

Study to Investigate the Clinical Outcomes of Manchester-Fothergill's Operation in Patients with Uterine Prolapse Caused by "True Cervical Elongation," Compared with Vaginal Hysterectomy (VH)

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Abstract

Aim: The aim of the present study was to investigate the clinical outcomes of Manchester-Fothergill's operation in patients with uterine prolapse caused by "true cervical elongation," compared with vaginal hysterectomy (VH). **Material & Methods:** The present study was conducted in the Department of Obstetrics and Gynecology, MGIMS, Sewagram, India for the period of three years, and during the study period, 30 patients underwent Manchester-Fothergill's operation and 200 patients underwent VH. After matching with age, parity, and preoperative POP-Q stage, we divided 25 patients each in Manchester-Fothergill's operation and vaginal hysterectomy respectively.

Results: Of the baseline characteristics, BMI, postmenopausal status, and smoking history were not statistically different between Manchester-Fothergill's operation and VH groups after PS matching with age, parity, and preoperative POP-Q stage variables. All subjects included in this study had advanced stages of POP that were preoperative POP-Q stage II, III or IV after matching. After matching, no recurrence of POP was reported in the Manchester-Fothergill's operation group, and one case of POP recurrence was confirmed on pelvic examination in the VH group. No statistically significant difference in the recurrence rates of POP was found between the Manchester-Fothergill's operation and VH groups. The duration of hospital stay and blood loss during surgery was not significantly different between the two groups. No statistically significant difference in postoperative complication rates was found between the Manchester-Fothergill's operation and VH groups. The results from second subgroup analysis of preoperative POP-Q indicated high BMI and not having a concurrent anterior colporrhaphy to be significant risk factors for recurrence of POP within 1 year after surgery. Age and parity failed to attain statistical significance in relation to recurrence of POP.

Conclusion: The Manchester-Fothergill's operation technique seems to be an effective and safe alternative procedure for the treatment of uterine prolapse caused by true cervical elongation, compared with VH.

Keywords: Clinical Outcome, Manchester-Fothergill's Operation, True Cervical Elongation, Uterine Prolapse.

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Introduction

Uterine prolapse is the herniation of the uterus into or beyond the vagina as a result of failure of the ligamentous and fascial supports. It often coexists with prolapse of the vaginal walls, involving the bladder or rectum. [1] Pelvic organ prolapse (POP) represents a common and bothersome condition in parous women. Studies on the subjective symptoms estimate the prevalence between 2.9% and 8.3% while data based on objective gynecological examination estimate the prevalence as high as 50%. [2,3] Effective nonsurgical treatment options for women with POP are available and include pelvic

floor muscle training and pessary, [4,5] but many women choose surgical therapy. [6] Surgical treatment for POP historically has included hysterectomy; up to 13% of all hysterectomies that are performed for POP. [7]

Determination of the best surgical treatment options involves consideration of a patient's values and preferences for uterine preservation vs hysterectomy. [8] For many years, abdominal sacrocolpopexy was considered the gold standard of care. More recently, major concerns about fertility or the rising wish to preserve body integrity have

questioned the need to perform hysterectomy at the time of POP surgery.⁸ The refinements in the operative technique and the introduction of minimally invasive surgery, have also encouraged surgeons to reconsider uterine preservation and implement “saving” uterus techniques. [9]

The Manchester’s operation is an additional fertility-sparing surgical approach to treatment of pelvic organ prolapse associated with cervical elongation which was first performed in 1888 by Dr. Archibald Donald of Manchester, England.¹ A high degree of acceptance or satisfaction and a low morbidity rate of this surgery make it a good option. Although minor complications like infection, hematoma and voiding difficulty have been reported, major complications are postoperative bleeding and cervical stenosis. [10] Since the Manchester-Fothergill’s operation maintains the uterine body, it seems effective in correcting uterine prolapse caused by true cervical elongation. In contrast, the Manchester-Fothergill’s operation is thought to be less effective than VH in patients with uterine body descent. [11]

Hence the aim of this study was to investigate the clinical outcomes of Manchester-Fothergill’s operation in patients with true cervical elongation in comparison to VH by matching the baseline characteristics of the patients.

Material & Methods

The present study was conducted in the Department of Obstetrics and Gynecology, MGIMS, Sewagram, India for the period of three years and during the study period, 30 patients underwent Manchester-Fothergill’s operation and 200 patients underwent VH. After matching with age, parity, and preoperative POP-Q stage, we divided 25 patients each in Manchester-Fothergill’s operation and vaginal hysterectomy respectively.

Inclusion Criteria

Patients who had uterine prolapse (preoperative apical POPQ stage ≥ 2) were eligible for inclusion in this study.

Women with normal Pap smear results and uterine anteroposterior diameters. < 4 cm, confirmed using transvaginal ultrasonography (TVS) before the operation, were included.

Exclusion Criteria

Patients who had undergone supracervical hysterectomy and women with missing medical records on preoperative Pap smear or TVS.

Vaginal hysterectomy for other benign gynaecological indications.

All women who received Manchester-Fothergill’s operation expressed willingness to preserve their

uterus confirmed by medical interview. During the study period, 500 patients underwent Manchester-Fothergill’s operation or VH under spinal anesthesia. Of the 500 patients, those who underwent concurrent suspension surgery, including sacrospinous ligament colposuspension ($n=79$) or non-vaginal surgery, such as abdominal sling ($n=54$), were excluded on the basis of their surgical records. Patients who did not complete the follow-up visit at 1 year after operation were also excluded ($n=19$). Finally, 397 patients were eligible for this study: 367 patients had VH and 30 patients had Manchester-Fothergill’s operation. After matching with age, parity, and preoperative POP-Q stage, we divided 25 patients each in Manchester-Fothergill’s operation and vaginal hysterectomy respectively.

Diagnostic method of uterine prolapse caused by true cervical elongation:

In this study, cervical elongation without uterine descent was confirmed by pelvic examination. On the basis of the POP-Q system, we confirmed uterine prolapse caused by true cervical elongation with C point ≥ 0 , D point ≤ -4 , and estimated cervical length ≥ 5 cm on pelvic examination. Estimated cervical length was calculated as the difference between the C and D points of the POP-Q system.

Medical Records and Measurement

General characteristics, such as age, body mass index (BMI), parity, smoking status, postmenopausal status, information about length of hospital stay, duration of operation, blood loss during surgery, and postoperative complications, were obtained from the review of medical records. Experienced urogynecologists performed the pelvic examinations and evaluated POP-Q stage before surgery for the entire study population. All patients were required to make visits to the outpatient clinic 1 year after operation and every year thereafter. Evaluations of POP-Q stage were obtained from every visit to the outpatient clinic. Recurrence was diagnosed if POP-Q stage was greater than stage I in pelvic examination.

Statistical Analyses

The results are presented as mean \pm standard deviation or median (Q1, Q3) and counts with percentages in parentheses for continuous and categorical variables, respectively. The third part presents the logistic regression analysis results. In the univariate logistic regression, some of the variables, such as postmenopausal status, in the Manchester-Fothergill’s operation group were not estimated well owing to rare events; therefore, Firth’s bias correction was used to resolve the situation. A multivariable logistic regression model was developed choosing the significant variables in the univariate logistic regression. All statistical tests were two-sided, and p values.

Results

Table 1: Baseline Characteristics

	Manchester-Fothergill's operation (n=25)	Vaginal hysterectomy (n=25)	p value
Age (yr)	44.86±4.96	43.77±5.25	0.436
BMI (kg/m ²)	23.47±1.63	23.97±2.88	0.512
Parity	2 (1-2)	2 (2-2)	0.220
Postmenopausal status	1	4	0.145
Tobacco chewer	0	2	0.316
Preoperative POP-Q stage			0.547
Stage II	0	0	
Stage III	22	21	
Stage IV	3	4	
Concurrent surgery			
Anterior colporrhaphy	7	15	0.064
Posterior colporrhaphy	25	25	>0.999

Of the baseline characteristic, BMI, postmenopausal status, and smoking history were not statistically different between Manchester-Fothergill's operation and VH groups after PS matching with age, parity, and preoperative POP-Q stage variables. All subjects included in this study had advanced stages of POP that were preoperative POP-Q stage III or IV after matching.

Table 2: Surgical Outcomes

	Manchester-Fothergill's operation (n=25)	Vaginal hysterectomy (n=25)	p value
Recurrence of POP	0	2	0.314
Length of hospital stay (day)	5 (5-5)	5 (5-6)	0.426
Intra-operative blood loss (mL)	5 (0-30)	0 (0-50)	0.743
Duration of surgery (min)	96.4±22.4	108.2±21.9	0.032
Complications	3	0	0.145
Bleeding	2	0	
Infection (UTI, sepsis)	0	0	>0.999
Iatrogenic injury to other organs	0	0	
Hematometra	1	0	

After matching, no recurrence of POP was reported in the Manchester-Fothergill operation group, and one case of POP recurrence was confirmed on pelvic examination in the VH group. No statistically significant difference in the recurrence rates of POP was found between the Manchester-Fothergill's

operation and VH groups. The duration of hospital stay and blood loss during surgery was not significantly different between the two groups. No statistically significant difference in postoperative complication rates was found between the Manchester-Fothergill's operation and VH groups.

Table 3: The Risk of 1-Year Recurrence

Univariable model			Multivariable model	
OR (95% CI)	p value	p value	OR (95% CI)	p value
Age	1.04 (0.94-1.10)	0.654	1.06 (0.95-1.18)	0.318
BMI	1.66 (1.14-2.31)	0.007	1.74 (1.08-2.81)	0.028
Parity	0.66 (0.26-1.60)	0.314	0.45 (0.13-1.63)	0.226
Postmenopausal status	2.95 (0.16-56.58)	0.424	-	-
Length of hospital stay	0.75 (0.33-1.60)	0.416	-	-
Blood loss during surgery	0.56 (0.00-145.03)	0.832	-	-
Duration of operation	1.02 (0.96-1.05)	0.812	-	-
Anterior colporrhaphy	0.07 (0.01-0.67)	0.025	0.06 (0.01-0.75)	0.032
Posterior colporrhaphy	0.16 (0.00-6.31)	0.314	-	-
Complication	1.84 (0.08-41.11)	0.723	-	-

The results from second subgroup analysis of preoperative POP-Q indicated high BMI and not having a concurrent anterior colporrhaphy to be significant risk factors for recurrence of POP within 1 year after surgery. Age and parity failed to attain statistical significance in relation to recurrence of POP.

Discussion

Nevertheless, the clinical outcomes of Manchester-Fothergill's operation for patients with true cervical elongation is unknown. Although the success rate of Manchester-Fothergill's operation for uterine descent is expected to be lower than that for cervical elongation, previous studies of the Manchester-Fothergill's operation included both etiologies of uterine prolapse. In addition, they included patients who did not have uterine prolapse or women with POP-Q stage I that did not need surgery. In result, the reported failure rates of Manchester-Fothergill's operation vary from 0 to 50%. [11-14]

Of the baseline characteristic, BMI, postmenopausal status, and smoking history were not statistically different between Manchester-Fothergill's operation and VH groups after PS matching with age, parity, and preoperative POP-Q stage variables. All subjects included in this study had advanced stages of POP that were preoperative POP-Q stage III or IV after matching. After matching, no recurrence of POP was reported in the Manchester-Fothergill's operation group, and one case of POP recurrence was confirmed on pelvic examination in the VH group. No statistically significant difference in the recurrence rates of POP was found between the Manchester-Fothergill's operation and VH groups. Some women may have no symptoms of a prolapsed cervix, especially if it is minor. If symptoms do occur, they may include a feeling of pressure in the vagina, pain during sex, problems urinating or backache. Women with severe cases may also feel or see the uterine tissue coming out of the vaginal opening. Less severe cases may be managed conservatively by Keigel's exercises which helps strengthen the weakened pelvic floor, weight loss to reduce the strain on the muscles and vaginal pessary inserted into the vagina to help hold the cervix and uterus in place. [15] Berger, et al [16] measured cervical length by using magnetic resonance imaging (MRI), but considering the high cost of MRI, whether MRI is necessary for diagnosis of cervical elongation is doubtful. In this study, we confirmed cervical elongation by using the POP-Q system. In addition, in a recent study, cervical length measured using the POP-Q system was more related to anatomical cervical length than that reported in an imaging study. [17]

The duration of hospital stay and blood loss during surgery was not significantly different between the two groups. No statistically significant difference in

postoperative complication rates was found between the Manchester-Fothergill's operation and VH groups. The results from second subgroup analysis of preoperative POP-Q indicated high BMI and not having a concurrent anterior colporrhaphy to be significant risk factors for recurrence of POP within 1 year after surgery. Age and parity failed to attain statistical significance in relation to recurrence of POP. However, this operation involves near-complete amputation of the cervix, leaving behind a small stump that is prone to dysfunction and future cervical incompetence, defeating the very purpose of procedure. The incidence of spontaneous miscarriages, cervical dystocia, cervical tears, incomplete rupture of uterus and secondary infertility is increased. Further, pregnancies that do occur are associated with high chances of operative delivery and caesarean sections. [18] The Manchester-Fothergill's operation is a procedure that involves excision of the cervix and suture of the cervical stump to the cardinal ligament. Since the Manchester-Fothergill's operation maintains the uterine body, it seems effective in correcting uterine prolapse caused by true cervical elongation. In contrast, the Sleeve operation, was devised because, it was considered that amputation of cervix in the Manchester-Fothergill's repair significantly hampered future fertility. [19]

In addition, the subjects in our study were a better representation of actual clinical practice than the subjects described in earlier studies. The study populations in these studies included patients without uterine prolapse or patients with stage 0 or I who did not require surgery. [12-14] In contrast, 98.9% of the study population in this study had advanced uterine prolapse. The research by Bergman, et al [13] excluded patients who underwent posterior colporrhaphy, while our study included patients who underwent anterior and posterior colporrhaphy and mid urethral sling, which are frequently performed with surgery for uterine prolapse.

Conclusion

In conclusion, the Manchester-Fothergill's operation seems to be an effective procedure in terms of anatomical outcomes as compared with VH for uterine prolapse caused by true cervical elongation. We confirmed uterine prolapse using the C point and excluded uterine descent on the basis of the D point in the POP-Q system. Identifying true uterine prolapse from uterine prolapse seems to be the key to the success of the Manchester-Fothergill's operation.

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