

PERSISTENT ANAL SPHINCTER DEFECTS AFTER PRIMARY REPAIR OF OBSTETRIC ANAL SPHINCTER INJURIES (OASIS) - DOES IT AFFECT QUALITY OF LIFE?

Hypothesis / aims of study

OASIS are a major contributory factor in the development of anal incontinence in women. Despite a primary repair up to 61%

	No defect N = 430	IAS defect N = 50	EAS defect N = 17	IAS + EAS defect N = 21
Social limitations	4.34	6.77	11.27	6.25
Emotions	11.92	18.26	17.71	19.58
Severity measures	10.74	16.75	14.61	14.00

continue to suffer from anal incontinence. A previous small study of 56 women who sustained OASIS has shown that the

presence of a combined defect of the internal (IAS) and external anal sphincter (EAS) is significantly related to bowel symptoms 6 to 8 weeks post partum (1). Furthermore an association between IAS defects and severe symptoms of fecal incontinence has been demonstrated (2). However the effect of persistent anal sphincter defects on quality of life (QoL) has not been studied. The aim of our study was to establish the effect of IAS and/or EAS defects (as diagnosed by endoanal ultrasound) on symptoms, manometry and QoL, following primary repair of OASIS.

Study design, materials and methods

All women who sustained OASIS and attended the perineal clinic (including tertiary referrals) over a five year period, between 2002 and 2007, were included in this study. As part of our normal protocol all women completed the Manchester Health Questionnaire (MHQ) and had anorectal manometry (Stryker air-filled system) and endoanal ultrasound (B & K Medical 10MHz rotating endoprobe) performed. The MHQ allows for scoring bowel related symptoms and its effect on QoL. The QoL domains include General Health Perceptions, Incontinence Impact, Role Limitations, Physical Limitations, Social Limitations, Personal Relationships, Emotions, Sleep/Energy and Severity Measures scoring from 0 (never affected) to 100 (always affected).

An IAS defect was defined as any defect in the IAS as seen on endoanal ultrasound. An EAS defect was defined as a defect in 2 or more levels of the EAS, the levels being the deep, superficial and subcutaneous level. For analysis subjects were divided into four groups: an intact anal sphincter complex, an isolated IAS defect, an isolated EAS defect or a combined IAS/EAS defect.

Statistical analysis comparing the 4 different groups were performed using Mann Whitney U test for comparing continuous variables and Chi Square test or Fisher's Exact test for categorical variables. Where applicable odds ratios (OR) were reported with 95% confidence interval (CI). A p-value < 0.05 was considered significant.

Results

Five hundred and sixteen women were studied with a mean follow-up of 10.6 (SD 9.5) weeks after delivery. The mean age and parity was 30 (SD 5.4) years and 1.3 (SD 0.55) respectively. Of the 516 women, 429 (83%) women had no defect, 49 (10%) had an isolated IAS defect, 17 (3%) an EAS defect and 21 (4%) had a combined IAS/EAS defect.

Compared to intact sphincters, combined defects were significantly associated with the highest risk of incontinence of liquid stool, OR 4.30 (1.33 – 13.86), p 0.028. IAS alone and EAS alone were not associated with incontinence of liquid stool when compared to an intact sphincter complex. All other symptoms of anal incontinence were not significantly different (Table 1).

Table 1: Patients [n (%)] with symptoms as per endoanal scan finding

The mean scores of QoL domains were significantly higher for Social Limitations (p 0.034), Emotions (p 0.045) and Severity Measures (p 0.040) in the IAS defect alone group compared to an intact anal sphincter complex. Although EAS alone and a combined anal sphincter defect showed equal or worse QoL scores in these domains, these were not significantly different (Table 2).

Table 2: Mean QoL domain scores from 0 (never affected) to 100 (always affected)

	No defect N = 429	IAS defect N = 49	EAS defect N = 17	IAS + EAS defect N = 21	Total N = 516
Fecal urgency	130 (31)	21 (43)	3 (18)	4 (20)	158(31)
Flatus	88 (21)	8 (16)	3 (18)	8 (38)	107 (21)
Liquid stool	22 (5)	4 (8)	0 (0)	4 (19)	30 (6)
Solid stool	10 (2)	0 (0)	0 (0)	1 (5)	11 (2)

The mean maximum resting pressure (MRP) was significantly lower in the IAS alone ($p = 0.02$) and combined defect group ($p < 0.001$) compared to no defect. IAS alone, EAS alone and combined defects were all associated with a significantly lower mean maximum squeeze pressure (MSP) when compared to an intact sphincter complex. Anal length was significantly shorter in the IAS defect ($p = 0.002$) or IAS/EAS combined defect group ($p = 0.017$), when compared to no defect (Table 3).

	No defect N = 430	IAS defect N = 50	EAS defect N = 17	IAS + EAS defect N = 21
Mean MRP	51.9	47.5	47.4	38.2
Mean MSP	86.9	78.6	67.1	65.5
Anal length	26.1	23.4	26.2	22.7

Table 3: Mean anal sphincter pressures in mmHg and anal length

in mm.

Interpretation of results

In contrast to other studies that showed a significant association between persistent anal sphincter defect and altered fecal continence, our study differentiated between women with a combined IAS/EAS defect or an isolated IAS or EAS defect. A persistent combined IAS/EAS defect has a negative effect on symptoms of anal incontinence, anal sphincter muscle strength and anal length. This finding supports the findings of another study that demonstrated that the single independent predicting factor of continence after anal sphincter repair was restoration of the high pressure zone of the anal canal represented by measurement of anal length (3).

Only subjects with an isolated IAS defect, but not those with a combined IAS/EAS defect, showed impaired QoL because of bowel symptoms when compared to women with an intact sphincter complex. A possible explanation could be the small number of subjects with an EAS or combined IAS/EAS defect.

Concluding message

Although a persistent combined IAS/EAS defect is associated with symptoms of anal incontinence and decreased anal sphincter pressures and length, impaired QoL was only associated with isolated IAS defects. It is therefore important to identify the full extent of injury at delivery in women who sustain OASIS, paying particular attention to the repair of the IAS. This is of extreme importance as it is very difficult to repair IAS as a secondary procedure when women present with fecal incontinence.

References

- 1: Am J Obstet Gynecol (2005) 193; 530-6.
- 2: Am J Obstet Gynaecol (2007) 196; 217.e1-217.e5.
- 3: Dis Colon Rectum (2005) 48; 1055-1061.

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<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes