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Original Research Article

Pelvic organ prolapse quantification system: to valsalva or not to valsalva while measuring genital hiatus (GH) and perineal body (PB)

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ABSTRACT

Background: It is a study to determine whether or not, the widening of GH and PB with valsalva is evidence of pelvic floor dysfunction, and by the logic should the values in POPQ staging, be taken at valsalva or at rest.

Methods: Prospective 2 arm cohort study. However, the analysis of various risk factors for prolapse was done in a case control study manner.

Results: As compared to women without prolapse, in patients with POP, the dimensions of GH and PB are higher. Also, the increase in their dimensions with valsalva is more in prolapse cases. So valsalving while measurement of GH and PB would give a better idea of pelvic floor dysfunction.

Conclusions: The study shows association between the severity of urinary problems and degree of prolapse. Measurements of POPQ when taken during valsalva, tend to give a better picture of levator dysfunction in prolapse patients.

Keywords: Calibrated swab stick, Genital hiatus, Pelvic organ prolapse quantification, Perineal body, Quality of life

INTRODUCTION

It is significant that Pelvic organ prolapse and its associated disorders, although were never life threatening, continued to have a major impact on QOL. Even though there were different systems proposed for its staging, none has proved itself to respond to all the requirements of the medical community, so the vast majority were short lived, failing to become the single most useful system for POP staging. POPQ is currently the most quantitative and site specific system of staging and has received the recognition of TNM system in oncology.¹ The original description of POPQ doesn't specify as to whether GH and PB measurements should be done in resting or during straining position. Hence methodology adopted by various practitioners vary.² Visco et al observed significant increase in GH and PB during

valsalva, but it's not clear this is a normal phenomenon or an evidence of pelvic floor dysfunction.²

Reviewing the literature, the major risk factors associated with prolapse are unassisted vaginal delivery and increasing parity.^{3,4} Decrease in sexual hormones after menopause, straining (constipation, chronic cough, occupational physical stress or obesity) associated with increased intra-abdominal pressure is also shown by various studies to be strong risk factors.⁵⁻¹⁵

As shown by a study, hiatal ballooning can be predicted by GH and PB measurements, with their sum (GH+PB>7) being a stronger predictor than individual measurements.¹⁶

This study aims to support the idea of measuring hiatal diameters while valsalva. It further aims to determine

strength of association of POP with various epidemiologic risk factors and aggravation of symptoms of urinary urge and incontinence with degree of prolapse

METHODS

The study was carried out in the department of Obstetrics and Gynecology, SCB Medical College and Hospital, Cuttack for a period of 24 months (October 2012 to October 2014). Methods and conditions for POPQ staging, as standardized by ICS and American Urogynaecologic society and was followed in the study. The study received clearance from the institutional ethics committee. History regarding various life events as a possible risk factor for prolapse was recorded.

Current symptoms of urgency and incontinence was also asked. POPQ staging was done. All measurements were taken in the patients at rest in dorsal lithotomy position,

with the help of POPSTICK. SUI demonstrated. The measurements of POPQ were taken in 50 patients with \geq stage 2 prolapse and in 50 other controls without prolapse. The same was repeated while straining. Increase in GH, PB and their sum was compared in both the groups

RESULTS

Table 1 presents the age distribution of subjects along with the Chi square test of association. The Chi square test revealed that the age distribution among cases and controls is more or less the same.

In Table 2 when the subjects were further divided into 2 groups 18-39 yrs and \geq 40yrs, and studied for the association with prolapse, it was found that there is a strong association of prolapse with the older age group (P value = 0.000).

Table 1: Age distribution of subjects by case and control.

Age group	Case		Control		Total		χ^2 , 'p'
	No.	%	No.	%	No.	%	
18-29	4	8.0	10	20	14	14	4.429, p=0.109
30-59	24	48.0	26	52	50	50	
\geq 60	22	44.0	14	28	36	36	
Total	50	100	50	100	100	100	

Table 2: Age distribution of subjects by case and control.

Age group	Case		Control		Total		χ^2 , 'p'
	No.	%	No.	%	No.	%	
18-29	8	16	25	50	33	33	13.071, p=0.000
30-59	42	84	25	50	67	67	
Total	50	100	50	100	100	100	

Odds ratio for group (Case/Control): Value 0.19 95% CI Lower: 0.075, Upper: 0.486,
Risk Estimate: for cohort age group=18-39 value 0.32, for cohort age group = \geq 40 value 1.68

Table 3: Parity distribution of subjects by case and control.

Parity	Case		Control		Total		χ^2 , 'p'
	No.	%	No.	%	No.	%	
0-2	14	28	35	70	49	49	17.647, 0.000
3-5	36	72	15	30	51	51	
Total	50	100	50	100	100	100	

Odds ratio for group (Case/Control): Value 0.167, 95% CI Lower: 0.70, Upper: 0.396,
Risk Estimate: For cohort parity group = 0 - 2 Value 0.400, For cohort parity group = 3 - 5 Value 2.400

Table 4: Distribution of subjects by menopause by case and control.

Menopause	Case		Control		Total		χ^2 , 'p'
	No.	%	No.	%	No.	%	
Yes	30	60	14	28	44	44	10.390, p=0.001
No	20	40	36	72	56	56	
Total	50	100	50	100	100	100	

Odds ratio for group (Case/Control): Value 3.857, 95% CI Lower : 1.67, Upper = 8.911,
Risk Estimate: For cohort Menopause = Yes Value 2.143, For cohort Menopause = No Value 0.556

Table 5: Distribution of subjects by cough and constipation by case and control.

Cough and constipation	Case		Control		Total		$\chi^2, 'p'$
	No.	%	No.	%	No.	%	
Yes	26	52	15	28	41	41	5.022, p=0.025
No	24	58	35	72	59	59	
Total	50	100	50	100	100	100	

Odds ratio for group (Case/Control): Value 2.528, 95% CI Lower : 1.112, Upper = 5.744,

Risk Estimate: For cohort cough and Constipation = Yes Value 1.733, For cohort cough and Constipation= No Value 0.686

Table 6: Distribution of subjects by urinary symptoms by case and control.

Urinary symptoms	Case		Control		Total		$\chi^2, 'p'$
	No.	%	No.	%	No.	%	
Present	30	60	21	42	51	51	3.241, p=0.072
Absent	20	40	29	58	49	49	
Total	50	100	50	100	100	100	

Odds ratio for group (Case/Control): Value 2.071, 95% CI Lower : 0.933, Upper = 4.597,

Risk Estimate: for cohort urinary symptoms= Present Value 1.429, for cohort urinary symptoms= Absent 0.690

Table 3 shows a positive association of higher parity levels and therefore vaginal birth with prolapse (P value 0.0004).

Table 4, study revealed 60% of the patients with prolapse were post menopausal, while figure was only 28% for the controls, thus pointing out the statistically significant association of menopause with that of prolapse (P value = 0.001).

Table 5 revealed that 52% of the prolapse patients had a history of chronic cough or constipation, while only 28%

of the controls reported it, thus a significant association (P value of 0.025).

In Table 6, both manifested and occult by SUI test showed significant association of prolapse with it (P = 0.000).

Table 7 comparing GH and PB at rest in cases and controls, the independent sample t test computed P value of 0.000. Also, the mean increase of GH and PB with valsalva in cases, as compared to the resting state when compared to the corresponding increase in controls was found to be statistically significant (P=0.000).

Table 7: Comparison of GH and PB at rest and strain in cases and controls.

	Group	N	Mean	Std. Deviation	Std. Error
GH without valsalva	Case	50	3.56	0.41	0.06
	Control	50	3.13	0.51	0.07
Increase in GH with valsalva	Case	50	2.76	0.91	0.13
	Control	50	1.16	0.91	0.13
PB without valsalva	Case	50	2.07	0.49	0.07
	Control	50	1.74	0.35	0.05
Increase in PB with valsalva	Case	50	1.12	0.54	0.08
	Control	50	0.52	0.40	0.06
GH+PB without valsalva	Case	50	4.63	0.62	0.09
	Control	50	4.87	0.71	0.10
Increase in GH+PB with valsalva	Case	50	2.40	1.19	0.17
	Control	50	1.68	0.74	0.10

DISCUSSION

This study supports the fact that the incidence of uterovaginal prolapse increases with increasing age. Most

studies examining prolapse or surgery for prolapse have reported the same.^{3,4} Labour aided by premature bearing down and undue physician's traction has a damaging effect on the intricately constructed support system of the pelvis and its nerve supply, leading to prolapse. The

Oxford Family Planning association prolapse epidemiological study, has shown parity to be the strongest risk factor for the development of POP with an adjusted relative risk of 10.85 (4.65-33.81).³ Increased risk of POP with menopause while supported by this study and that by Swift et al, the Progetta menopause study group do not support the view.^{5,6}

This study did not find an association between difficult delivery and prolapse but Samuelsson et al have reported an increased incidence of prolapse with an increase in birth weight which was statically significant.⁴ In tandem with our finding, a study of 21,449 Italian women attending a menopausal clinic reported no significant increase in POP with delivery of babies weighing more than 4500 gms.⁶

This study shows wider GH and PB with valsalva in the cases as compared to the controls. The mean increase in GH and PB with valsalva in patients with POP included in this study was 2.76±0.91 cm and 1.12±0.54 cm respectively. Although there are not many studies on this till date, a study by Anthony G et al reported a mean increase of 0.79±0.78 cm and 0.19±0.43 cm in GH and PB with valsalva in prolapse patients.¹⁷ The results of this study regarding positive association of levator hiatus ballooning with urinary symptoms is in agreement with studies by Azar Khunda et al, where they concluded that the sum of GH and PB measurements obtained during a clinical examination using the ICS POP Q is a strong predictor of symptoms and signs of prolapse.¹⁸

CONCLUSION

- There is more prevalence of POP after 40 years of age. Etiologic association of this problem is found with higher parity
- Menopause also predisposes to POP.
- As compared to women without prolapse, in patients of POP, the dimensions of GH and PB are higher. Also, increase in their values in more with valsalva in patients than controls.
- Measurements of POPQ when taken during valsalva, tend to give a better picture of levator dysfunction in prolapse patients.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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