rectum symptoms affected your . . ."[b]				
Ability to do household chores?	10.5 (3.0–24.0)	3.0 (1.0–5.0)	5.0 (1.0–10.0)	.165
	n = 10	n = 26	n = 47	
Physical recreation such as walking, swimming or other exercise?	25.0 (15.0–75.0)	6.0 (2.0–20.0)	5.5 (2.0–22.5)	.002
	n = 15	n = 37	n = 60	
Entertainment activities (eg, movies, concerts)?	25.0 (10.0–50.0)	3.0 (1.0–10.0)	5.0 (2.0–13.0)	< .001
	n = 14	n = 31	n = 57	
Ability to travel by car or bus >30 minutes from home?	26.5 (7.5–50.0)	3.0 (2.0–10.0)	5.0 (1.0–32.0)	.015
	n = 12	n = 31	n = 54	
Participating in social activities outside your home?	14.0 (5.0–50.0)	4.0 (1.0–10.0)	4.0 (1.0–11.0)	.008
	n = 15	n = 38	n = 59	
Emotional health (nervousness, depression, anger)?	15.0 (6.0–50.0)	5.0 (2.0–37.0)	6.0 (2.0–26.0)	.118
	n = 17	n = 39	n = 57	
Feeling frustrated?	32.5 (12.0–75.0)	15.0 (5.0–50.0)	20.0 (5.0–49.0)	.066
	n = 24	n = 61	n = 114	

[a] Generated by a Kruskal-Wallis test of the median scores of women who answered >0 across the 3 exposure groups, unless otherwise noted. [b] Obtained with a Fisher exact test. [c] The Colorectal-Anal Impact Questionnaire scores were scaled from 0 (not at all) to 100 (greatly); median (interquartile range) was calculated with scores only from women who gave an answer of >0.

Evers. Anal incontinence after anal sphincter laceration. Am J Obstet Gynecol 2012.

Evers, AJOG 2012

Bowel dysfunction decades after OASIS

ICS 2015 Montreal

Objective: To determine obstetric variables associated with the long-term prevalence of flatal and/or fecal incontinence among women who sustained (OASIS)

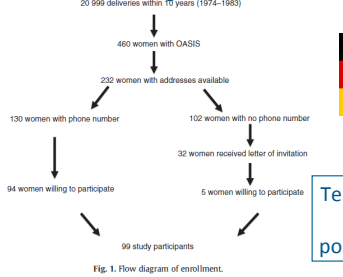


Fig. 1. Flow diagram of enrollment.

Telephone survey of 99/460 (22%) possible participants

Huebner, Intl J Gynecol Obstet 2013

Long-term bowel symptoms after OASIS

ICS 2015 Montreal

Mean follow-up: 27.5±2.4 years

39% anal incontinence (fecal or flatal) – 39/99

17% fecal incontinence (76% (13/17) before menopause)

35% flatal incontinence (63% (22/35) before menopause)

13% both fecal and flatal incontinence

16% difficulties emptying bowel completely

Huebner, Intl J Gynecol Obstet 2013

Long-term bowel symptoms after OASIS

ICS 2015 Montreal

Multivariate models built to look at long-term bowel sx: FI, flatal incontinence, incomplete evacuation

OVD → fecal incontinence (OR 3.27, 1.12–9.56,p=.026)

Trend with forceps > vacuum for flatal incontinence (OR 7.00, 0.73–66.80, p=0.064

No other variables associated with long-term bowel sx (parity, length of second stage, fetal weight, BMI, episiotomy, diabetes)

Retrospectively, would you have opted for C-section?
9% of women with flatal incontinence
13% of women with fecal incontinence

Huebner, Intl J Gynecol Obstet 2013

Bowel dysfunction decades after OASIS

ICS 2015 Montreal

Objective: To evaluate the long-term risk of fecal incontinence after primary anal sphincter reconstruction and its impact on quality of life

Methods: Cohort study of 125 women with complete anal sphincter rupture between 1976 and 1991 and 238 nonexposed parous controls

Primary outcomes: Wexner score, St Mark score, QOL

Mean follow up time: 22 (21.7–22.6) years

Mean age at follow up: 50 (49.8–51.0) years

Soerensen, Dis Col Rect 2013

Soerensen, Dis Col Rect 2013

ICS 2015 Montreal

49% of exposed women and 74% of nonexposed women continent at final follow up

TABLE 3. Continence status at time of evaluation

	Exposed			Nonexposed		
	1989 (n = 97)[a]	*1992 (n = 173)[b]*	*Final follow-up (n = 125)*	*1989 (n = 231)[c]*	*1992 (n = 329)[d]*	*Final follow-up (n = 238)*
Continent	62 (64)	81 (47)	61 (49)	195 (84)	291 (88)	177 (74)
Flatus incontinent	17 (18)	48 (28)	43 (35)	27 (12)	28 (9)	34 (14)
Liquid stool	11 (11)	24 (14)	18 (14)	8 (3)	5 (2)	21 (9)
Solid stool	7 (7)	20 (12)	3 (2)	1 (0.4)	5 (2)	6 (3)

Incontinence of flatus and liquid stool were more common in OASIS group at all time points

OASIS → FI (RR= 2.00, 1.52–2.63)

No other risk factors identified

Bowel dysfunction decades after OASIS

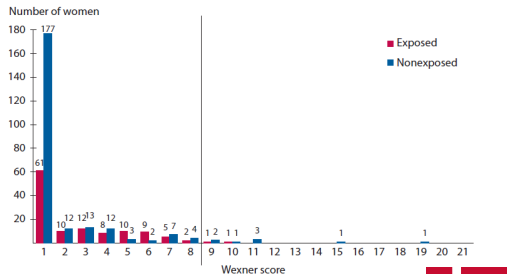
TABLE 4. Association between demographic characteristics and fecal incontinence

	RR (95% CI)	Adjusted RR* (95% CI)
Descriptive data		
Obstetric anal sphincter tear	2.00** (1.52–2.63)	1.84** (1.40–2.43)
Age	0.98 (0.96–1.00)	1.0 (0.92–1.09)
Age group		
<45	Reference	
45–49	0.86 (0.60–1.23)	0.85 (0.50–1.45)
50–54	0.83 (0.56–1.23)	0.86 (0.37–2.01)
55–60	0.50*** (0.29–0.86)	0.51 (0.14–1.86)
>60	0.82 (0.44–1.53)	0.93 (0.15–5.86)
BMI	0.82 (0.47–1.45)	0.86 (0.50–1.46)
Postmenopausal	0.88 (0.66–1.18)	1.25 (0.89–1.75)
Postmenopausal hormone replacement	0.66 (0.41–1.06)	0.71 (0.44–1.13)
Obstetric risk factors		
Obstetric anal sphincter tear	2.00** (1.52–2.63)	1.98** (1.42–2.77)
Birth weight	0.68 (0.44–1.05)	0.64 (0.40–1.03)
Mode of delivery	1.27 (0.92–1.74)	0.90 (0.60–1.35)
Labor induction	1.03 (0.76–1.39)	0.91 (0.66–1.26)
Mediolateral episiotomy	1.46**** (1.06–2.01)	1.16 (0.81–1.66)
Duration of second stage	1.32 (0.94–1.86)	1.07 (0.73–1.57)
Fetal presentation	1.30 (0.88–1.92)	1.04 (0.66–1.65)
Delivery data		
Subsequent deliveries		
0	Reference	
1	1.16 (0.83–1.62)	
2	1.51 (1.01–2.25)	
3	1.34 (0.69–2.62)	
>3	1.68 (0.41–6.87)	
Total parity		
1	Reference	
2	0.78 (0.50–1.23)	
3	0.88 (0.54–1.45)	
>3	1.07 (0.63–1.83)	

*Each variable is adjusted to the remaining variables in the category.

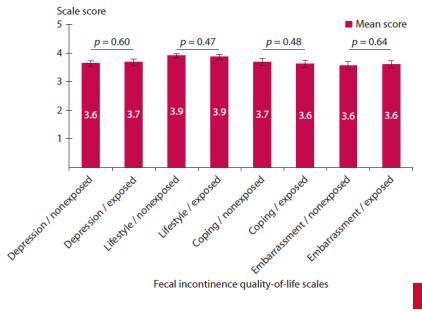
Soerensen, Dis Col Rect 2013

Bowel dysfunction decades after OASIS



Soerensen, Dis Col Rect 2013

FI-related QOL impact no different



Soerensen, Dis Col Rect 2013

Symptoms and Imaging

Objective: To assess function & morphology of anal sphincters & pelvic floor in women with long-term FI after sphincter repair and to correlate with FI severity

Methods: Cohort study of 29 women with OASI (1976 -1991) and 30 nonexposed parous controls, stratified as continent vs. minor FI vs. severe FI. MRI, 3D EAUS, and anorectal physiology tests performed and compared.

Results:

- EAUS: shorter anterior EAS in cases (8.6 vs 10.2 mm; P = 0.03)
- Among cases: Shorter anterior sphincter length with severe vs. minor FI (7.7 vs 10.4 mm; P = 0.04).
- No correlation between anal pressures FI severity.

Soerensen, Dis Col Rect 2013

Bowel anatomy/function decades p/ OASIS

Nested case-control – 68 women with FI and 68 age-matched controls completed survey & MRI to assess pelvic floor support

- Age at development of FI: <40: 9%, 40-59: 47%, 60+: 44%
- IAS/EAS injury in asymptomatic women: 10%; 30% in women with FI
- Predictors of FI:
  - Internal sphincter injury (8.8, 2.3 – 34)
  - Reduced perineal descent (1.7, 1.2-2.4)
  - Fecal urgency and stool consistency
  - No association of FI with EAS or PR injury
- Prior OASIS -> pelvic floor injury (IAS, EAS, PR)
- Smokers → EAS atrophy (even s/ other OB risk factors)

OB trauma is a stronger RF for postpartum FI than delayed onset FI

Bharucha, Am J Gastroenterol 2012

OASIS & interaction with bowel symptoms

Objective: To identify obstetrical risk factors associated with FI in women with irritable bowel syndrome & and to determine whether obstetric anal sphincter injuries interact with diarrhea or urgency to explain the occurrence of FI

Methods: 115/164 (70%) of women in parent study about IBS completed interview about bowel symptoms and OB history

Results:

RF for FI: parity (p = 0.007), operative delivery (P = 0.049), obstetrical sphincter lacerations (P = 0.007), fecal urgency (P = 0.005), diarrhea (P = 0.008), and hysterectomy (P = 0.004)

Not associated with episiotomy, pelvic organ prolapse, or urinary incontinence

Interaction between OASIS and bowel symptoms amplified risk of FI

Robinson, FPMRS 2013

OASIS & interaction with bowel symptoms

Objective: To ID OB risk factors associated with FI in women with irritable bowel syndrome (IBS)

Methods: 115/164 (70%) of women in parent study about IBS completed interview about bowel symptoms and OB history

Results:

FI associated with: parity, OVD, OASIS, fecal urgency, diarrhea, & hysterectomy (NOT with episiotomy, POP, or UI)

Interaction between OASIS and bowel symptoms amplified risk of FI

OASIS + diarrhea → more than doubled risk of FI

OASIS + fecal urgency → increased the risk of FI by nearly 2-fold

OASIS data was by patient report, so concern about recall bias

Robinson, FPMRS 2013

How to integrate all of these data?

- OASIS is associated with increased risk of both short-term and long-term bowel symptoms
- Risk of bowel symptoms after OASIS is higher after OVD
- Risk of bowel symptoms after OASIS is higher with other comorbidities
- More research should explore the mechanisms by which OASIS impacts both short- and long-term bowel symptoms

Aims

- Review the context in which OASIS occurs
- Summarize relationship between obstetrics & bowel dysfunction
  - Pregnancy
  - Delivery
- Short-term and long-term bowel symptoms following OASIS
- Review principles of treatment of OASIS

OASIS repair and rehabilitation are important!

Common-

- Obstetric anal sphincter injuries (OASIS) rate: up to 1-5%
- Busy obstetrician repairs more anal sphincters than a colorectal surgeon does!

High morbidity-

Anal pressure studies show impairment (Haadem,ObGyn,1987)

If transient anal incontinence after first delivery, then 40% risk of relapse w/ subsequent delivery (Bek, BJOG,1992)

Best chance of success is with primary repair

Low success rates for secondary repairs -approximately 50% at 5 years

Obtaining Informed Consent

Royal College of Obstetricians and Gynaecologists

Consent Advice No. 9

June 2010

REPAIR OF THIRD- AND FOURTH-DEGREE PERINEAL TEARS FOLLOWING CHILDBIRTH

Rare	1/1000 to 1/10 000	A person in small town
Very rare	Less than 1/10 000	A person in large town

RCOG Consent Advice #9, 2010

I have explained the procedure to the patient, in particular, I have explained:

The intended benefits: *To repair damage that has already occurred, to attempt to restore normal anatomy, help wound healing and reduce the risk of long-term bowel problems. The risks quoted below might be linked to sphincter (anal muscle) damage rather than the repair and these are likely to be significantly higher if the trauma is not repaired.*

Serious risks:

- *inability to control bowels and/or flatus (passing wind; common)*
- *possibility of recommending delivery by caesarean section in future pregnancies if symptoms persist or investigations suggest abnormal anal function. (uncommon)*
- *haematoma (collection of blood; rare)*
- *consequences of failure of repair requiring the need for further interventions and treatments (rare)*
- *developing a fistula (hole) between your back passage and vagina after the tear has healed. This will need to be repaired by further surgery (very rare)*

Frequent risks:

- *difficulty in passing stools initially (common)*
- *suture material causing discomfort and requiring removal (common)*
- *healing with excessive immature tissue formation (common)*
- *urinary infection (common)*
- *wound Infection (common)*
- *a feeling that you need to rush to the toilet to open your bowels urgently (very common)*
- *pain or soreness in the perineum and pain during intercourse (common)*

Guidelines for OASIS Repair

Royal College of Obstetricians and Gynaecologists

Setting standards to improve women's health

Green-top Guideline No. 29
March 2007

THE MANAGEMENT OF THIRD- AND FOURTH-DEGREE PERINEAL TEARS

Principles of OASIS repair

- Realize that this sphincter is an important physiological structure deserving excellent surgical conditions and technique - Treat it like it was yours!
- Good lighting - To the OR if needed
- Excellent anesthesia- Regional or general anesthesia necessary for overlapping repair and preferred for both
- Aseptic conditions
- Multiple rectal exams to delineate extent of injury
- Recognize and repair IAS separately if needed

Steps of OASIS Repair

- Carefully ID ends of EAS - Grasp with Allis forceps
- Can do approximation repair or overlapping repair
- Do not transect EAS completely to do overlapping

Although data lacking, consider:

- Long lasting monofilament absorbable suture for EAS (e.g 2-0,3-0 Maxon, PDS)
- Prophylactic antibiotics (2nd or 3rd generation cephalosporins, Metronidazole, Amoxicillin/clavulanate all reported)
- Stool softeners, Bulking agents

Approximation vs. Overlapping?

If complete EAS disruption, current data does not currently tell us whether approximation repair or overlapping repair is better.

UK Cochrane Database

Methods of repair for obstetric anal sphincter injury. Cochrane Database of Systematic Reviews 2013, Issue 12. Art. No.: CD002866. DOI: 10.1002/14651858.CD002866.pub3.

Main results

Six eligible trials, of variable quality, involving 598 women, were included. There was considerable heterogeneity in the outcome measures, time points and reported results. Meta-analyses showed that there was no statistically significant difference in perineal pain (risk ratio (RR) 0.08, 95% confidence interval (CI) 0.00 to 1.45, one trial, 52 women), dyspareunia (average RR 0.77, 95% CI 0.48 to 1.24, two trials, 151 women), flatus incontinence (average RR 1.14, 95% CI 0.58 to 2.23, three trials, 256 women) between the two repair techniques at 12 months. However, it showed a statistically significant lower incidence of faecal urgency (RR 0.12, 95% CI 0.02 to 0.86, one trial, 52 women), and lower anal incontinence score (standardised mean difference (SMD) -0.70, 95% CI -1.26 to -0.14, one trial, 52 women) in the overlap group. The overlap technique was also associated with a statistically significant lower risk of deterioration of anal incontinence symptoms over 12 months (RR 0.28, 95% CI 0.09 to 0.79, one trial, 41 women). There was no significant difference in quality of life. At 36 months follow-up, there was no difference in flatus incontinence (average RR 1.12, 95% CI 0.63 to 1.99, one trial, 68 women) or faecal incontinence (average RR 1.01, 95% CI 0.34 to 2.98, one trial, 68 women).

Authors' conclusions

The data available show that at one-year follow-up, immediate primary overlap repair of the external anal sphincter compared with immediate primary end-to-end repair appears to be associated with lower risks of developing faecal urgency and anal incontinence symptoms. At the end of 36 months there appears to be no difference in flatus or faecal incontinence between the two techniques. However, since this evidence is based on only two small trials, more research evidence is needed in order to confirm or refute these findings.

Approximation vs. Overlapping?

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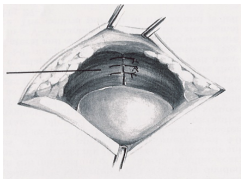
Intervention Review

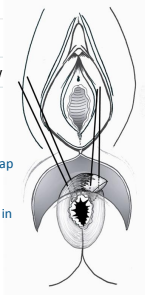
Methods of repair for obstetric anal sphincter injury

Ruwan J Fernando[1,*], Abdul H Sultan[2], Christine Kettle[3], Ranee Thakar[2]

Database Title



2 small trials:
@ 12 mos: primary overlap → lower risk of AI & urgency
@ 36 mos: no difference in AI or FI



Physiotherapy Management of Obstetric Anal Sphincter InjurieS (OASIS)

Paula Igualada-Martinez MSc BSc (Hons)
Clinical Specialist Physiotherapist
Guy's and St Thomas' NHS Foundation Trust , London, UK

KING'S HEALTH PARTNERS
Pioneering better health for all

"All women should be offered physiotherapy and pelvic-floor exercises for 6–12 weeks after obstetric anal sphincter repair."

(Royal College of Obstetricians and Gynaecologists (RCOG) (2007). The management of third and fourth degree perineal tears. Green-top Guidelines No 29)

Aims of this presentation

- Aims of Physiotherapy in Bowel Dysfunction
- Acute physiotherapy management of OASIS
- Physiotherapy Assessment
- Physiotherapy Management

Physiotherapy in Bowel dysfunction

-Faecal Incontinence
- To strengthen the Pelvic Floor Muscles including EAS
- To increase the sensibility of rectum
- To keep the rectum empty
- To change stool consistency

Bø et al (2007) Evidence-Based Physical Therapy for the Pelvic Floor
Bols et al (2013) KNFG Evidence Statement Anal incontinence

-Rectal Evacuation disorders
- To correct muscle disco-ordination
- To correct incorrect defecation patterns
- To strengthen pelvic floor muscles
- To change stool consistency

Laycock and Haslam (2002) Therapeutic Management of Incontinence and Pelvic Pain

Acute physiotherapy management

- R.I.C.E
  - Rest, Ice, Compression and Elevation

National Institute for Health and Clinical Excellence (NICE) (2006). Routine postnatal care of women and their babies

- Avoidance of excessive forces on healing tissue (Defecation dynamics and constipation management)

Sherburn et al (2013) The role of physiotherapy after obstetric anal sphincter injury: An overview of current clinical practice. Australian and New Zealand Continence Journal. 19 (1)

- Pelvic Floor Muscle Training (PFMT) (pain-free activation!)

NICE (2006). Routine postnatal care of women and their babies
RCOG (2007). The management of third and fourth degree perineal tears. Green-top Guidelines No 29.
Boyle et al (2012) Cochrane Database of Systematic Reviews, Issue 10. Art. No.: CD007471

- Raise awareness of common symptoms following OASIS

NICE (2006). Routine postnatal care of women and their babies

Physiotherapy Assessment

- History taking

Bols et al (2013) KNFG Evidence Statement Anal incontinence

- Standardized assessment tools/questionnaires

Roos et al (2009) Int Urogynecol J Pelvic floor Dysfunct.;20 (4):407-10

- Observation and Physical examination
  - Pelvic floor muscle assessment via PV or PR
    - PERFECT Scheme
    - International Continence Society Pelvic Floor Score
    - PFMF assessment scheme

Chartered Society of Physiotherapy (2000) (Appendix 9)
Laycock J and Jerwood D (2001) Physiotherapy 87 (12):631-642
Messelink B et al. (2005) Neurourology and Urodynamics 24:374-380
Slieker-ten Hove et al (2009) Neurourology and Urodynamics 28:295-300

- Further tests and investigations

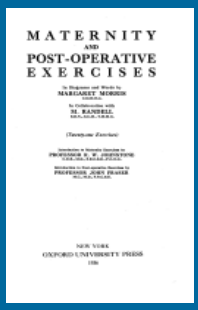
Bols et al (2013) KNFG Evidence Statement Anal incontinence

Pelvic floor muscle training

Margaret Morris through the British Physiotherapy Association highlighted:

"The importance of tensing and relaxing the pelvic floor muscles together with the **sphincters** as a **preventative** and **treatment** option for urinary and **faecal incontinence**

(St Thomas' Hospital 1936)"



Pelvic floor muscle training

-PFMT is effective in the treatment of:

- Urinary Incontinence (level 1)
  - Dumoulin et al (2014) Cochrane Database of Systematic Reviews, Issue 5. Art. No.: CD005654
  - NICE (2013) The management of Urinary Incontinence. Clinical Guideline 171
  - Boyle et al (2012) Cochrane Database of Systematic Reviews, Issue 10. Art. No.: CD007471
- Improve pelvic organ prolapse
  - Hagen and Stark (2011) Cochrane Database of Systematic Reviews, Issue 12. Art. No.: CD003882
- ***Faecal Incontinence***
  - Boyle et al (2012) Cochrane Database of Systematic Reviews, Issue 10. Art. No.: CD007471
  - Norton and Cody (2012) Cochrane Database of Systematic Reviews, Issue 7. Art. No.: CD002111
  - NICE (2007)Faecal incontinence. Clinical guideline 49

PFMT

- PFE's should involve fast and slow twitch muscle fibres and be performed in a variety of positions
- Exercise programs should follow the principles of:
  - Specificity
  - Overload
  - Progression
  - Maintenance and reversibility
- For a minimum of **5 months**
- Include strategies to adhere to the exercise regime
- **Endurance of squeeze**

Bø et al (2007) Evidence-Based Physical Therapy for the Pelvic Floor

American College of Sports Medicine (ACSM) (1998) Med Sci Sports Exer 30: 975-991

'The Knack'

-The use of anticipatory pelvic floor contraction immediately prior to an activity that causes urinary leakage ("the knack") is taught

-No studies yet on Faecal and/or Flatus incontinence

-Used in POP by Hagen et al (2009) and Braekken et al (2010)

Miller et al (1996) Neurourology and Urodynamics 15:392–393

Biofeedback

Biofeedback in patients with bowel dysfunction can be used in various ways:

-EMG biofeedback (activity of motor units- registration of a physiological activity by audio or visual means)

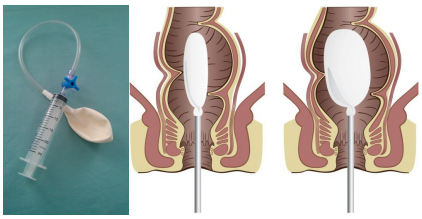
- Improve PFMT technique
- Increase motivation
- Monitor progress
- Functionality
- Enjoyment

Herderschee et al (2011) Cochrane Database of Systematic Reviews, Issue 7. Art. No.: CD009252

Bols et al (2013) KNFG Evidence Statement Anal incontinence

Sensory Training

- Pressure (anal manometry or probe) or using a rectal balloon:

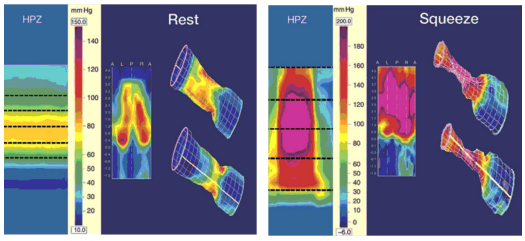


Bols et al (2013) KNFG Evidence Statement Anal incontinence

Norton and Cody (2012) Cochrane Database of Systematic Reviews, Issue 7. Art. No.: CD002111

Bols et al (2007) BMC Public Health 7:355

Bruno et al (2015) J Coloproctol (Rio J). 2015;35:14-9



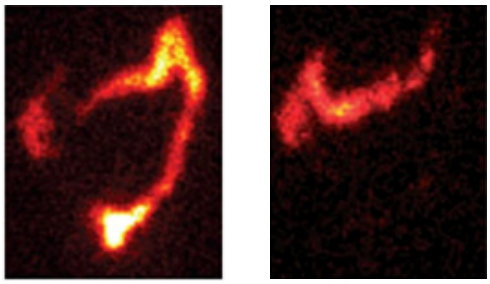
Topographic plots demonstrating the highpressure zone (HPZ) and 3-D high definition anorectal manometry (HDARM) representations of intra-anal pressures at rest (top) and during squeeze (bottom). For more detail, please see Ambartsumyan *et al.*, page 1918.

Neuromuscular Electrical Stimulation (NMES)

- NMES is aimed at training the pelvic floor and external anal sphincter muscles by producing a series of electrically induced contractions, to improve strength, sensation and function
- NMES is a treatment for women who demonstrate a grade 0, 1 on the modified Oxford scale and would otherwise be unable to re-educate their pelvic floor muscles
- Patients should join in with the electrically induced contraction.
- Caution when using before 12/52 postpartum

Vonthein et al (2013) Int J Colorectal Dis 28:1567-1577

Rectal Irrigation



Before emptying

After emptying

Christensen et al (2003) Diseases of the Colon and Rectum 46:68-76

Loperamide

-There is moderate evidence that constipating medication (loperamide oxide and diphenoxylate with atropine) reduces the risk of FI among patients with liquid stool

Omar and Alexander (2013) Cochrane Database of Systematic Reviews, Issue 6. Art. No.: CD002116

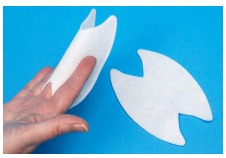
Anal plugs

-"Plugs could then be useful in a selected group of people either as a substitute for other forms of management or as an adjuvant treatment option"

Deutekom and Dobben (2012) Cochrane Database of Systematic Reviews, Issue 4. Art. No.: CD005086.

Faecal Pads

- Faecal pads are shaped to fit in and around the buttocks
- Some disposable faecal pads have an internal cuff/ gathers designed to hold liquid or solid stool in place



- There is very limited research evidence about how well faecal pads work.
- A disposable gauze dressing placed between the buttocks has been found to be acceptable for light bowel leakage where the stool usually remains between the buttocks and doesn't soil underwear

Bliss et al (2011) Use and Evaluation of Disposable Absorbent Products for Managing Fecal Incontinence by Community-Living People. J Wound Ostomy Continence Nurs. 2011 May-Jun; 38(3): 289–297
http://www.continenceproductadvisor.org/products/faecaldevices/faecalpads

Defecation dynamics

-Defecation technique:
- Knees higher than hips
- Forearms on thighs
- Lean forward, neutral spine
- Avoid holding the breath

-Toilet Routine:
- Regular attempt following breakfast (stimulation of gastro-colic reflex)
- Privacy and time
- Avoid ignoring the urge to defecate

Laycock and Haslam (2002) Therapeutic Management of Incontinence and Pelvic Pain

Lifestyle advice/education

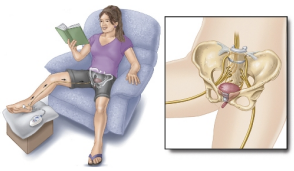
- Patient education and advice
- Dietary supplementation with Psyllium husk or gum Arabic fiber is associated with a reduced number of FI episodes and improved consistency of stools
- Weight loss through behavioural intervention is associated with improvement in the frequency of liquid stool incontinence among obese women with urinary incontinence
- Increasing fluid intake to influence the consistency of stools
- Review of medication
- Fibre intake

Bols et al (2013) KNFG Evidence Statement Anal incontinence
Markland et al (2011) Int Urogynecol Journal ;22(9):1151-7
Norton et al (2010) Neurourol Urodyn ;29(1):199-206
Abrams et al (2009) Incontinence. Health Publications Ltd; p. 1321-86.
Bliss et al (2001)Nurs Res; 50(4):203-13.

Percutaneous tibial nerve stimulation for faecal incontinence

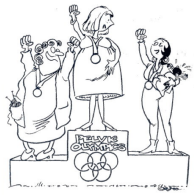
Issued: May 2011

NICE interventional procedure guidance 395
guidance.nice.org.uk/ipg395



Preventative conservative measures

-Pelvic floor muscle training



Boyle et al (2012) Cochrane Database of Systematic Reviews, Issue 10. Art. No.: CD007471
Stafne et al (2012) BJOG: an international journal of obstetrics and gynaecology;119(10):1270-80.

-Perineal Massage

Beckmann and Stock (2013) Cochrane Database of Systematic Reviews 2013, Issue 4. Art. No.: CD005123

Conclusions

- Physiotherapy/Conservative management should be first line management of OASIS related bowel dysfunction.
- Always allow time for natural resolution of symptoms before commencement of any more intrusive intervention such as intra anal/vaginal EMG/NMES, use of rectal irrigation, Loperamide, etc…
- Prevention is better than cure!
- Ensure good communication with the MDT!

The dedicated OASIS clinic and management of subsequent pregnancies

Heidi Brown MD MAS
Paula Igualada-Martinez MSc BSc (Hons)

"All women who have had obstetric anal sphincter repair should be reviewed 6–12 weeks postpartum by a consultant obstetrician and gynaecologist."

"If facilities are available, follow-up of women with OASIS should be in a dedicated perineal clinic with access to endoanal ultrasonography and anal manometry, as this can aid decision on future delivery."

(RCOG 2007)

The dedicated OASIS clinic

A dedicated one-stop OASIS clinic enables provision of:

- Evaluation of the clinical diagnosis and ano-rectal function following OASIS:
  - Physical examination
  - Endoanal ultrasound
  - Anorectal physiology
- Recognition and management of OASIS-related complications:
  - Assessment of pelvic floor symptoms with a standardized questionnaire
  - If symptomatic, referral to the most appropriate health professional
  - Consider psychological trauma

- Education of women (continue debriefing):
  - Explain injury, cause of injury, clinical significance and impact on quality of life
  - Appropriate counselling regarding mode of subsequent delivery
  - Reassurance and support

RCOG (2007) Green-top Guideline No. 29
Sultan et al (2007) Perineal and Anal Sphincter Trauma

Multidisciplinary One-stop clinic

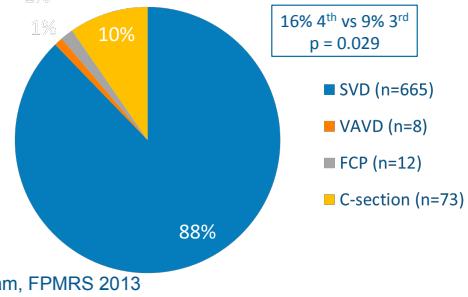
- The model of care will be dependent on local expertise and resources however...
- An ideal multidisciplinary one-stop clinic should allow:
  - Assessment and investigations at once to minimise visits to the hospital
  - Mum and baby friendly
  - Array of expertise (Colorectal Nurse Specialist, Physiotherapist, Clinical Scientist, Colorectal Surgeon, Midwife and Obstetrician/ Urogynaecologist)
  - Continuity of care (consistency of information given to the women by all members of the MDT at all stages –labour, postnatal ward, dedicated clinic and with subsequent pregnancies)
  - At 12 weeks and 9-12 months postpartum

Aims

- Review existing literature
- Review guidelines
- Tackle the gray zone

Mode of Delivery with prior OASIS

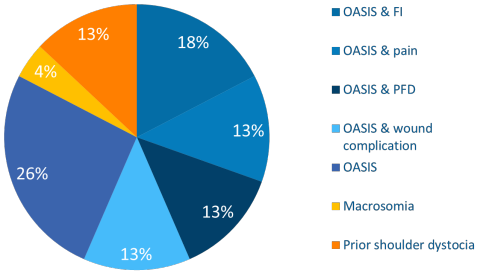
Retrospective cohort of 758 US women who had an OASIS with documented subsequent delivery



Basham, FPMRS 2013

Reason for Elective Section p/ OASIS

Reason for C-section was elective in 32% (23/73)



Basham, FPMRS 2013

Mode of Delivery with prior OASIS

685 (90%) VD

627 (85%) 1st or 2nd degree

23 (3%) OASIS

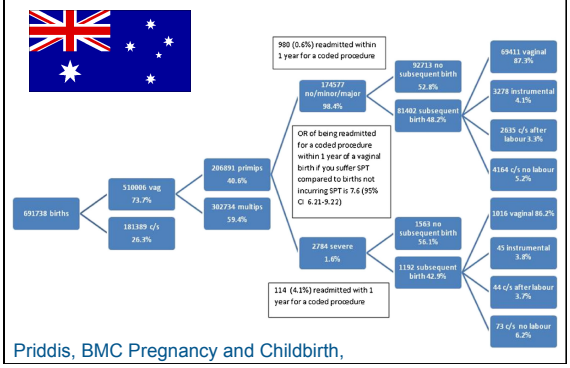
22 (96%) 3rd degree

1 (4%) 4th degree

Associated Factors	RR (95% CI)
Characteristics of Index Delivery / OASIS	
Mediolateral episiotomy	7.3 (1.9 - 28.0)
Chromic suture for OASIS repair	7.4 (1.5 - 37.8)
Characteristics of Subsequent Delivery	
Forceps (ref: SVD)	12.0 (3.0 - 48.0)
Birth weight >4kg	2.9 (1.1 - 7.5)

Basham, FPMRS 2013

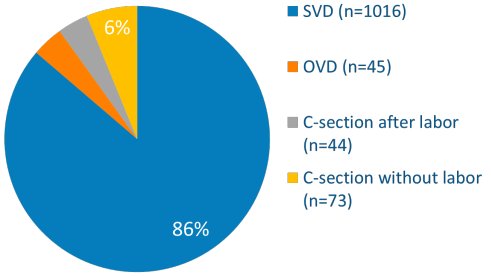
Mode of Delivery with prior OASIS



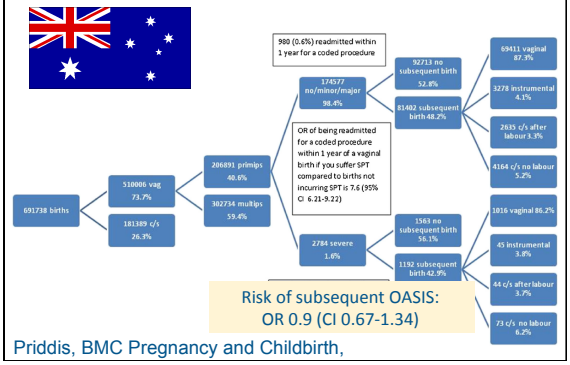
Priddis, BMC Pregnancy and Childbirth,

Mode of Delivery with prior OASIS

Retrospective cohort of 1192 Australian women with OASIS & documented subsequent delivery



Risk of repeat OASIS not increased



Risk of subsequent OASIS: OR 0.9 (CI 0.67-1.34)

Priddis, BMC Pregnancy and Childbirth,

Authors Conclusions

Primiparous women who experience OASIS are:

- less likely to have a subsequent baby
- more likely to have a related surgical procedure in the 12 months postpartum
- no more likely to have an OVD or OASIS in a subsequent birth

Priddis, BMC Pregnancy and Childbirth,

Bowel dysfunction 3-8 years after OASIS

Table 3. The women's thoughts concerning subsequent deliveries.

	Case group, $n = 125$		Cesarean group, $n = 121$		Normal delivery group, $n = 211$		Test of equal proportions
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	p-value
Wished to postpone the subsequent delivery	41	32.8 (24.8–41.8)	21	17.4 (11.3–25.5)	34	16.1 (11.6–21.9)	0.0007
Wished to abandon plans for more children	22	17.6 (11.6–25.7)	16	13.2 (8.0–20.9)	10	4.7 (2.4–8.8)	0.0005
Had more than one delivery during the study period	74	59.2 (50.0–67.8)	73	60.3 (50.0–69.0)	129	61.1 (54.2–67.7)	0.94

33% wished to postpone subsequent delivery

18% wished to abandon plans for more children

59% had another baby anyway

Wegnelius, Acta Obstet Gynecol Scand 2011

Bowel dysfunction 3-8 years after OASIS

Table 4. Frequency of cesarean sections and sphincter ruptures at the second delivery.

Second delivery during the study period	Case group, $n = 125$ $n = 74$ (59%)		Cesarean group, $n = 121$ $n = 73$ (60%)		Normal delivery group, $n = 211$ $n = 129$ (61%)		p-value
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	
Cesarean section at second delivery	36	48.6 (37–60.5)	47	64.4 (52.2–75)	5	3.9 (1.4–9.3)	<0.0001
Vaginal second delivery	$n = 38$		$n = 26$		$n = 124$		
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	
Rupture of anal sphincter at the second delivery	3	7.9 (1.77–21.4)	5	19.2 (6.6–39.4)	1	0.8 (0–4.4)	
Relative risk (RR) Odds ratio (OR)	9.79 10.54		23.85 29.29		1 1		

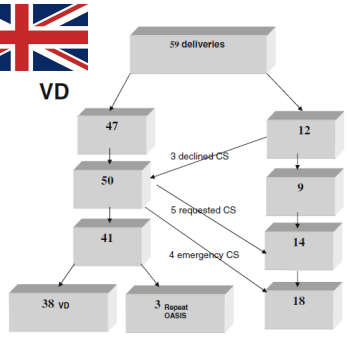
49% had a C-section for subsequent delivery

3/38 with VD had OASIS in case group, versus 5/26 in C-section group

Risk of OASIS was highest in C-section group

Wegnelius, Acta Obstet Gynecol Scand 2011

OASIS, bowel sx, QoL after prior OASIS



7% risk of OASIS with subsequent vaginal birth

Scheer, IUJ, 2009

Anorectal manometry findings

Among women with prior OASIS who delivered in subsequent pregnancy via recommended mode of delivery, maximum squeeze pressures were lower after vaginal birth but did not change after C-section

Table 3 Mean maximum resting pressure (MRP) and mean maximum squeeze pressure (MSP) during subsequent pregnancy and after delivery in women who had their recommended mode of delivery

	MRP mmHg (SD)			MSP mmHg (SD)			ΔP mmHg (SD)		
	Antenatal	Postnatal	p value[a]	Antenatal	Postnatal	p value[a]	Antenatal	Postnatal	p value[a]
Vaginal delivery (n=35)	53.8 (15.9)	53.5 (16.3)	0.93	94.7 (26.5)	89.0 (31.9)	0.18	36.1 (26.7)	24.6. (17.2)	0.06
Caesarean section (n=9)	37.78 (13.8)	42.33 (10.7)	0.55	59.89 (19.3)	66.67 (12.4)	0.17	20.5 (14)	24.33 (14.7)	0.72

[a] Paired t test: manometry findings antenatal vs. postnatal

Scheer, IUJ, 2009

Bowel symptoms p/ subsequent delivery

Scheer, IUJ, 2009

Authors' conclusions

"Women who have no antenatal evidence of objective compromise of anal sphincter function can be reassured that a vaginal delivery is not associated with any significant deterioration in function or quality of life."

Scheer, IUJ, 2009

Decision Analysis

Theoretical cohort of >75,000 women with prior OASIS created using TreeAge software to inform an analytic decision model comparing elective CS w/ TOL

Table 1. Elective Cesarean Delivery Compared With Trial of Labor After Obstetric Anal Sphincter Injuries

Assumed Rates	Elective Cesarean Delivery	Trial of Labor
Repeat obstetric anal sphincter injuries	n/a	5.6%
Urinary incontinence	6.1%	21.4% (obstetric anal sphincter injuries)
Fecal incontinence	7.6%	17% (obstetric anal sphincter injuries)
Dyspareunia	21%	35.7% (obstetric anal sphincter injuries)
Fistula	n/a	2.98% (obstetric anal sphincter injuries)
Outcomes	Elective cesarean delivery	Trial of labor
Maternal deaths	26	9
Cesarean deliveries	75,152	24,725
Postpartum urinary incontinence	4,568	10,279
Postpartum fecal incontinence	5,710	6,336
Postpartum dyspareunia	15,776	20,631
Postpartum fistula	0	84
Cost per pregnancy	$14,072	$9,989
Quality-adjusted life-years	2,026,849	2,028,352

n/a, not applicable.

Worstell, Obstet Gynecol S, 2014

Decision Analysis - Conclusions

Varying duration of FI favored trial of labor to 5.3 years

Varying duration of FI in women who experienced repeat OASIS favored trial of labor to 4.8 years

The authors conclude:

Women with a history of OASIS experience more postpartum UI and FI. However, the burden of postpartum incontinence is high in general and CS is not entirely protective.

But most bowel symptoms manifest decades later…

Worstell, Obstet Gynecol S, 2014

So the evidence is clear as mud…

What do the experts say?

Guidelines about Subsequent Pregnancy

Royal College of Obstetricians and Gynaecologists

Green-top Guideline No. 29
March 2007

12. Future deliveries

What advice should women be given following an obstetric anal sphincter injury concerning future pregnancies and mode of delivery?

All women who sustained an obstetric anal sphincter injury in a previous pregnancy should be counselled about the risk of developing anal incontinence or worsening symptoms with subsequent vaginal delivery.

All women who sustained an obstetric anal sphincter injury in a previous pregnancy should be advised that there is no evidence to support the role of prophylactic episiotomy in subsequent pregnancies.

All women who have sustained an obstetric anal sphincter injury in a previous pregnancy and who are symptomatic or have abnormal endoanal ultrasonography and/or manometry should have the option of elective caesarean birth.

Subsequent Pregnancies

Cochrane Database Syst Rev. 2014 Nov 6;11:CD010374. doi: 10.1002/14651858.CD010374.pub2.

Interventions for women in subsequent pregnancies following obstetric anal sphincter injury to reduce the risk of recurrent injury and associated harms.

Farrar D[1], Tuffnell DJ, Ramage C.

Author information

Abstract

BACKGROUND: Perineal damage occurs frequently during childbirth, with severe damage involving injury to the anal sphincter reported in up to 18% of vaginal births. Women who have sustained anal sphincter damage are more likely to suffer perineal pain, dyspareunia (painful sexual intercourse), defaecatory dysfunction, and urinary and faecal incontinence compared to those without damage. Interventions in a subsequent pregnancy may be beneficial in reducing the risk of further severe trauma and may reduce the risk of associated morbidities.

OBJECTIVES: To examine the effects of Interventions for women in subsequent pregnancies following obstetric anal sphincter injury for improving health.

SEARCH METHODS: We searched the Cochrane Pregnancy and

SELECTION CRITERIA: Randomised controlled trials, cluster-ran
effects of any intervention in subsequent pregnancies following ob
randomised controlled trials and cross-over trials were not eligible

DATA COLLECTION AND ANALYSIS: No trials were included. In future upd
authors will extract data and assess the risk of bias of included studies.

MAIN RESULTS: No eligible completed trials were identified. One ongoing trial was identified.

AUTHORS' CONCLUSIONS: No relevant trials were included. The effectiveness of interventions for women in subsequent pregnancies following obstetric anal sphincter injury for improving health is therefore unknown. Randomised trials to assess the relative effects of interventions are required before clear practice recommendations can be made.

RCT: CS vs VD for continent women with h/o OASI
- Abramowitz, 2008

Eur J Obstet Gynecol Reprod Biol. 2014 Mar;174:51-3. doi: 10.1016/j.ejogrb.2013.12.004. Epub 2013 Dec 12.

Delivery outcomes and events in subsequent pregnancies after previous anal sphincter injury.

Ali A[1], Glennon K[2], Kirkham C[2], Yousif S[2], Fegan M[2].

Author information

Abstract

OBJECTIVE: To assess the mode of delivery following previous anal sphincter injury (ASI), and to evaluate the perineal outcome following a vaginal birth.

STUDY DESIGN: Retrospective data search of the hospital Patient Access System on patients who delivered following previous ASI from 2010 to 2012. When a second ASI was sustained, additional information was gathered from the patients' medical notes. Continuous variables were described by counts and percentages and analysed using SPSS version 20.

RESULTS: Between January 2010 and July 2012, 138 women with previous ASI delivered at the Rotunda Hospital, of whom 69 (50%) had a spontaneous vaginal delivery (SVD), 13 (9.4%) had an instrumental delivery (11 vacuum, 2 forceps), and 56 (40.6%) had a caesarean section. Of these caesarean sections, 43 (76.8%) were elective, and 13 (23.2%) were emergency. Of the 82 vaginally delivered patients, the majority had a second degree perineal tear or minor lacerations (54/82 and 14/82 respectively) but 11 had a third degree perineal tear following an SVD - a recurrence risk of 13.4%. There was no significant difference in the average birthweight between patients who sustained a second ASI (3644g) compared to those who did not (3680g). None of the patients who had a second ASI developed faecal incontinence symptoms postnatally: two patients developed flatal incontinence which resolved with physiotherapy.

CONCLUSION: This study highlights the importance of individualised antenatal assessment in patients with a previous ASI. They may have a personal preference when considering their mode of delivery. A specialist clinic affords them the opportunity for a detailed discussion. In this study, 86.5% of women who delivered their subsequent baby vaginally did not sustain an ASI, while 13.4% had a repeat ASI following vaginal birth. It is therefore important to counsel regarding the incidence of repeat ASI, but also to emphasise that it is generally impossible to confidently predict recurrence antenatally.

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

COMMITTEE OPINION

Number 559 • April 2013

Committee on Obstetric Practice

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

Cesarean Delivery on Maternal Request

ABSTRACT: *Cesarean delivery on maternal request* is defined as a primary prelabor cesarean delivery on maternal request in the absence of any maternal or fetal indications. Potential risks of cesarean delivery on maternal request include a longer maternal hospital stay, an increased risk of respiratory problems for the infant, and greater complications in subsequent pregnancies, including uterine rupture, placental implantation problems, and the need for hysterectomy. Potential short-term benefits of planned cesarean delivery compared with a planned vaginal delivery (including women who give birth vaginally and those who require cesarean delivery in labor) include a decreased risk of hemorrhage and transfusion, fewer surgical complications, and a decrease in urinary incontinence during the first year after delivery. Given the balance of risks and benefits, the Committee on Obstetric Practice believes that in the absence of maternal or fetal indications for cesarean delivery, a plan for vaginal delivery is safe and appropriate and should be recommended to patients. In cases in which cesarean delivery on maternal request is planned, delivery should not be performed before a gestational age of 39 weeks. Cesarean delivery on maternal request should not be motivated by the unavailability of effective pain management. Cesarean delivery on maternal request particularly is not recommended for women desiring several children, given that the risks of placenta previa, placenta accreta, and gravid hysterectomy increase with each cesarean delivery.

US Policy Statements

American College of Obstetrics & Gynecology:

- Anorectal dysfunction listed among conditions for which neither VB nor CS is favored

National Institutes of Health:

- Case– control studies supply weak-quality evidence for reduced risk of anal incontinence w/ planned CS vs. unplanned CS or *instrumental* VB
- + association between OASIS & fecal incontinence
- Limiting use of midline episiotomy & forceps can reduce the frequency of OASIS

Consider prophylactic episiotomy?

The effect of a mediolateral episiotomy during operative vaginal delivery on the risk of developing obstetrical anal sphincter injuries

Joey de Vogel, MD; Ann
Jan Willem de Leeuw, M

"We advocate the use of a mediolateral episiotomy in all operative vaginal deliveries to reduce the incidence of OASIS."

OBJECTIVE: The objective o ase of an OVD (ad-
obstetrical anal sphincter in .12–0.24).
tive vaginal deliveries (OVD) and to assess whether a mediolateral episiotomy is protective for developing OASIS in these deliveries.

STUDY DESIGN: We performed a retrospective cohort study. Maternal and obstetrical characteristics of the 2861 women who delivered liveborn infants by an OVD at term in the years 2001-2009 were extracted from a clinical obstetrics database and were analyzed in a logistic regression model.

RESULTS: The frequency of OASIS was 5.7%. Women with a mediolateral episiotomy were at significantly lower risk for OASIS compared with

CONCLUSION: We found a 6-fold decreased odds for developing OASIS when a mediolateral episiotomy was performed in OVD. Therefore, we advocate the use of a mediolateral episiotomy in all operative vaginal deliveries to reduce the incidence of OASIS.

Key words: mediolateral episiotomy, obstetrical anal sphincter injuries, operative vaginal delivery

Cite this article as: de Vogel J, van der Leeuw-van Beek A, Gietelink D, et al. The effect of a mediolateral episiotomy during operative vaginal delivery on the risk of developing obstetrical anal sphincter injuries. Am J Obstet Gynecol 2012;206:404.e1-5.

De Vogel, AJOG 2012

2010 Cochrane Review

"No benefit could be demonstrated for Cesarean delivery over vaginal delivery in the prevention of anal incontinence."

This review encompasses 21 published studies, involving 31,698 women, delivered by 6,028 CD and by 25,170 VD. No randomised studies comparing CD to VD in average risk pregnancies exist. The above conclusion is therefore based upon less than optimal evidence.

Communication with patients is key

Things to Consider:

- Patient preferences
- Bowel symptoms after last OASIS / birth
- Current bowel symptoms
- Objective assessment of sphincter anatomy and function
- Estimated fetal weight
- Future childbearing plans
- Medical comorbidities
- Documentation, documentation, documentation

ICS 2015 Montreal

Notes