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To Evaluate the Effect of Parity and Mode of Delivery on Pelvic floor in long term -By trans Labial USG.

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Introduction

Pelvic floor is a complex structure that supports pelvic organs and provide resting tone and voluntary control of urethra and anal sphincters. Pelvic floor dysfunction (PDF) refers to a spectrum of functional disorders caused by the impairment of the ligaments ,fasciae and muscles that support the pelvic organs .pelvic organs prolapse involves the descent pelvic structures , including the cervix , uterus and vaginal walls .prevalence of prolapse is generally lower (3 to 6%) if the definition is based on symptoms compared to examination findings(41 to50%).symptoms do not always correlate with anatomic severity .clinical manifestation of female pelvic floor dysfunction (FPFD) include stress urinary incontinence ,pelvic organ prolapse ,over active bladder syndrome and faecal incontinence .

Risk factors for FPFD are childbirth, pregnancy chronic constipation, low oestrogen levels, pelvic surgeries, perineal injuries other causes of pelvic floor structure relaxation.[1-4.] Among all of this pregnancy and deliveries are most common factors, which are highly related to POP and SUI[5&6]

POP and SUI severely affect the quality of affected women life. levator ani muscle avulsion during delivery or due any trauma is strongly associated with pelvic organ prolapse[7] levator ani muscle avulsion act as an independent and most common risk factor for persistent post-partum voiding dysfunction[8.] most of the symptoms of UI is either fully cured or improved after prolapse surgery. after surgery anal dysfunction and sexual function is also improved.

Early diagnosis, preventive measures and intervention of pelvic floor disorders are important. With revolutionary change in ultrasonographic technology, trans labial ultrasound and three dimensional (3D) trans labial ultra sound have become the main means of diagnosis of FPFD.in trans labial ultra sonography uterus .bladder , urethra ,rectum and anal canal can clearly visualised .in real time imaging we can assess the dynamic appraisal of the pelvic organs and pelvic floor in rest , contraction and Valsalva manoeuvre[9-11] .evaluation of pelvic floor is done clinically .2D ,3D and 4 D imaging emerged as valuable and objective method in urogynaecological, allowing the assessment of pelvic floor anatomy and its function and dysfunction. Ultrasonographic imaging provide immediate confirmation of clinical findings and this fills the some of the limitations of the clinical examination.

In most cases of FPFD neither aetiology nor pathophysiology is well understood. trans labial ultrasonography has great potential to explore the anatomy and changes that occur in pelvic floor and its organs during pregnancy and after delivery. Trans labial

ultrasonography is very use full in determining residual urinary volume, detrusor wall thickness, bladder neck mobility, and assessing pelvic organ prolapse and function of levator ani muscle.

Ultrasonography is a safe, inexpensive easily available and provide high quality information of organ scanned. Ultrasonography of pelvic floor pickup pelvic floor structural and functional abnormality early, before patient complaint of them.

In this study we will study the anatomical and functional changes that occur after delivery in pelvic floor and its organs like uterus, bladder, urethra, rectum and anal canal by trans labial ultrasound.

Objective

1-. To evaluate the anatomical and functional changes in female pelvic floor after childbirth.

2 -effect of parity on pelvic floor changes.

3- effect of mode of delivery on pelvic floor changes.

Women selected for study had no complaint related to pelvic floor defects.

Study Design

This is a cross sectional observational study.

Material ad method

All the women selected for study from patients who attended gynae OPD in Sparsh hospital, Nasrapur tirwa road Kannauj between 1 Jan 2023 to 31 August 2023, for any other gynaecological problem. Women selected for study had no complaint related to pelvic floor defect. Women selected had last delivery at least 2 years back.

Study was approved by hospital research ethic committee. All patient well informed and consent taken for trans labial USG examination.

Inclusion criteria

-Women included between 18 to 35 years

-Up to 3 parity women were included

-No other pelvic operation or spinal operation

-No other complains of chronic cough, constipation or any other medical disorder.

-No any uterine operation other than LSCS.

-No pelvic mass

-No history of any hormonal intake.

Control group-

-Non pregnant patients who attended gynae OPD for any other gynaecological problem

-Age between 18 to 35 years

-No h/o any hormonal intake

-No complain of POP and SUI

Average age of patient – 32 yrs study group

Average BMI 25

Average age 32 yrs Control group

BMI 26.4

Machine

GE VOLUSON 8P USG machine was used for scanning of patients. volume probe was used, frequency, with 2D and 3D scanning function and pelvic floor mode.

Patient emptied bladder 10 min before the scanning (urine 20 to 30 ml during scanning).

Scanning was done by a clinician of 22 yrs. of experience in USG scanning in Obstetrics and Gynaecology ultrasonography.

Patient lie down in lithotomy position with legs flexed and abducted, heels close to the buttock as much as possible. volume probe is covered by transparent disposable cover, USG jelly is applied on the probe. probe is placed vertically gently over the vulva, slightly splitting the labia minora. this shows the mid sagittal view of pelvis. this view clearly shows from anterior to posterior urethra with bladder neck, vagina, cervix, rectum and anal canal.

Measurement done in rest, contraction and Valsalva manoeuvre. For effective Valsalva manoeuvre, patient hold the breath for 15 to 20 seconds. during this

manoeuvre we see that all the pelvic organs move toward the imaginary line between the posteroinferior surface of pubic symphysis to anorectal angle. all the organs move to caudal side and area of hiatus is enlarged.

In effective pelvic floor contraction, patient is asked to effectively contract the anus and vagina upward and forward.

Measurement done in 2D, during rest, contraction and Valsalva manoeuvre are.

1- Distance between posteroinferior surface of pubis symphysis and anorectal angle.
2- Distance between bladder neck and imaginary line between posterior inferior surface of pubis symphysis and Ano rectal angle.
3- Bladder neck decent
4- Bladder neck mobility

Measurement done in 3D during rest, contraction and Valsalva manoeuvre

1-distance between urethra and lateral midpoint of levator ani muscle, right and left side.

2-distance between urethra and post fourchette

3-Thickness of levator ani muscle

4-Hiatus area

This is a cross sectional observational study.

145 patients recruited for study, after taking informed consent.

25 patients in para 1 FTND group, 25 patients in para1, LSCS group, 25 patients in para 2 FTND,25 in PARA 2 LSCS,10 in para3FTND ,10 in para 3 LSCS and 25 in nulliparous group.

Statistical method used for analysis.

Qualitative data has been presented as frequency and percentages. Quantitative data first checked for normality in distribution through Shapiro Wilk and visual inspection of q-p plot. If normally distributed, quantitative data has presented as mean and standard deviation.to compare normally distributed quantitative variables across 2 categories, independent t test has been used .to look for association between 2 qualitative variables, chi square test has been used. if in contingency table in any cell value is less then 5, Fisher Exact test has been used instead of chi square test.

Results

Table 1: Description of overall para 1 FTND group

	Levator ani thickness in rest	Levator ani thickness in contraction	Levator ani thickness in Valsalva	Hiatus area in rest	Hiatus area in contraction	Hiatus area in Valsalva
N	25	25	25	25	25	25
Mean	1.03	1.04	0.871	17.6	16.3	22.4
Standard deviation	0.105	0.124	0.0631	2.04	2.36	3.79

Levator ani thickness and hiatus area at rest, showing in table 2.

Comparison of para 1 FTND with standard findings using with one sample t test

Table 2: One sample T Test

		Statistic	df	p
Levator ani thickness at rest	Student's t	17.1	24.0	<.001

Thickness of levator ani muscle is increased after 1st FTND in rest in comparison to nulliparous women. muscle thickness is increased after one normal vaginal delivery, which is significant on rest p value is <.001.

Comparison of hiatus area in rest, contraction and Valsalva in para 1 FTND with standard finding of nulliparous patients, showing in table 3

Table 3

		Statistic	df	p
Hiatus area in rest	Student's t	8.89	24.0	<.001
Hiatus area in contraction	Student's t	10.2	24.0	<.001
Hiatus area in Valsalva	Student's t	5.09	24.0	<.001

Hiatus area on rest, contraction and Valsalva is significantly changed after first FTND, when compared to parameters of nulliparous patients. area increased on rest p value is <.001, on contraction is decreased and Valsalva area is increased and p value is <.001, which is significant. hiatus area after one normal delivery is changed in rest, contraction and Valsalva. this shows that first FTND delivery definitely causes permanent anatomical and functional changes in pelvic floor muscle, which remain in long term.

80 % pts had injuries in levator ani muscle after first FTND which led to develop pelvic floor defect in any form in future after first FTND.

Descriptive statistic of levator ani thickness of para 1 LSCS patients (both patients included with trial or without trial) showing in table 4.

Table 4

	Levator ani thickness in rest	Levator ani thickness in contraction	Levator ani thickness in Valsalva
N	25	25	25
Mean	1.03	1.09	0.870
Median	1.02	1.06	0.870
Standard deviation	0.124	0.129	0.103
Maximum	0.780	0.850	0.680
minimum	1.20	1.30	1.09

Descriptive analysis of hiatal area in para 1 LSCS patients

	Hiatus at rest	Hiatus in contraction	Hiatus in Valsalva
N	25	25	25
Mean	16.6	15.9	20.6
Median	16	15.7	20
Standard deviation	3.16	2.98	4.22
Minimum	13	12	15
Maximum	27	23.4	32

Statistical comparison of hiatal area in para 1 LSCS with standard findings of nulliparous women, showing in table 5, by using one sample T test

Table 5

		Statistic	df	p
Hiatus in rest	Student's t	4.18	24.0	<.001
Hiatus in contraction	Student's t	7.31	24.0	<.001
Hiatus in Valsalva	Student's t	2.46	24.0	<.001

Hiatal area is significantly changed after first delivery by LSCS. hiatal area is increased in rest and Valsalva and decreased in contraction which is significant p value is <.001 for each of them as showing in table 5.

This shows that first delivery either by FTND or LSCS causes significant changes in hiatal parameters permanently.

Table 6: Showing statistical analysis of levator ani thickness in rest.

		Statistic	df	p
Levator ani thickness in rest	Student's t	14.5	24.0	<.001

Levator ani thickness is increased after first LSCS which is significant, p value is <.001.

64 % patients who had LSCS after prolonged trial of delivery had pelvic floor injuries in comparison to 36%patients who had LSCS without any trial for normal delivery .this shows that Direct LSCS does not exclude the chances of injuries after delivery , this may be due to that pressure caused by weight of baby on pelvic floor muscles and stretching of neurovascular bundle and dissolution of collagen of ligaments of pelvis and uterine support occur in pregnancy which is maximum in 3 rd trimester .

Table 7: Descriptive statistical analysis of para 1 FTND and para2 FTND patients.

	category	Hiatus area in rest	Hiatus in contraction	Hiatus in Valsalva
N	Para 2 Para1	25 25	25 25	25 25
Mean	Para2	18.8	17.1	26.4
Mean	Para1	17.6	16.3	22.4
Median	Para2	18.0	16.7	28.0
Median	Para1	17.3	16.0	22.4
Standard deviation	Para2 Para1	2.69 2.04	2.34 2.36	4.06 3.79
Minimum	Para2	14.3	13.0	18.0
	Para1	13.2	13.0	15.6
Maximum	Para2	26.9	24	32.0
	Para 1	23.1	24.6	30.6

Table 8: Statistical comparison of hiatal parameters between para1 versus para 2 FTND by independent sample T test.

		Statistic c	df	p
Hiatus in rest	Student's t	1.76	48.0	0.085
Hiatus in contraction	Student's t	1.17	48.0	0.249
Hiatus in Valsalva	Student's t	3.61	48.0	<.001

Changes in hiatal area in rest and contraction are not statistically different in para 1 and para2 FTND pts. change in hiatal area in Valsalva is significant between para 1 and para 2 FTND patients, p value is <. 001.this shows that after second FTND hiatal area is increased in rest as compared to para 1 patients, but this is not statistically significant. area in contraction also decreased in para 2 FTND as compared to para1, but this is not statistically significant. After second FTND levator ani

muscle become more lax, due to more damage of muscle fibers and stretching of neurovascular structures which don't heal with time. that's why changes in hiatal area are statistically significant as compared to para 1 FTND.

Statistical comparison of levator ani muscle thickness in para 1 versus para 2 patients showing in table 9, by independent sample T-test

Table 9

		statistic	df	p
Thickness in rest	Student's t	1.96	48.0	0.055
In contraction	Student's t	5.421	48.0	<.001
In Valsalva	Student's t	-0.390	48.0	0.698

Changes in thickness of levator ani muscle is significant in contraction. p value is <.001.

Table 10: Showing statistical comparison of injuries between para 1 versus para 2 FTND cases by chi square test.

category		Injuries No	Injuries Yes	total
Para2	Observed % with in row	4 16%	21 84%	25 100%
Para 1	Observed %with in row	5 20%	20 80%	25 100%
Total	Observed % with in row	9 18%	41 82%	50 100%

X^2 tests

	Values	df	p
X^2	0.136	1	0.713
N	50		

After second FTND there is no statistically significant increase in injuries as compared to para 1 FTND patients.

Descriptive analysis of para 2 LSCS cases.

Table 11: Showing descriptive analysis of hiatus parameters.

	Hiatus in rest	Hiatus in contraction	Hiatus in Valsalva
N	25	25	25
Mean	15.6	14	17.5
Median	16	14	17
Standard Deviation	1.97	1.49	2.53
Minimum	12.5	12	14.2
Maximum	19.2	17	23

Table 12: Sowing descriptive analysis of levator ani muscle.

	Levator ani thickness in rest	Levator ani in contraction	Levator ani thickness in Valsalva
N	25	25	25
Mean	0.981	1.09	0.904
Median	1.0	1.10	0.980
Standard deviation	0.103	0.130	0.115
Minimum	0.790	0.880	0.670
Maximum	1.20	1.30	1.10

Table 13: Showing comparison between hiatus findings in para 2 LSCS versus para 1 LSCS patients

		Statistic	df	p
Hiatus in rest	Weltch's t	-1.46	40.2	0.15
Hiatus in contraction	Weltch's t	-2.79	35.3	.008
Hiatus in Valsalva	Weltch's t	-3.08	39.3	0.004

In para 2 patients' Hiatal area in contraction is decreased more in compared to para 1 LSCS patients. Which is statistically significant. hiatal area during Valsalva is increased in para 2 LSCS patients I comparison to para 1LSCS patients. Which is statistically significant, p value is <. 004.after second LSCS delivery levator ani muscle become laxer due to continuous pressure on pelvic floor and stretching of neurovascular structures by weight of foetus in third trimester causes damage to these structures. this increases the tensile strength of muscle, which is not recovered fully after delivery.

Table 14: Showing comparison between levator ani findings in para 2 LSCS versus para 1 LSCS.

Levator ani thickness		Statistic	df	p
Rest	Student t	-1.53	48	0.133
Contraction	Student t	6.72	48	<.001
Valsalva	Student t	-4.79	48	<.001

Lavator ani muscle thickness is decreased in Valsalva and increased in contraction in para 2 LSCS patients as compared to para 1 LSCS patients. and this difference is significant p value is <. 001 this is due to increased laxicity of muscle .in rest also thickness of muscle is decreased but this is not significant statistically.

Table 15: Showing comparison of para 2 LSCS with standard findings.

		statistic	df	p
Levator ani muscle thickness in rest	Student's t	15.1	24.0	<0.001

Thickness of levator ani muscle after 2 LSCS is increased. this is statistically significant <.001.

Comparison of injuries between para 1 and para2 LSCS patients

Table 16 : X^2 tests

	Value	df	p
X^2	2.88	1	0.089
N	50		

Difference in Incidence of injuries in both group is not statistically significant. there is no increase in injuries after second birth by LSCS.

Table 17: Showing statistical test to compare hiatus findings in para 3 LSCS and para 2 LSCS patients by independent sample T- test

		statistic	df	p
Hiatus in rest	Welch's t	0.293	22.6	0.772
Hiatus in contraction	Welch's t	0.882	23.1	0.38
Hiatus in Valsalva	Welch's t	-1.908	32.8	0.06

There is no significant difference in hiatus parameters in para 3 LSCS and para 2 LSCS group. This shows that with increasing parity there is no statistically significant difference in hiatal area in patients with LSCS. changes only occur till second LSCS delivery which is significant statistically.

Table 18: Showing statistical comparison of lavator ani findings in para3 and para 2LSCS patients by independent samples T test

		statistic	df	p
Levator ani thickness in rest	Welch's t	0.169	27.4	0.867
Levator ani in contraction	Welch's t	-0.387	31.7	0.702
Levator ani in Valsalva	Welch's t	0.820	25.8	0.420

There is no statistically significant difference in levator ani muscle in para 3 versus para 2 LSCS group.

Table 20: Showing comparison of injuries in para 2 and para 3 LSCS patients.

X^2tests

	Value	p
Fisher's exact test		1.00
N	35	

No significant difference in pelvic floor defects in both the groups. This shows that with increase in parity in LSCS group patients there is no significant statistical change in incidence of pelvic floor defects.

Table 19: Showing comparison of thickness of levator ani muscle in rest para 3 LSCS with standard findings by one sample test

		Statistic	df	p
Levator ani thickness rest	Student's t	15.6	9.0	<.001

Thickness of lavator ani muscle is decreased after 3 LSCS which is statistically significant p value is <.001.

Table 20: Showing comparison of hiatus area between para3 LSCS with standard finding

		Statistic	df	p
Hiatus in rest	Student's t	3.01	9.0	.015
Hiatus in contraction	Student's t	6.18	9.0	<.001
Hiatus in Valsalva	Student's t	-14.4	9.0	<.001

Hiatus area in Valsalva is increased as compared to standard findings. which is significant, p value is <.001. hiatus area in contraction is decreased as compared to standard patients. which is significantly significant <.001 is p value. hiatal area in rest is also increased in para 3 LSCS patients, value is .015 which is not statistically significant.

Table 21: Showing descriptive analysis of para 2 FTND versus para 3 FTND patients.

	category	Hiatus in rest	In contraction	In Valsalva
N	Para2 Para3	25 10	25 10	25 10
mean	Para2 Para3	18.8 23.3	17.1 19.4	26.4 26.3
Median	Para 2 Para3	18 23.5	16.7 21.5	28 26.5
Standard deviation	Para2 Para3	2.69 3.33	2.34 6.48	4.06 2.77
minimum	Para2 Para3	14.3 18.8	13 2.49	18 20
Maximum	Para2 Para3	26.9 27.7	24.0 24.0	32 30

Table 22: Showing independent sample T -test

Levator ani muscle thickness		statistic	df	p
In rest	Student's t	3.070	33.0	.004
In contraction	Student's t	0.208	33.0	0.837
In Valsalva	Student's t	0.776	33.0	0.443

Levator ani thickness is decreased in rest in para 3 patients as compared to para 2 FTND patients, which is significant. This means with increase in parity thickness of levator muscle is decreased due to permanent damage of muscle, which is healed by fibrosis. This led to increased hiatal area even in rest, muscle remain displaced more laterally in normal rest position.

With increased parity in FTND group patient's levator ani muscle thickness is decreased.

Table 23: Showing independent t test for hiatal area

Hiatus area		statistic	df	p
In rest	Welch's t	3.7744	13.96	.002
In contraction	Welch's t	1.1084	9.96	0.294
In Valsalva	Welch's t	.0787	24.37	0.938

Hiatus area in rest is increased in para 3 FTND patients as compared to para 2 FTND patients.

Which is significant, p value is 0. 002.this is also due to permanent changes occur in pelvic floor muscle and increased laxicity of muscle. Muscle remain more lateral position in rest.

Table 24: Showing comparison of injuries in para 3 and para 2 FTND patients.

Category		0	1	total
Para2	Observed %with in row	4 16%	21 84%	25 100%
Para3 %with row	Observed	0 0.0%	10 100%	10 100%
Total	Observed % within row	4 11.4%	31 88.6%	35 100%

X^2 tests

	Value	df	p
X^2	1.81	1	0.179%
Fisher's exact test			0.303%
N	35		

There are no significant changes in incidence of pelvic floor defects with increase in parity in FTND group. maximum injuries occur after first FTND, after that permanent changes occur in pelvic floor anatomically and functionally. laxity of muscle is also increased, which help easy vaginal delivery in subsequent pregnancies.

Effect of mode of delivery-

Table 25: Showing comparison of hiatal area between para 1 FTND and para 1 LSCS (with trial andwith out trial both patients included) by independent sample T test

Hital area		Statistic	df	p
In rest	Student's t	-1.631	47	0.110
In contraction	Student's t	-1.324	47	0.192
In Valsalva	Student's t	-0.669	47	0.507

This shows that there is no statistically significant difference in changes in hiatal area in different phases in both groups. in LSCS group both types of patients are included patient who had direct LSCS and patient who had LSCS after trial for normal delivery. sometime LSCS in obstructed labour.

Table 26: Showing comparison of injuries in para 1 FTND and para 1 LSCS patients

X^2tests

	Value	df	p
X^2	1.38	1	0.240
N	49		

There is no statistically difference in injuries between 2 group. This may also be due to the inclusion of both types of patients in LSCS group.

Comparison of injuries between para 1FTND versus para1 LSCS (who had LSCS without trial)

Table 27

category		No	Yes	Total
FTND	Observed %within row	5 20%	20 80%	25 100%
LSCS	Observed %within	9 100%	0 0.0%	9 100%

	row			
Total	Observed %within row	14 41.2%	20 58.8%	34 100%

X^2 tests

	Value	p
Fisher's exact test		<0.001
N	34	

80%of patient after first FTND had pelvic floor injuries manifested in later life either ant compartment or posterior compartment defects. patient who had first delivery by LSCS without having any trial for vaginal delivery had less damage to pelvic floor. Only damaged caused by increased pressure on pelvic floor by weight of baby and stretching of neurovascular structures is present in these patients. Hiatal area at rest and Valsalva is increased in these LSCS patients, p value is 0.031 and <0.001 respectively, which is statistically significant .

Table 28: Showing Comparison of changes in hiatal area between para 2 FTND and para 2 LSCS

Hiatus area		Statistic	df	p
In rest	Student's t	4.90	48.0	<0.001
In contraction	Student's t	5.57	48.0	<0.001
In Valsalva	Welch's t	9.26	48.0	<0.001

There is significant statistical difference in hiatal area between para 2 FTND and para 2 LSCS patients.

Hiatal area is more in rest and Valsalva in par a2 FTND patients then para 2 LSCS patients.

On contraction area is less in FTND Group then in para 2 LSCS. this shows that mode of delivery has definite role in damage of pelvic floor muscle, FTND causes more damage to pelvic floor muscle and neurovascular structures. Some injuries do not heal with time.

Table 29: Comparison of injuries in para 2 FTND and para 2 LSCS group

	Value	df	p
X^2	10.3	1	0.001
N	50		

Injuries are more in para 2 FTND group then in para 2 LSCS group.

Comparison between para 3 FTND and para3 LSCS in hiatal area in rest, contraction and Valsalva by independent sample T test , showing in table 30

Table 30

Hiatus area		Statistic	df	p
rest	Welch's t	6.89	12.2	<.001
Contraction	Welch's t	2.81	9.50	<.001
Valsalva	Welch's t	8.31	10.89	<.001

Area of hiatus is increased in rest and Valsalva in para 3 FTND in comparison to PARA 3 LSCS. area in contraction is also decreased in in para 3 FTND in comparison to PARA 3 LSCS. these differences are significant P value is <.001 for all of them.

Table 31: Showing incidences in injuries in Para 3 FTND and para 3 LSCS.

category		No	Yes	No
FTND	Observed %with in row	0 0.0%	10 100%	10 100%
LSCS	Observed %with in row	6 60%	4 40%	10 100%
TOTAL	Observed %with in row	6 30%	14 70%	20 100%

X^2test

	Value	p
Fisher's exact test		.0011
N	20	

Incidences of injuries are more in para 3 FTND patients in comparison to para 3 LSCS patients. which is significant.

This shows that mode of delivery has definite role in injuries of pelvic floor.

Table 32: Showing comparison of injuries in all patients in FTND group and all patients in LSCS group

Category		No	Yes	Total
FTND	Observed %with in row	9 15%	51 81%	60 100%
LSCS	Observed %with in row	28 54%	23 45.1%	51 100%
Total	Observed % with in rows	37 33.3%	74 66.7%	111 100%

X^2test

	Value	df	p
X^2	19.8	1	<.001
N	111		

This result shows that overall prevalence of pelvic floor injuries is more in FTND group in comparison to LSCS group. This shows that mode of delivery has definite role in pelvic floor injuries in long term.

Discussion

In our study we chosen the patients in 18 to 35 yrs age group. as the dysfunction of pelvic floor increases in peri and the post-menopausal group. This eliminates the pelvic floor dysfunction related with increased age. high BMI patients also had more pelvic floor dysfunction due to increased pressure. in our study BMI of patients is not high, so pelvic floor problem related to high BMI is also eliminated [22-23].in our study BMI of all patients are almost similar.

Levator ani muscle gain its contractility up until 1 year after birth[12-14].so we chosen the patients who had their last delivery at least 2 years back.

Defects of pelvic floor has not been comprehensively investigated by 3 D volume ultrasound. Studies done previously had more focus on urethra and para urethral tissues. With help of trans labial USG whole levator hiatus and surrounding muscle (pubococcygeus and puborectalis) can be visualised as a highly echogenic structure. But it is difficult to distinguish different parts of muscle separately observation of muscle during contraction and Valsalva increases the detection of injuries of levator ani complex. on USG of patients after first FTND symmetry of muscle is not seen as compared to nulliparous females. this is also observed in our study. this supports the hypothesis that many abnormalities of levator ani muscle occur after first vaginal delivery. Bladder neck mobility is also increased after first vaginal delivery as compared to nulliparous patient. changes in morphology of muscle is more in FTND patients then LSCS patients. bladder neck mobility is also increased more in FTND patients then LSCS patients. Appearance of muscle not correlate with function of muscle; a bulky muscle may not contract well.

Hiatal area measurements are highly reproducible with trans labial USG, hiatal area strongly give the indication for pelvic organ prolapse.in our studies patient who had increased hiatal area, had more anterior and posterior compartments defects.

During pregnancy uterus increases in size continuously and its shape and position also become longitudinal with increase in gestational age. in third trimester uterus is vertical and exert maximum pressure on pelvic floor and supporting ligaments of uterus. dissolution of collagen of ligaments occur in pregnancy, ligaments become loose. if the pelvic floor structure and function fail to be repaired in time after delivery, a series of pelvic floor dysfunction diseases may happen, such as genital prolapse, faecal incontinence and urinary incontinence.

Result of our study shows that second delivery either by FTND or by LSCS do not much influence the structure and function of the pelvic floor. But second delivery by FTND contribute to increase in hiatal area. trauma occur during first delivery is the major contributor for pelvic floor impairment morphological and functionally[15-17]. changes in pelvic floor occur till second delivery as shown in result of our study, after that subsequent deliveries do not contribute much. This is the vaginal mode of first delivery which contribute more for pelvic floor dysfunction. During vaginal delivery there may be more compression and stretching of the neural, muscular and connective structures, contributing to morphological and functional changes of pelvic floor after vaginal delivery[18-19]. Mechanical force applied on levator ani muscle during vaginal delivery, this force is maximum in first vaginal delivery that causes maximum trauma to levator ani muscle especially in the puborectalis muscle[20-21].

Our study shows that as the numbers of delivery increased area of hiatus increased, although patient don't complaint of any type of prolapse, only some women complain of heaviness in lower part of abdomen and vagina. on trans labial USG examination some patients had anterior or posterior compartment prolapse on Valsalva. This shows that we can pick up early these patients by trans labial USG before clinical manifestation of problem.

Conclusion

By this study is clear that first FTND causes maximum damage to pelvic floor. Changes in pelvic floor occur till second parity in vaginal group patients after that pelvic floor become lax and subsequent deliveries do not cause much changes in pelvic floor anatomically and functionally.

According to this study vaginal delivery group patients had more changes in pelvic floor muscles and more no of injuries in comparison to LSCS group. mode of delivery has definite role in pelvic floor damage and prevalence of injuries in long term.

Patient who has first LSCS delivery without trial for normal delivery, had not much damage to pelvic floor and ant and posterior compartments defects are also very less in these patients in comparison to patient with first FTND. trial for normal delivery has definite role in pelvic floor defects. this factor has to be evaluated further studies with large sample size.

With continuous improvement of people's living standards and increase in general awareness in women for their health, women in their reproductive age group give more attention to pregnancy. all women are not aware of pelvic floor dysfunction caused by pregnancy and childbirth. this is proved by many studies that first delivery especially FTND causes maximum trauma to pelvic floor. This can be well explained to women during their antenatal visits. they should be motivated to get done trans labial USG after 1 year of delivery to know the health of their pelvic floor. changes present in pelvic floor can easily be demonstrated during USG examination to them so that they can take appropriate mode of therapy according to their problem with in time. this will reduce the prevalence of pelvic floor defects cases in elderly women. quality of life will be better in advance aged women .so trans labial USG is easily available, less expensive, easy to perform and well accepted among women should be offer to each woman after delivery.

limitation of study

this is a single centre study. Sample size is small.to validate the findings of this study more studies with large sample size is required. Finding of para 1 FTND should

compare with para 1 LSCS without trial, to know the exact difference between to 2 group.

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