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Obstetric anal sphincter injuries (Oasis): A prospective observational longitudinal study

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Abstract
Objective: Intrauterine growth restriction (IUGR), a condition in which the foetal growth is restricted pathologically in utero, remains a serious health problem. The main aim of this study was to evaluate the effect of L-Arginine administration on the fetal outcome in pregnancies complicated by intra uterine growth restriction.
Methods: This randomized control study was undertaken in the Department of Obstetrics and Gynaecology at Government Kilpauk Medical College and Hospital, Chennai from March 2017 to August 2017. The study included 60 randomly chosen pregnant women diagnosed with intrauterine growth restriction (IUGR). 30 women received 3 g of L-Arginine daily as a supplement to standard therapy (case group) and 30 women received only routine therapy (control group). The ultrasound and clinical examination were done on the first day of hospitalization and then every week in both the groups.
Results: In the group treated with L-Arginine, we observed higher Estimated fetal weight after 4 weeks of treatment (p <0.05), higher birth weight at delivery (p < 0.05), and APGAR score at 5 minutes (p < 0.05) compared to control group. There were no significant differences in IUGR (at entry and at delivery) between two groups. We also observed that there was an improvement in the liquor status of the group treated with L-Arginine (p<0.05).
Conclusion: Our study demonstrated that L-Arginine administration to pregnant women with IUGR may improve fetal condition and neonatal outcome after delivery by prolonging pregnancy and delivering a child with higher birth weight, better APGAR score and decrease the rate of cesarean sections. However, these benefits require confirmation by larger, more-powered study.

Keywords: IUGR, L-Arginine, neonatal outcome, oligohydramnios

Introduction

Perineal trauma is adverse sequel of vaginal delivery. About 85% of women who have a vaginal birth sustain some form of perineal trauma [1]. This can be either in form of intentional perineal incision (i.e.) episiotomy or unintentional perineal injury. However the incidence depends on difference in obstetric practice including rate of episiotomy which is different in various countries as well as various hospitals in same country also. In Netherland, England, USA and in East European countries rate of episiotomy is 8%, 14%, 50% and 99% respectively [2-4].
The morbidity associated with perineal injury and its repair is a major health problem. In healthy women, anal sphincter tear at vaginal delivery is the most common precursor of fecal incontinence and may also be a marker for the development of subsequent pelvic dysfunction [5-8]. Incidence of 3rd and 4th degree perineal tear are indicator of quality of care in many countries like UK, USA, Finland etc. and the organization for Economic Co-operation and Development routinely reports this indicator [9-10].
The purpose of the present study is to assess incidence and various known risk factors associated with anal sphincter injuries during vaginal delivery and symptomatic outcome of its primary repair.

AIMS & Objective

The aim of this study is to determine incidence and risk factors of obstetric anal sphincter injuries during vaginal delivery and symptomatic outcome of primary repair.
The objectives:

- To determine the incidence of OASIS in KMC, Chennai
- To study the risk factors for obstetric anal sphincter injuries(OASIS) and to determine the

significance of association
- To assess the symptomatic outcome of primary repair by subjective questionnaire regarding anal incontinence

Material and Methods

Study site
Department of obstetrics and gynecology Government Kilpauk Medical College

Study population
The study population comprised of antenatal patients delivering at KMC hospital, Chennai.

Study design
Prospective observational longitudinal study

Time frame to address the study
The study period is from July 2014 to May 2016

Criteria for selection of patient
Inclusion criteria
All patients who delivered vaginally with 3rd and 4th degree perineal tear

Exclusion criteria
- All patients who delivered by caesarean section
- Patient with only 1st and 2nd degree perineal tear
- Patient with non-cephalic presentation
- Multiple pregnancy
- Patient who delivered pre term (<37 weeks) (baby's birth weight will be less)
- Patient with previous anal sphincter injury
- Patient with repaired or unrepaired rectovaginal fistula

Source of data
The source of data is the patients attending the obstetrics and gynecology department in KMC hospital, Chennai, which is tertiary referral hospital. The study is conducted over a period of two years from July 2014 to May 2016 after obtaining ethical and scientific committee clearance and obtaining informed consent from patients.

Methodology
All vaginal deliveries with OASIS are taken into study according to inclusion criteria and analyzed by taking factors into account:

Statistical analysis
The data were analysis using SPSS (Statistical Package for Social Science) Ver 16.01. The data collected were scored and analyzed, Continues variables were presented as means with Standard deviation (sd) and categorical variables were presented as frequency and percentages. Chi-square test was used to compare proportions. All the Statistical results were considered significant at P value ≤ 0.05.

Observation and Results
Total 40 patients diagnosed to have OASIS over a period of 2 year. The following observations made in present study.

Table 1: patient's mean age and OASIS

Age group	Number	Percentage
≤ 25 Years	8	20.00
26 – 30 Years	26	65.00
31 – 35 Years	6	15.00
Total	40	100
Minim	23	
Max	35	
Mean	27.73	
Standard Deviation (sd)	2.77	

Table 1 shows the mean age of patient having OASIS is 27.73 years.

Table 2: Age and type of Perineal Tear

Age group (in years)	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
≤ 25	5	16.67	2	33.33	0	0.00	1	50.00	8	20.00
26 – 30	21	70.00	4	66.67	0	0.00	1	50.00	26	65.00
31 – 35	4	13.33	0	0	2	100	0	0.00	6	15.00
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	14.38									
p-value	0.03									
Significant	Significant									

Table 2 shows percentage of patients in age groups, <25, 26-30, 32-35 are 20%, 65% and 15% respectively

Table 3: Gravida with Type of Perineal Tear

Gravida	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
PRIMI	25	83.33	4	66.67	0	0.00	2	100	31	77.50
MULTI	5	16.67	2	33.33	2	100	0	0.00	9	22.50
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	8.46									
p-value	0.04									
Significant	Significant									

Table 3 shows 77.50% patients who had oasis were primigravida whereas 22.50% patients were multigravida and there is significant association between gravida and perineal tear

Table 4: Gestational Age with Type of Perineal Tear

Gestational Age	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
< 40 Weeks	17	56.67	3	50.00	1	50.00	1	50.00	22	55.00
≥ 40 Weeks	13	43.33	3	50.00	1	50.00	1	50.00	18	45.00
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	0.14									
p-value	0.99									
Significant	Not Significant									

Table 4 shows 55% and 45% of the patient were < 40 weeks and ≥40 weeks respectively of the period of gestational age.

Table 5: Birth weight with Type of Perineal Tear

Birth Weight	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
< 3.5 Kg	19	63.33	3	50.00	0	0	0	0.00	22	55.00
≥ 3.5 Kg	11	36.67	3	50.00	2	100	2	100	18	45.00
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	5.79									
p-value	0.12									
Significant	Not Significant									

Table 5 shows 22 patients (55%) and 18 patients (45%) have their babies birth weight <3.5 kg and ≥3.5 kg respectively.

Chart No. 4 Birth Weight with Type of Perineal Tear

Table 6: Occipito Posterior Postion with Type of Perineal Tear

Occipito Posterior Position	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
YES	6	20.00	2	33.33	2	100	2	100	12	30.00
NO	24	80.00	4	66.67	0	0.00	0	0.00	28	70.00
Total	30	100	6	100	2	100	2	100	40	100
Chi square	10.80									
p-value	0.01									
Significant	Significant									

Table 6 shows 30% patient with perineal tear had persistent occipito posterior position and 70% patient did not have persistence occipito posterior position.

Table 7: Duration of 1st Stage with Type of Perineal tear

Duration of 1st Stage	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
5 – 7	1	3.33	0	0.00	0	0.00	0	0.00	1	2.50
7 – 9	10	33.33	2	33.33	0	0.00	0	0.00	12	30.00
9 – 11	10	33.33	3	50.00	1	50.00	0	0.00	14	35.00
11 – 13	6	20.00	1	16.67	0	0.00	2	100	9	22.50
13 – 15	3	10.00	0	0.00	1	50.00	0	0.00	4	10.00
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	12.87									
p-value	0.38									
Significant	Not Significant									

Table 7 shows 2.50%, 30%, 35%, 22.50%, 10.00% patients have duration of 1st stage of labour 5-7, 7-9, 9-11, 11-13, 13-15 hours respectively which is statistically not significant.

Table 8: Duration of 2nd Stage with Type of Perineal Tear

Duration of 2nd Stage	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
< 30 Mints	1	33.33	0	0.00	0	0.00	0	0.00	1	2.50
45 – 59 Mints	1	33.00	0	0.00	0	0.00	1	50.00	2	5.00
60 – 74 Mints	15	50.00	2	33.33	0	0.00	0	0.00	17	42.50
75 – 89 Mints	9	30.00	3	50.00	0	0.00	1	50.00	13	32.50
≥90 Mints	4	13.33	1	16.67	2	100	0	0.00	7	17.50
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	21.11									
p-value	0.05									
Significant	Significant									

Table 8 shows 1, 2, 17, 13 and 7 patients have duration of 2nd stage of labour <30 mins, 45 -59 mins, 60 – 74 mins, 75 – 89 mins and ≥90 mins respectively which is statistically significant.

Table 9: Forceps with Perineal Tear

Forceps	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
Normal Vaginal Delivery	26	86.67	4	66.67	0	0.00	1	50.00	31	77.50
Forceps Delivery	4	13.33	2	33.33	2	100	1	50.00	9	22.50
Total	30	100	6	100	2	100	2	100	40	100
Chi square	9.00									
p-value	0.02									
Significant	Significant									

Table 9 shows 77.50% and 22.50% patient with perineal tear were delivered by normal vaginal delivery and forceps delivery respectively and there is significant association between forceps delivery and perineal tear.

Table 10: Mode of Delivery at KMC Hospital

Mode of Delivery	Number (N)	Percentage (%)
Normal Vaginal Delivery	5599	95.8%
Forceps Delivery	241	4.1%
Total	5840	100%

Table 10 shows at KMC hospital, out of 5840 patients, 5599 patients (95.8%) delivered normal vaginally and 241 patients (4.1%) by forceps.

Table 11: Mode of Delivery and Incidence of Tears

Mode of Delivery	Total Number (N)	No of Tears	Incidence Rate
Normal Vaginal Delivery	5599	31	0.5%
Forceps Delivery	241	9	3.73%
Total			

Table 11 shows incidence of perineal tear in normal vaginal delivery, and forceps delivery has 0.5% and 3.73% respectively.

Table 12: Shoulder Dystocia with Perineal tear

Shoulder Dystocia	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
Yes	2	6.67	2	33.33	2	100	0	0.00	6	15.00
No	28	93.33	4	66.67	0	0.00	2	100	34	85.00
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	14.92									
p-value	0.002									
Significant	Significant									

Table 12 shows those who have perineal tear, 15% patients had shoulder dystocia whereas 85% patient did not have shoulder dystocia.

Table 13: Out Come (Anal Incontineuce) with Perineal Tear

Out Come	Type of Perineal Tear								Total	
	3A		3B		3C		4			
	N	%	N	%	N	%	N	%	N	%
NO	30	100	6	100	0	0.00	2	100	38	95.00
GAS	0	0.00	0	0.00	2	100	0	0	2	5.00
TOTAL	30	100	6	100	2	100	2	100	40	100
Chi square	40.00									
p-value	0.0001									
Significant	Significant									

Out of 40 patients at 1st month postpartum follow up 2 (5.25%) patients had complaint of flatus incontinence and 1 (2.63%) patients had liquid incontinence and none of the patient had solid incontinence.

Chart NO. 8 out come with type of perineal tear with anal incontinence (One = no incontinence, Two = flatus incontinence, Three = liquid incontinence)

At 3 month postpartum follow up, 2 (2.5%) patients had flatus incontinence and 38 patients were asymptomatic.

Discussion

Summary

This is prospective observation study conducted in KMC hospital, Kilpauk, Chennai. The aim of this study is to determine incidence and risk factors of obstetric anal sphincter injuries during vaginal delivery and symptomatic outcome of primary repair. 40 patients with obstetrics anal sphincter injury are included in this study

The following observations are made in the study

1. Incidence of patient with obstetric anal sphincter injury is0.67%.
2. Mean age of patient with OASIS is 27.73 years and more number of patients are in age group 26 to 30 year.
3. Primigravida are more (77.5%) compared to multigravida (22.5%) which is statistically significant.
4. Patients with perineal tear are almost equally distributed(22 vs 18) between <40 weeks and ≥40 weeks
5. Patients are almost equally distributed (22 vs 18) between <3.5 kg and ≥3.5 kg
6. 12 patients had occipitoposterior position and 28 patients had occipitoanterior position.
7. Longer duration of 1sr stage of labour is not significantly associated with perineal tear.
8. Longer duration of 2nd stage of labour is significantly associated with perineal tear.
9. In our study all patient got mediolateral episiotomy (angle of episiotomy was not able to controlled between 30 to 60 degree to midline)
10. Forceps delivery has highest chances of perineal tear (3.73%), compared to normal vaginal delivery (0.5%).
11. In current study, 6 patients (13.16%) had shoulder dystocia while delivery and all 6 patients were managed by MacRobert's maneuver.
12. In present study after primary repair of OASIS at 1 month follow up only 5.25% patients had flatus incontinence and only 2.63% patient had liquid incontinence and at 3 month postpartum follow up 97. 74% patients were asymptomatic and only 2.63% patient had flatus incontinence.

Conclusion

This study concluded that incidence of OASIS in KMC hospital, Chennai is 0.67%. We found primigravida, prolonged 2nd stage of labour and instrumental delivery (axis traction forceps) are significantly associated with OASIS. Correct identification of perineal layers and its proper repair gives encouraging results in terms of anal incontinence.

Recommendations

1. Episiotomy angle should be decided possibly with marker pan during delivery before perineum distends at angle between 40 to 60 degree to prevent post-delivery medialisation of episiotomy angle
2. Studies on large number of patients with long term follow up are require and preferably to be assessed objectively with endoanal sonography if feasible
3. There should be a dedicated perineal clinics who deals with various perineal problems
4. We should pay attention to provide perineal support during the delivery of head and shoulder which could be protective for perineal tear
5. Training of midwife and resident doctors in proper identification and repair of OASIS is very important to prevent long term consequences of OASIS
6. Regular audit on OASIS to be conducted

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