

ROLE OF ANTERIOR COLPORRHAPHY IN PVR URINE VOLUME AND STRESS URINARY INCONTINENCE

DR NISHTHA HANDA , DR KAMNA DATTA , DR NEHA PRUTHI

Introduction

Post-void residue (PVR) urine is a key marker for the efficacy of emptying of bladder.¹ The proposed *mechanism is the distortion or kinking effect of the prolapse on the urethra to cause bladder outlet obstruction.*

Stress Urinary incontinence (SUI) occurs in prolapse when urethral support is weekend and bladder and urethra prolapse through weekend anterior vaginal wall.

Patients with greater degree of prolapse (hence higher PVR volume) do not have symptoms of SUI with full prolapse due to obstructive kinking of the urethra , which is revealed when prolapse is reduced. It is called **occult stress urinary incontinence (OSUI)**. Whenever these cases are operated for pelvic organ prolapse (POP) , post operatively they may develop **denovo** SUI. Hence there is a necessity to identify these cases to prevent frustrating development of postoperative de novo SUI. It can be done by continence testing performed with the prolapse reduced.⁴ Being a subjective assessment and a technique dependent method, a more objective parameter is to asses PVR volume preoperatively in all prolapse patients. High PVR volume is associated with OSUI and therefore **PVR measurement can act as a surrogate marker for OSUI in these patients.**

These cases can be managed by two ways:

•First is by adding an incontinence surgery along with vaginal hysterectomy and anterior colporrhaphy. With this, known side effects and risks of anti incontinence operation (including bladder perforation, hematoma, voiding dysfunction / urinary retention, vaginal erosion) must be taken into account.

•Second is by doing two step procedure ; that is vaginal hysterectomy and anterior colporrhaphy in first sitting. An anti incontinence procedure might not be required if patient has no post operative SUI.

The purposes of this study were to identify risk factors for elevated PVR and to evaluate the rate of resolution of elevated PVR in patients undergoing vaginal hysterectomy with anterior colporrhaphy for POP. Also, this study aims to find risk factors of SUI and OSUI in patients of prolapse and SUI correction with anterior colporrhaphy .

Methods

•prospective observational study

•ABVIMS and RML Hospital Delhi, INDIA

•SAMPLE SIZE: 50 patients

Inclusion criteria :

All patients undergoing vaginal hysterectomy with anterior colporrhaphy for POP with cystocele.

Exclusion criteria :

- Women with no cystocele,
- history of previous pelvic surgeries,
- associated bladder injuries, structural bladder abnormalities and
- urge incontinence

Parameters assessed pre op :

- the degree of prolapse (POPQ staging),
- grades of cystocele
- SUI associated complications.
- Ultrasound measurements of PVR

Post-operative:

- PVR assessment
- SUI assessment on post operative day 6 and 3 months post surgery.

Result

1	POPQ staging	Pre-operative PVR (mL)	
		<50 mL(n=22)	>=50 mL (n=28)
	2(n=7)	7 (100%)	0 (0%)
	3(n=19)	8 (42.11%)	11 (57.89%)
	4(n=24)	7 (29.17%)	17 (70.83%)
	P value	0.003	
	Degree of cystocele	<50 mL(n=22)	>=50 mL(n=28)
	1 ° (n=10)	10 (100%)	0 (0%)
	2 ° (n=27)	11 (40.74%)	16 (59.26%)
	3 ° (n=13)	1 (7.69%)	12 (92.31%)
	P value	<.0001	

POPQ staging is significantly associated with pre-operative PVR, 70 .83% of elevated pre-operative PVR cases seen with POPQ stage 4.

Degree of cystocele is significantly associated with pre-operative PVR with 92% patients with elevated pre-operative PVR with grade 3 cystocele.

2 Association of pre op SUI and OSUI with POPQ staging

Pre-operative SUI was not significantly associated with degree of prolapse.

Although OSUI more commonly seen in patients with higher degrees of prolapse this relationship is not found significant due to small sample size.

POPQ staging	Pre op SUI		Total
	Absent (n=39)	Present(n=11)	
2(n=7)	5 (71.43%)	2 (28.57%)	7 (100%)
3(n=19)	15 (78.95%)	4 (21.05%)	19 (100%)
4(n=24)	19 (79.17%)	5 (20.83%)	24 (100%)
P value	0.902		
POPQ staging	Pre op OSUI		Total
	Absent(n=44)	Present(n=6)	
2(n=7)	7 (100.00%)	0 (0.00%)	7 (100.00%)
3(n=19)	18 (94.74%)	1 (5.26%)	19 (100.00%)
4(n=24)	19 (79.17%)	5 (20.83%)	24 (100.00%)
P value	0.273		

3 Table 4:-Association of pre op PVR(mL) with pre op SUI and pre op OSUI

Pre op PVR(mL)	OSUI absent(n=44)	OSUI present(n=6)
<50 mL	22 (50%)	0 (0%)
>=50 mL	22 (50%)	6 (100%)
P value	0.028	
Pre op SUI	Pre op PVR	
	<50 mL	>=50 mL
SUI absent(n=39)	18 (46.15%)	21 (53.85%)
SUI present(n=11)	4 (36.36%)	7 (63.64%)
P value	0.734	

In this study , 6 patients with pre op OSUI, 100% had significant pre op PVR. This association was found significant i.e., increased PVR is associated with OSUI.

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Table 5 :-Comparison of PVR(mL) SUI and OSUI between pre-operative and post-operative.

PVR(mL)	Pre-operative(n=50)	Post-operative(n=50)		P value
<50 mL	22 (44%)	50 (100%)		<.0001
>=50 mL	28 (56%)	0 (0%)		
SUI	Pre-operative(n=50)	Post-operative(n=50)		P value
		At day 6	At 3 months	
SUI	10 (20%)	0 (0%)	0 (0%)	<.0001
Occult SUI	6 (12%)	0 (0%)	0 (0%)	

In this study anterior colporrhaphy significantly reduces elevated PVR. Vaginal hysterectomy with anterior colporrhaphy significantly reduced post op persistent SUI or de novo OSUI.

Discussion

- **In our study , degree of prolapse and cystocele was significantly associated with pre-operative PVR** i.e. larger cystoceles had higher pre-operative PVR. Similar results were seen by KV Aravinda et al in his study also found that higher degree of cystocele was associated with elevated pre-operative PVR.²
- **In our study pre-operative SUI was not associated with stage of prolapse** . A study done by Richardson DA et al also states that greater degrees of anterior vaginal wall prolapse (Stage III and IV) had no correlation with symptoms of genuine stress incontinence.³
- **Richardson DA in his study found that OSUI was found to be more prevalent in women with greater degree of prolapse.** Proposed theory that greater degrees of prolapse with kinking of urethra causes incomplete voiding hence PVR will be increased .Similar results were seen by Reddy NS et al .
- **Although in our study also , OSUI more commonly seen in patients with higher degrees of prolapse**, in our study this relationship is not found significant due to small sample size.³

- **This study shows that amongst the patients with pre-operative OSUI, 100% had significant pre-operative PVR.** i.e pre operative PVR can identify patients with OSUI being more at risk of developing post op de novo SUL. This is comparable to the results of K. Jundt et al⁴ who concluded 55.8% and Gallentine et al⁵ who reported about 66% of women with OSUI to have elevated PVR.
- **In this study anterior colporrhaphy significantly reduces elevated PVR.** Ulrich A et al; also showed that the all women undergoing surgery for POP had postoperative resolution of elevated PVR by surgical correction of prolapse with cystocele repair.⁶ Similar findings were confirmed by a study done by Saravanan N et al⁷. Pre-operative elevated PVR resolved post operatively in 91%, which was highly significant.
- **In our study anterior colporrhaphy significantly corrected pre-operative SUI. Hence the prolapse repair (Vaginal Hysterectomy and Anterior Colporrhaphy) might work as an anti-incontinence surgery.** Bergman⁸ and co-authors also showed a immediate success rate of 90% and 5-year success rate of 37% using the anterior colporrhaphy in the relief of stress incontinence. No such study was found in Indian context.

Conclusion

- 1.All cases of Pelvic organ prolapse should be evaluated pre operatively to identify increased PVR volume , SUI and OSUI.
- 2.OSUI is usually seen in patients with advanced prolapse and cystocele and thus associated with increased PVR.
- 3.Pre-operative assessment of PVR volume is better measure of pre-operative OSUI than traditional tests. Pre op PVR can be used as a simplistic measure to identify exactly those cases which can develop postoperative SUI.
- 4.Anterior colporrhaphy can not only reduce PVR volume significantly in most of the cases but also alleviate SUI in most patients. Those cases who are having PVR volume >50 mL and SUI can be managed by vaginal hysterectomy and anterior colporrhaphy.
- 5.Limitations of this study is that: Patient group is small.

References

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