

Preoperative and Postoperative Postvoid Residual Urine Volume in Urogenital Prolapse: A Comparative Study

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ABSTRACT

Objectives: The objectives of the present study were to compare pre- and postoperative postvoid residual urine (PVR) volume, to know the correlation of PVR to urinary symptoms and prolapse, and also to assess the role of vaginal hysterectomy and anterior colporrhaphy in relieving urinary disturbances.

Materials and methods: The study was done at the Department of Obstetrics and Gynaecology, Adichunchanagiri Institute of Medical Sciences, B.G. Nagara, Mandya, India, from November 2010 to May 2012. In this study, 100 women with pelvic organ prolapse were included. Detailed history was noted, and thorough examination was done. Ultrasound measurements of PVR urine volume was done to all cases preoperatively and on 5th postoperative day. All cases underwent vaginal hysterectomy and anterior colporrhaphy. The PVR urine volume >50 mL was considered significant.

Results: Patients belonged to the age group of 30 to 75 years. Majority were in the age group of 50 to 59 years. Out of 100 cases, 42 had preoperative PVR volume >50 mL and 58 cases <50 mL. Out of 100 cases, 58 had third-degree descent, 21 had second-degree descent, and 21 had procidentia according to Shaw's classification. Urinary symptoms like incomplete emptying (57 cases), straining to void (52 cases), poor stream (34 cases), need to reduce prolapse before voiding (32 cases), hesitancy (25 cases), and intermittent stream (11 cases) were associated with prolapse. Stress incontinence and urge incontinence were present in 28 and 46 cases respectively. Urinary disturbances were associated with majority of the cases who had PVR > 50 mL. Postoperatively, 9 cases had PVR volume > 50 mL. Out of those, 8 cases developed stress urinary incontinence (SUI) during follow-up. One case was lost to follow-up.

Conclusion: Urinary disturbances are more commonly seen in genital organ prolapse. Raised PVR was significantly associated with increased degrees of prolapse as well as urinary disturbances. The SUI increases with increasing PVR volume. Vaginal hysterectomy and anterior colporrhaphy were effective procedures in reducing elevated PVR and urinary disturbances in prolapse patients. There is a need for long-term follow-up for these cases.

Keywords: Pelvic organ prolapse, Postvoid residual urine, Urinary disturbances, Vaginal hysterectomy and anterior colporrhaphy.

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INTRODUCTION

Pelvic floor disorders encompass a wide range of debilitating conditions affecting the middle aged and elderly women. Over the years, there has been a steady growth in demand for services to care for pelvic floor disorders.¹ Prolapse, procidentia, or downward descent of the vagina and uterus is a common disabling condition.

The more common pelvic support disorders include rectocele, enterocele, cystocele, and uterine prolapse, reflecting displacement of the rectum, small bowel, bladder, and uterus respectively, resulting from failure of the endopelvic connective tissue, levator ani muscular support, or both. As prolapse becomes more advanced, it may be associated with elevated postvoid residual urine (PVR) volume, voiding difficulty, recurrent urinary tract infections, symptoms of pelvic pressure, and/or urinary incontinence. Many women with moderate-to-severe genital prolapse have associated stress urinary incontinence (SUI).²

MATERIALS AND METHODS

The present study was done to compare preoperative and postoperative PVR urine volumes in urogenital prolapse patients undergoing anterior colporrhaphy with vaginal hysterectomy, to study the correlation between PVR, urinary symptoms, prolapse, and also to determine the prevalence of urinary disturbances in pelvic organ prolapse. The study was conducted on all women with urogenital prolapse undergoing vaginal hysterectomy and anterior colporrhaphy at Adichunchanagiri Institute of Medical Sciences, B.G. Nagara, Mandya, India.

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In this study, 100 women with pelvic organ prolapse were included from November 2010 to May 2012.

RESULTS

About 61% of the procidentia cases had preoperative PVR > 50 mL followed by third degree (50%) (Table 1). Higher the degree of prolapse, the greater is the PVR volume.

In the current study, all the urinary disturbances were found to be high for the group that had PVR > 50 mL (Table 2).

A total of 90% of increased frequency, 85% of urge incontinence, and 79% of stress incontinence cases were relieved of their complaints postoperatively (Table 3).

About 28 cases had SUI preoperatively, out of them 13 had PVR > 50 mL. Postoperatively, eight cases developed SUI during follow-up and one was lost to follow-up, out of which six had persistence of SUI and two cases developed new onset of SUI (Table 4).

Vaginal hysterectomy with anterior colporrhaphy was very effective in reducing PVR volume. The result is statistically significant as p-value is <0.001 (Table 5).

Out of eight cases, six continued to suffer from SUI in the postoperative period and two cases developed new-onset SUI after surgery. All the cases had postoperative and preoperative PVR > 50 mL; one case was lost to follow-up (Table 6).

Table 1: Correlation between degrees of prolapse and PVR

Degree of prolapse	Preoperative PVR < 50 mL	Preoperative PVR > 50 mL	Total
Second	21	0	21
Third	29	29 (50%)	58
Procidentia	8	13 (61%)	21
Total	58	42	100

Table 3: Distribution of patients having urinary disturbances

Urinary disturbances	Preoperative	Preoperative persistence of complaints (1 case lost to follow-up)	Relieved (%)
Stress incontinence	28	6	79
Urge incontinence	46	7	85
Increased frequency	73	8	90

Table 5: Comparison of preoperative and postoperative PVR volume

	PVR < 50 mL	PVR > 50 mL	Total
Preoperative	58	42	100
Postoperative	91	9	100

p-value is <0.001

DISCUSSION

Out of 100 cases, 42 had preoperative PVR volume >50 mL and 58 cases <50 mL. Incidence of increased frequency was highest among the cases followed by urge incontinence and stress incontinence consecutively. As the grades of prolapsed increase, the PVR volume and urinary incontinence increase.³ The majority of urinary disturbances got relieved postoperatively. Patients who had persistence of the symptoms cannot be neglected. All cases with pelvic organ prolapse should be evaluated for PVR volume.

Our study also shows that the prevalence of SUI after prolapse repair was 21.5% (6/28 cases). Two (2/8) cases had *de novo* SUI following surgery. Total SUI was demonstrated before surgery in 28/100 (28%) cases. So, 22/28 (78.5%) of those cases are corrected just by vaginal hysterectomy and anterior colporrhaphy without any anti-incontinence surgery, where anterior colporrhaphy might work as anti-incontinence surgery.⁴ However, 21.5% of the patients had persistence of SUI postoperatively. All patients with postoperative persistence or new-onset SUI had PVR > 50 mL, suggesting that patients with increased PVR > 50 mL may have occult SUI. Those cases with PVR volume >50 mL can be managed in two ways. First is by adding an incontinence surgery along with vaginal hysterectomy and anterior colporrhaphy. It may not be required in many of the cases

Table 2: Correlation between urinary disturbances and PVR

Urinary disturbances	Preoperative PVR < 50 mL	Preoperative PVR > 50 mL	Total
Hesitancy	10	15 (60%)	25
Straining to void	30	32 (61%)	62
Incomplete emptying	26	31 (54%)	57
Poor stream	19	15 (44%)	34
Intermittent stream	3	8 (72%)	11
Need to reduce to void	19	13 (40%)	32

Table 4: Comparison of preoperative and postoperative PVR volume and SUI

	PVR < 50 mL	PVR > 50 mL	Total
Preoperative SUI	15	13	28
Postoperative persistence of SUI	0	6 (1 case lost to follow-up)	6
New onset of SUI postoperatively	0	2	2

Table 6: Persistent and newly developed SUI during follow-up

Persistence of SUI postoperatively	6
New onset of SUI	2
Total cases of SUI postoperatively	8
Lost to follow-up	1
Total cases postoperative PVR > 50 mL	9 (1 case lost to follow-up)
Preoperative PVR was >50 mL for all cases	

and also is not cost-effective. However, addition of an anti-incontinence surgery in higher grades of prolapse may help in reduction of persistence of symptoms.⁵ Second is by doing a two-step procedure, i.e., vaginal hysterectomy and anterior colporrhaphy in first sitting, and later, if patient develops SUI postoperatively any anti-incontinence surgery can be performed. Disadvantage is increased morbidity because of the two procedures. If we are able to identify exactly those cases that can develop postoperative SUI by any test, it will be of great advantage, so that two surgeries can be performed simultaneously, thereby reducing the morbidity from two procedures and also avoiding unnecessary anti-incontinence surgery to many of the cases. Hence, as pre-operative Bonney's test might not be adequate to detect all cases of SUI, we require a still better test to identify occult SUI, which can further reduce postoperative SUI.

CONCLUSION

Urinary disturbances are more commonly associated with genital organ prolapse. As the grade of cystocele increases, the PVR volume increases and also SUI. Voiding symptoms have poor sensitivity and specificity for elevated PVR.

Patients with PVR volume >50 mL are prone to have postoperative SUI. These patients can be managed in two ways. First is by adding an anti-incontinence surgery along with vaginal hysterectomy and anterior colporrhaphy. Second is by doing a two-step procedure, i.e., vaginal hysterectomy and anterior colporrhaphy in first

sitting; later, if patient develops SUI postoperatively, any anti-incontinence surgery can be performed. Vaginal hysterectomy and anterior colporrhaphy alone can reduce PVR volume significantly and relieve SUI in most of the cases. But, addition of any anti-incontinence surgery in higher degrees of prolapse with raised PVR volume may further decrease postoperative persistence of SUI or *de novo* SUI. There is a need for a still better test, which should be able to identify exactly those cases that can develop postoperative SUI, so that both surgeries can be performed simultaneously, thereby reducing the morbidity from two procedures and also avoiding unnecessary anti-incontinence surgery to many of the cases.

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