



## Preservation of Vaginal Length by Vertical vs Horizontal Vault Closure Technique after Vaginal Hystrectomy

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### Abstract

**Objective:** To compare vaginal length preservation between vertical and horizontal vault closure technique after vaginal hystrectomy.

**Methods:** Randomized prospective Study was conducted at two private hospitals in Kashmir valley. 46 women who attended gynecology clinic between Jan 2016 to Jan 2021 with POPQ grade 1 prolapse were randomized into two groups according to vaginal vault closure technique (horizontal 23 vs vertical 23).

**Results:** Vaginal length measured pre-operatively between horizontal and vertical group was similar with mean  $\pm$ SD (7.6 $\pm$ 0.82) and 7.79 $\pm$ 0.80). Immediate postoperative vaginal length was significantly short in horizontal group as compared to vertical closure group with mean $\pm$ SD (6.4 $\pm$ 0.88) and 7.31 $\pm$ 0.72). Mean difference in vaginal length between two groups before and after surgery was 1.2(0.12) centimeters (horizontal) and 0.4(0.11) centimeters vertical group.  $P < .001$

**Conclusion:** vertical vaginal vault closure preserves vaginal length as compared to horizontal vault closure.

**Keywords:** vault closure, vaginal hystrectomy, vaginal length, vertical, horizontal.

### Introduction

Vaginal route for removal of uterus is preferred option for benign hystrectomy as blood loss is minimum with short hospital stay<sup>1,2</sup>. whenever possible vaginal route should be the first choice for hystrectomy, however irrespective of route chosen for hystrectomy there is some degree of vaginal shortening as hystrectomy always involves some length of vaginal wall excision along with cervix<sup>3</sup>. Many studies have been conducted to compare effect of hystrectomy on vaginal length. Two studies by vassalo et al<sup>4</sup>, and Sabri Cavkaytar, et al<sup>5</sup> reported that vaginal length is preserved if we close vaginal vault vertically

rather than horizontally, however another study by cruck shank and pixy found no difference<sup>6</sup>.

Our study compared vaginal length measurements after vaginal hystrectomy by vertical and horizontal vault closure technique.

### Aims and Objectives

To compare vaginal length preservation between vertical and horizontal vaginal vault closure technique after vaginal hystrectomy.

### Material and Methods

Study was conducted at two private hospitals in Kashmir valley, 46 women who attended gynecology clinic at ibn Sina (central Kashmir)

and wani (south Kashmir) hospital between Jan 2016 to Jan 2021 were enrolled in the study. Written and informed consent was obtained from every patient.

All the patients with POPQ stage 1 uterine prolapse who had undergone elective vaginal hysterectomy by single surgeon utilizing same technique for benign gynecological indications were randomized into two groups according to vaginal vault closure technique, group 1 horizontal and group 2 vertical vault closure technique.

As We used to perform elective surgeries on Mondays and Thursdays of a week only therefore all the Vaginal hysterectomies performed on Mondays (23), horizontal vault closure technique was utilized and Vaginal hysterectomies performed on Thursday's vertical vault closure technique was utilized.

Patients were anesthetized, vaginal length measured from each patient using ring forceps was (mean  $\pm$ SD)  $7\pm 1$ cms.

Vaginal hysterectomy was performed incision was made 2cms from cervix using monopolar cautery, standard McCall culdoplasty was performed.

After hysterectomy, uterosacral ligaments were identified and fixed to ipsilateral vaginal vault with size 0 vicryl suture. One patient had small ovarian cyst 3cm on left side, left salpingo-oophorectomy was done. Vaginal vault was closed vertically from side to side in all 23 patients operated on Thursdays of a week and horizontally from anterior to posterior among those operated on mondays, one patient has also undergone TOT

procedure for pure stress urinary incontinence. Vaginal length was measured using ring forceps with patient still under anesthesia in dorsal position. Using weighted speculum, distal end of ring forceps was placed in posterior fornix and speculum was removed, distance between posterior fornix and hymen was measured in centimeters.

Vaginal length was again measured 6 wks after hysterectomy using same method.

### Statistical Analysis

Data was expressed as median and range. Mean (SD) and 95% confidence interval are used to describe normal distribution. Patient characteristics were compared using chi-square analysis and student t- test. Two-sided  $p < 0.005$  was defined for significance. Software used was SPSS 16.0 and MS Excel.

### Results

Distribution of variables like age, parity and BMI was more or less similar between two groups.

Mean Pre-operative vaginal length between horizontal and vertical group was ( $7.6\pm 0.82$ ) and ( $7.79\pm 0.80$ ) cms.

Mean immediate post-operative vaginal length among horizontal and vertical group was ( $6.4\pm 0.88$ ) and ( $7.31\pm 0.72$ ) cms.  $p < 0.001$ .

Mean pre-op. post-operative difference in vaginal length between horizontal and vertical group was ( $1.2\pm 0.12$  and  $0.4\pm 0.11$ ) with  $p < 0.001$ .

Unless otherwise indicated data is given as mean  $\pm$ SD and as median (range)

VARIABLE	Group		P value
	Horizontal (Monday)	Vertical (Thursday)	
Age	54(7.5)	55(7.4)	NS
BMI	25(4.0)	26(4.2)	NS
Parity	3(2-6)	3(1-7)	NS

Operation time	100(70-155)	100(65-150)	NS
Preoperative vaginal length	7.6(0.82)	7.79(0.80)	NS
Postoperative(immediate) vaginal length)	6.4(0.88)	7.31(0.72)	<0.001
AT 6 wks postoperative.	6.3(0.86)	7.28(0.73)	
Difference in vaginal length in cm	1.2(0.12)	0.4(0.11)	<0.001

Data given as mean (SD) or as median (range)

## Discussion

Closing vaginal vault vertically has an advantage over horizontal closure as some length of vagina is preserved. In our study we found that mean difference in vaginal length between horizontal and vertical vault closure technique pre- and post-operatively was 1.2cms vs 0.4cms which was statistically significant.

Similar observations were made in studies conducted by cavkaytar et al<sup>5</sup> and Vassallo et al<sup>4</sup> they found vaginal cuff closure vertically preserves vaginal length as compared to horizontal cuff closure. However, Cruikshank and Pixley et al<sup>5</sup> found closing vaginal cuff vertically or horizontally does not affect vaginal length.

In our study variables like BMI, Age and Parity were similar between two groups. Mean operation time between two groups was also more or less similar. Standard prophylactic McCallsculdoplasty was performed by same surgeon in all the patients. Hence in conclusion vertical vaginal vault closure with McCallsculdoplasty prevents vaginal shortening as compared to horizontal closure.

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