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OBSTETRIC ANAL SPHINCTER INJURY: RISK FACTORS AND LONG TERM OUTCOME OF REPAIR

Hypothesis / aims of study

1. Identify risk factors for Obstetric Anal Sphincter Injury (OASI) in our study population and in women with significant / persistent symptoms following primary repair, explore the impact on quality of life and sexual function.
2. Investigate the association (if any) between subjective symptoms & objective assessment obtained from endoanal ultrasound and anorectal manometry in women with OASI

Study design, materials and methods

All women who had anal sphincter injuries at delivery in 1999 – 2002 were identified and a data extraction form used to collect information about patient characteristics, pregnancy, delivery, and follow-up. There were 75 women in this group and majority of the tears (85%) were repaired by overlap technique while 15% had end-to-end repair. The same demographic details were collected for all women who delivered vaginally (without sphincter injury), over the same four-year period to act as the control group for evaluation of risk factors. There were 13,360 women in this group. From one year post repair, all 75 women with anal sphincter injury were invited to participate in the study. This involved filling a questionnaire with symptoms and Quality of Life (QOL) scorings (validated from a previous pilot study), followed by anal endosonography and manometric studies. Ethical committee approval was obtained for the study. 50 women agreed to participate in the study. Descriptive statistics was used to analyse incidence and severity of symptoms. Univariate analysis was carried out for possible risk factors and also to examine the relationship between incontinence symptoms, ultrasonic and manometric findings. Odds ratio, relative risk estimates with 95% confidence intervals and *p* values are presented.

Results

a. *Risk Factors*

During the period studied, a total of 13,435 women delivered vaginally, with 75 women sustaining a third degree tear, giving an incidence rate of 0.56%. Univariate analysis showed that the risk of anal sphincter injury was increased by primiparity (Odds Ratio OR 2.5); instrumental vaginal delivery – forceps (OR 3.4), ventouse (OR 2.5); episiotomy (OR 3.4); birth weight 3.5-4kg (OR 2.0), >4kg (OR 2.8); epidural analgesia (OR 1.6). Duration of active pushing in second stage of labour did not significantly alter the odds of sustaining a third-degree tear (OR 0.9).

b. *Study patients n = 50*

50 (66%) women responded, filled the questionnaire and underwent anorectal function tests. 18 (35%) women were continent (or Parks grade 1) while 32 (65%) women were symptomatic. Of the 32 symptomatic women, 16 (50%) had flatus incontinence (Grade 2), 8 (25%) had incontinence to liquids (Grade 3), and 8 (25%) incontinence to solids (Grade 4). All symptomatic women scored low on their quality of life questionnaire with an average score of 2 on a scale of 1 to 5. There was significant sexual dysfunction in symptomatic women.

Endoanal scan: Most of the women with demonstrable sphincter defects were symptomatic (10/13 or 77%), while one-third (33%) of asymptomatic women had sphincter defects (Relative Risk 2.0).

Manometry: Table 1 shows statistically significant differences in the Maximum Voluntary Contraction (MVC) and rectal sensitivity (urge) measurements between continent and incontinent women (*p* values 0.04 and 0.02 respectively), but no significant differences in Maximum Resting Pressure (MRP)and Maximum Tolerated Volume (MTV).

Continent *n=18*		Incontinent women *n = 32*			
	Grade 1	Grade 2	Grade 3	Grade 4	*p value*
MRP *mmHg*	36 (18-55.5)	52 (26.7-61.5)	32 (25-45)	34 (18.7-38)	0.48
MVC *mmHg*	82 (44.5-107)	112 (73-126)	52 (38-69)	53 (34-72.5)	0.04
MTV *cc*	96 (35-105)	60 (28.7-80)	26.5 (20.7-45)	32.5 (22.5-46)	0.17
Urge *cc*	35 (11-45)	32.5 (18.7-53.7)	8.5 (5-21.7)	10 (6.25-25)	0.02

Table1. Values given are median and (Interquartile ranges). Multiple comparisons were done using Kruskal–Wallis analysis.

Interpretation of results

At the initial 6 weeks follow-up which all the women with OASI had, only 10% expressed symptoms, compared with 65% who were later found to be symptomatic during the study with poor QOL and sexual functions. Most predictive risk factors for OASI are primiparity, forceps delivery, birth weight, and episiotomy. There was a two-fold increase in risk of a woman having incontinent symptoms in the presence of sphincter defects. There were more obvious differences in the MVC and urge measurements of continent and incontinent women.

Concluding message

The overall failure rate for 1^0 repair is still >50% with half of the cases having a significant degree of incontinence (Grades 2 and 3). Majority of these women had low QOL scoring / sexual dysfunction. There was good correlation between symptoms, defects on ultrasound, and manometric findings emphasizing the use of these investigations in managing women with OASI, including advice about subsequent deliveries.