ORIGINAL RESEARCH

Comparitive Study Of pre and post-operative post void residual urine volume in urogenital prolapse in patients undergoing anterior colporrhaphy with vaginal hysterectomy

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ABSTRACT
Post-void residual volume (PVR) is the urine volume left in bladder at the completion of micturition. It is a key marker for the efficacy of bladder emptying. PVR measurement is essential, particularly in women with the symptoms of pelvic floor dysfunction, including those with lower urinary tract and pelvic organ prolapse symptoms. Patients attending with genitourinary prolapse were explained about the nature of the study and written and informed consent was obtained. Detailed history, general physical examination was done as per predesigned and pretested proforma. 47 patients complained about 'has to reduce prolapse to void' and it was significantly associated with the degree of prolapse. P value was <0.0001. Out of 33 patients with PVR >50 ml, only 1 patient had POPQ stage 2 prolapse, 14 patients had POPQ stage 3 prolapse and 18 patients had POPQ stage 4 prolapse. P value was 0.024.The number of patients with PVR >50 m l had increased with increase in the grade of Baden Walker prolapse, Out of six patients of procedentia, five patients had raised PVR. P value is 0.005.In this study, increasing degree of prolapse by both the classifications has shown a statistically significant relation with Raised PVR.

Key words: Post void residual urine volume, urogenital prolapse, anterior colporrhaphy with vaginal hysterectomy

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INTRODUCTION

Pelvic organ prolapse is the downward displacement of the structures that are normally located adjacent to the vaginal vault. These conditions are commonly affecting a progressively large percentage of women as age advances. Though mortality is negligible, significantly morbidity is associate with prolapse. In areas of high parity and little or no access to health care, countless women suffer from problems associated with pelvic organ prolapse, with no real possibility of resolution. These conditions have a direct effect on urinary, gastrointestinal and sexual functions. And it can only be appreciated by those women burdened and living with these problems on a day today basis.[1]

Treatment ofpelvicorganprolapseandtheassociatedsymptoms constitutes a major subject in gynecology. Providingpermanent relief from this classicalmalady,byrestoringnormalanatomyandmaximumphysiological functions always tests the ingenuity of gynecologists.Prolapse is associated with voiding difficulty, bladder outlet obstruction, occult stress incontinence and lower urinary tract symptoms.[2]

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Urinary symptoms in voiding difficulties arefrequency,stress incontinence, Urge incontinence, incompleteemptying, poorstream,strainingto void.[3]
Post-void residual volume (PVR) is the urine volume left in bladder at the completion of micturition. It is a key marker for the efficacy of bladder emptying. PVR measurement is essential, particularly in women with the symptoms of pelvic floor dysfunction, including those with lower urinary tract and pelvic organ prolapse symptoms.

PVR Measurementtechniquesinclude
1. Trans vaginal ultrasonography.
2. Trans abdominalultrasonography.
3. Bladdercatheterization.

These different techniques might account for the differences in recommended upper limit of normal PVR. Another one key source of the possible variation is the delay in measuring PVR after micturition. [4]
Post-void residual urine volume has been examined for its relationship to voidingdysfunction.ElevatedPVRvalues are associatedwithpoordetrusoruroflowmetry. Musclecontractilityorincreasedurethralresistance,aswellasabnormal Prolapse has a significant positive relationship with high PVR. The proposed mechanism of genital prolapse is the distortion or kinking effect of the prolapse on the urethra to create bladder overflow obstruction. And women with high grade prolapse have increased urethral closure pressure and pressure or transmission ratios that decrease after the prolapseisreduced. Hence there is need for studies which demonstrate that prolapse surgery can reduce or eliminate any elevated PVR.[5,6]

Methodology
Type of study
The present three year study was observationaldescriptive cross sectional study.

Study period
This study was conducted over a period of threeyear in a Tertiary Care Hospital in Karnataka, South India.

Sample size
Present study was conducted on 65 patients withurogenital prolapase.

Sampling procedure
The sample size was calculated based on 80% of the average number of patients attending a Tertiary Care Hospital inKarnataka, South India over three years with urogenital prolapse.

Selection criteria
Inclusion criteria
- All the patients with urogenital prolapse.

Exclusion criteria
- Patients not willing to give informed consent.
- Patients not available for follow up after operation.

Procedure
Patients attending with genitourinary prolapse were explained about the nature of the study and written and informed consent was obtained. Detailed history, general physical examination was done as per predesigned and pretested proforma and they were subjected to;
- Historytakingandfillingofthepreformedquestionnaireforurinary complaints.
- Menstrual and Obstetric history.
- Physical examination which included POP-Q.
- Determination of PVR preoperative and postoperative.
- Urine routine and microscopy.

Results
In this study, sixty five cases of different degrees of genitourinary prolapse were studied. The age of the patients varied from 25 years to 72 years with mean age of 50 years. 45 patients were postmenopausal and the mean menopausal age was 12 years.

Table 1:Demographic features in relation to prolapse

Parameters	Years
Mean age	50.0 ± 14
Mean duration of prolapse	5.0 ± 6.5
Mean duration of menopause	12.0 ± 7.5

Durationofprolapsevariedfrom1yearto30yearsanddegreeof prolapse varied from 2nd degree prolapse to procedentia.

Table 2: Distribution of patients with degrees of prolapse

Degree of prolapse	Number of patients	Percentage
2nd Degree	06	10.83%

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3rd Degree	11	16.92%
4th Degree	48	73.84%

Out of 65 cases, 11 were second degree, 48 were third degree and 6 were procedentia according to Baden Walker system (Graph 1). According to the POP- Q system, there was one patient with stage 1prolapse, nine patients with stage 2 prolapse,28 patientswithstage 3 prolpaseand 27 patientswerewithstage 4prolapse.

Table 3:POP-Q grades of prolapse in relation to PVR

I POP Q Grade	PVR	
	<50 ml	> 50 ml
1	01	00
2	08	01
3	14	14
4	09	18
Total	32	33

47 patients complained about 'has to reduce prolapse to void' and it was significantly associated with the degree of prolapse. P value was <0.0001.

Out of 33 patients with PVR >50 ml, only 1 patient had POPQ stage 2 prolapse, 14 patients had POPQ stage 3 prolapse and 18 patients had POPQ stage 4 prolapse. P value was 0.024.

The number of patients with PVR >50 m l had increased with increase in the grade of Baden Walker prolapse, Out of six patients of procedentia, five patients had raised PVR. P value is 0.005.

In this study, increasing degree of prolapse by both the classifications has shown a statistically significant relation with Raised PVR.

Table 4: Association of age and raised PVR

PVR			Total
Age groups	<50 ml	> 50 ml	
A (25-34)	6	0	6
B (35-44)	8	5	13
c (45-54)	8	8	16
D (55-64)	9	10	19
E (65-74)	1	IO	11
Total	32	33	65

Increasing parity was not associated with an increased PVR, nor with the degree of prolapse. P value was 0.757.

The storage dysfunction symptoms were not associated with the raised PVR. But theemptyingdysfunctionsymptomslike straining to voidandhas to reduce the prolapse to void, have shown significant association with raised PVR. The P values were0.047 and 0.004 respectively.

Table 5: Association of urinary symptoms with raised PVR

Symptoms	Total	PVR		p value
		<50 ml	> 50 ml	
Stress incontinence	17	9	8	0.722
Urge incontinence	28	13	15	0.694
Increased frequency	44	24	20	0.215
Nocturia	42	20	22	0.725
Hesistancy	1 8	9	9	0.939
Straining to voiding	42	18	24	0.047 (s)
Incomplete emptying	46	20.	26	0.165
Poor stream	23	II	12	0.867
Intermittent stream	10	3	7	0.186
Post micturition	13	5	8	0.385
Has to reduce prolapse	47	18	29	0.004 (s)

Sevenpatientshadabnormalurinemicroscopyandonroutineexamination, Out of them, six patients had PVR > 50 ml. But association between UTIandelevatedPVRwasnotstatisticallysignificant.Pvaluewas0.050. Amongfour patients with derangedrenal

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function, threepatientshadPVR > 50ml. P valuewas 0.37 showing no significance.

DISCUSSION

In this study, PVR was used for the determination of voiding dysfunction. Elevated PVR cannot be predicted based on symptoms alone; however, prolapse beyond the hymen may help identify women with incomplete bladder emptying.

The present study supports the lackofassociation between raised PVR and storage disorder symptoms; however the emptying dysfunctionsymptoms like 'straining to void ' and 'has to red use prolapse to void' have shown significant association withraised PVR(p=0.047 and0.004respectively;Table 6).

In study done by Fitzgerald et al., symptoms of voiding difficulty were found significantly related with elevated PVR.7

The poor predictive value of obstructive voiding symptomsin diagnosis of raised PVR was reported by Al -Shahrani M and Lovatsis in 2005. They have shown that the poor relationship between raised PVR and the symptoms of incomplete emptying, poor flow and straining to void.8

The present study shows significant reduction in elevated PVR by anterior colporrhaphywith vaginalhysterectomy($p<0.0001$). This suggests that the anterior colporrhaphy with vaginal hysterectomy is an effective procedure forthe reduction of elevated PVR.

In thestudy donebyStanton et al. also shown thatsymptoms of urge incontinence,stress incontinenceandprolapseweresignificantlyreducedafter anterior colporrhaphy and vaginal hysterectomy. The surgery has improved the urodynamic findings by correcting a large cystocele and cystourethrocele which impede the urinary flow.

It is commonly considered that retention of urine will be associated with an increase in risk of urinary tract infection. Inthisstudy, 11% of patients were diagnosed to have an abnormal urine microscopic examination. But it was not significantly related to elevated PVR or increase in degree of prolapse (p=0.050).

The levels of blood urea and creatinine were evaluated for assessing the renal function. In cases of major degree of prolapse, because of the kinks in the ureter, back pressure would cause hydroureter and hydronephrosis.

In the present study, only 4% of patients had elevatedlevels of bloodurea or serum creatinine. Strengths of this study include its prospective design and use of direct catherization to determine PVR which is the most reliable method.

Although the study assessed the symptoms associated with progression of vaginal descent, it has not measured the level of discomfort and level of patient satisfaction after the surgery.

CONCLUSION

Vaginal hysterectomy with anterior colporrhaphy was found to be an effective procedure for the reduction of raised PVR in prolapse patients. PVR evaluation and detailed history about urinary symptoms is necessary for the preoperative and postoperative care of patient.

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