

Anatomical and Functional Results of Modified McCall Culdoplasty after Vaginal Hysterectomy in a District Hospital of Bangladesh

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Abstract

Genital organ prolapse is a less-reported problem in Bangladesh. Surgery is needed only if the condition causes symptoms or interferes with her normal activities. Removal of the uterus and attaching the uterosacral ligaments to the posterior vaginal cuff and the cul-de-sac peritoneum in order to close off the sac and prevent subsequent prolapse is known as McCall culdoplasty. It was a prospective clinical trial. A total of 125 women were included purposively in this study who were admitted at Chattogram General Hospital, Bangladesh, for stage 2-4 uterovaginal prolapse and underwent Modified McCall culdoplasty during vaginal hysterectomy in the year 2018 and they were followed up-in the immediate post operative period, after 6 months, 12 months and 24 months. Six gynaecologists who were experienced in this operation assessed the eligibility of patients. Mean age of the study population was 55 ± 3.6 and BMI (Kg/m^2) was 22 ± 1.8 . While median of parity was 4(3-6). Majority (64%) underwent VH \pm Bilateral salpingo-oophorectomy (BSO) and McCall culdoplasty and Pelvic floor repair (Anterior colporrhaphy and posterior colpoperineorrhaphy). Along with VH bilateral salpingo-oophorectomy (BSO) and McCall culdoplasty, anterior colporrhaphy was done in 12% cases and posterior colpoperineorrhaphy was done in another 12% cases. Blood transfusion was needed in 10 patients. 2 patients underwent laparotomy and Colpotomy was performed in 1 case due to complications. Stage 1 vault prolapse was identified in 4 cases at 12 months and 9 cases at 24 months. Only 1 patient developed stage 2 vault prolapse. Vaginal length to the extent of $>7\text{cm}$ was maintained in 88 cases. Intromission dyspareunia was experienced by 4 patients. No cases complained of profound dyspareunia. The McCall culdoplasty did not lead to a disruption of the vaginal axis and gave excellent anatomical and functional results in maintaining support after vaginal hysterectomy especially in sexually active patients.

Index Terms McCall culdoplasty; vaginal hysterectomy; Pelvic organ prolapsed; Genital organ prolapsed; uterovaginal prolapse.

Introduction

Genital organ prolapse exclusively affects women. The global prevalence of this condition is estimated to be 40% in women aged more than 45 years¹. It's an under diagnosed and less reported problem that increase with age, limits physical activity, feeling

discomfort, reduces self-esteem, interferes with sexual life and has a influence on body image.

Enterocoele and vault prolapsed account for up to 16% of the mid-term and long-term complications associated with curative surgery for uterovaginal prolapse in vaginal hysterectomy². Both these

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complications can cause a recurrence of the original urogenital prolapse. Surgery is needed only if the condition causes symptoms or interferes with her normal activities. The aim of first surgery should be to restore the normal anatomy e.g. a normal vaginal length should be maintained with its axis directed towards S3–S4³. The strongest support of uterus is provided by the middle tier e.g. cardinal ligament, the uterosacral ligament and pubocervical ligament³. 25% uterine vault & enterocele results from middle compartment defect. Uterine prolapse is almost always accompanied by some degree of enterocele, as the degree of uterine descent progresses, the size of the hernial sac increases. Post hysterectomy vault prolapsed (PHVP) may be the result of poor repair and inadequate identification of cuff support structure at the time of hysterectomy or may develop as a result of an enterocele that was overlooked⁴. The risk of requiring a repeat procedure for pelvic organ prolapse (POP) may be as high as 29%⁴.

Removal of uterus is permissible in postmenopausal cases as it may harbor disease or may be a focus of problem in the future. In 1957 McCall described attaching the uterosacral ligaments to the posterior vaginal cuff and the cul-de-sac peritoneum in order to close off the sac and prevent subsequent prolapsed⁵.

The aim of the study is to establish the safety and effectiveness of the McCall culdoplasty as a method for providing vaginal cuff support, with the primary goal of preventing the occurrence of vault prolapse in the future.

Materials and Methods

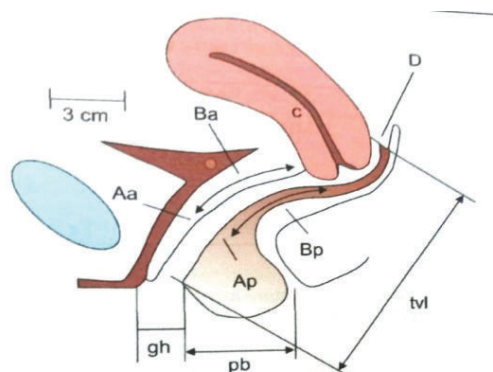
It was a prospective clinical trial. A total of 125 women were included purposively in this study that were

admitted at Chattogram General Hospital and underwent Modified McCall culdoplasty during vaginal hysterectomy in the year 2018 and they were followed up in the immediate post-operative period, after 6 months, 12 months and 24 months. All women with uterine prolapse at stage 2 or higher, aged >40 years participated in this study. Women with coexisting prolapse of the anterior or posterior vaginal wall, or both, elongated cervix were included. Concomitant repair of anterior and posterior vaginal wall prolapses (colporrhaphy) and deficit perineum was done.

Modified McCall culdoplasty technique was used during hysterectomy. Peritonization was performed by closure of the pouch of Douglas by means of a vicryl 0 with intraperitoneal hitching of only uterosacral ligaments without taking the cardinal ligaments in the suture, thus keeping the ureters distant from the peritoneal suture. The effect of this suture was to suspend the posterior vagina to the uterosacral ligaments on each side and at the same time maintaining sufficient vaginal length. All procedures performed in the study were in accordance with the standards of the institution.

Six gynaecologists who were experienced in this operation assessed the eligibility of patients, using pelvic organ prolapse quantification (POP-Q) system [6] and completed the questionnaires. The decision of operation was a shared decision by the woman and gynaecologist. All participants provided informed consent.

Staging of pelvic organ prolapsed according to pelvic organ prolapsed quantification (POP-Q) system [7].



Anterior wall Aa	Anterior wall Bb	Cervix or cuff C
Genital hiatus gh	Perineal body Pb	Total vaginal length tv
Posterior wall Ap	Posterior wall Bp	Posterior fornix D

Stage of prolapse	Extent of prolapse (in relationship to the hymen: prolapse above the hymen, negative numbers; prolapsed beyond the hymen, positive numbers)
Stage 0	No prolapse (apex can descend as far as 2 cm relative to the total vaginal length)
Stage I	The most distal portion of prolapse descends to a point less than 1 cm above the hymen
Stage II	Maximum descent is within 1 cm of the hymen
Stage III	Prolapse extends more than 1 cm beyond the hymen but no more than 2 cm of the total vaginal length
Stage VI	Complete eversion of the vagina or descent within 2 cm of the total vaginal length

We excluded women with previous pelvic floor or prolapse surgery, known malignancy or an abnormal cervical smear test result, a wish to preserve fertility, immunological or hematological disorders interfering the recovery after surgery, abnormal ultrasonography findings of the uterus or ovaries, abnormal uterine bleeding and those who were unwilling to return for follow up.

Each patient had immediate and early follow up after operation and examined after 6 (six) months, 12 months and 24 months postoperative. In addition to an interview and the quality-of-life questionnaires, a complete urogynecological examination was carried out. Vaginal length was measured from the introitus to the vaginal vault using a flexible graduated Ayer's spatula. The quality of sexual activity was assessed using specific questioning to estimate the severity of any dyspareunia and whether sexual activity had stopped.

Results:

There was 13 drop out cases after 12 months follow-up and another 8 patients drop out after 24 months follow-up.

Table-I

Demographic characteristics of the patients (n=125)

Variable	Mean \pm SD	Range
Age (years)	55 \pm 3.6	45-75
BMI (Kg/m ²)	22 \pm 1.8	18-30
	Median (IQR)	
Parity	4 (3-6)	2-12

Data was expressed as mean \pm SD or median (IQR) and range

Table-II

Pre-operative complaints of the patients (n= 125)

Variables	Frequency (n)	Percentage
Chronic Cough	20	16
Persistent Constipation	30	24
Retention of urine	25	20

Data was expressed as frequency (%)

Table-III

Details of vaginal procedures (n=125)

Procedures	Frequency (n)	Percentage (%)
VH (\pm BSO) and McCall culdoplasty, Pelvic floor repair	80	64
VH (\pm BSO) and McCall culdoplasty, Anterior Colporrhaphy	15	12
VH (\pm BSO) and McCall culdoplasty	5	4
VH (\pm BSO) and McCall culdoplasty, Posterior colporrhaphy	15	12
VH (\pm BSO) and McCall culdoplasty, Posterior colpoperineorrhaphy	10	8

Data was expressed as frequency (%)

Table-IV
Complications of surgery

Complications	n (%)	Management
Intra-operative		
Blood loss > 500 ml	10 (8%)	Blood transfusion
Bladder injury/ Rectal injury	Nil	
Post-operative		
Bleeding	2 (1.6%)	Laparotomy
	1 (0.8%)	Examination under anaesthesia
Urinary retention	5 (4%)	Intermittent self-catheterization
Urinary tract infection	6 (4.8%)	Oral antibiotic
Pelvic abscess	1 (0.8%)	Colpotomy

Data was expressed as frequency (%)

Table-V
Post operative ICS (International Continence Society) stage of Post hysterectomy cuff

ICS stages	At 6 month	At 12 month	At 24 month
Vaginal vault: point C Stage 0	125 (100%)	95 (84.8%)	90 (86.5%)
Vaginal vault: point C Stage 1	0 (0%)	4 (3.6%)	9 (8.7%)
Vaginal vault: point C Stage 2	0 (0%)	1 (0.9%)	1 (0.96%)
Vaginal vault: point C Stage 3	0 (0%)	0 (0%)	0 (0%)
Vaginal vault: point C Stage 4	0 (0%)	0 (0%)	0 (0%)

Data was expressed as frequency (%)

Table-VI
Characteristics of pre and post operative sexual activity (n = 85)

Sexual activity	Pre-operative	After 6 month	After 24 month
Intromission Dyspareunia	80 (94%)	4 (4.7%)	4 (4.7%)
Deep Dyspareunia	0 (0%)	0 (0%)	0 (0%)

Data was expressed as frequency (%)

Table-VII
Post-operative vaginal length (n=104)

Vaginal length	Frequency (n)	Percentage
8-9 cm	88	84.6
<7 cm	16	15.4

Data was expressed as frequency (%)

Discussion:

Pelvic organ prolapse is the downwards herniation of pelvic organs beyond their anatomical entity. It's one of the major health concerns of the women around the world. Different types of corrective surgeries have been implied. After evaluating classification of pelvic organ prolapsed, McCall culdoplasty is one of the most

feasible surgical procedures with successful outcome if done appropriately.

Age group of women included in our study was 45-75 years. Maximum number belonged to 55 years. The age of women incorporated in studies conducted by Chene et al., 2008 [8], Duddalwar and Bhalerao, 2021 [7], Niblock et al., 2017 [9] was the same as ours.

In the present study, majority of women had parity of 4. Other studies Chene et al., 2008 [8], Duddalwar and Bhalerao, 2021 [7], Niblock et al., 2017 [9] had slightly lower parity.

The mean BMI in patients who underwent surgery was 22, which was 24.67 and 26.5 in Chene et al., 2008 [8] and Niblock et al., 2017 [9] respectively.

In our study other than symptom of mass coming out per vaginum in 100% women, 20% women had urinary symptoms (urinary retention) and 30% had bowel symptoms (constipation). Urinary symptoms and bowel symptoms are much lower than those in Duddalwar and Bhalerao, 2021⁷ which is 81.54% and 53.85% and the study of Yuvaraj and Mahale (2014) also had symptoms of mass coming out per vaginum in 100% women, urinary symptoms in 74% and bowel symptoms in 34% women¹⁰.

Table 2 describes different types of operation performed according to simplified pelvic organ prolapsed (S-POP) scoring system and symptoms of the patient. Majority (70%) of the women underwent vaginal hysterectomy, McCall culdoplasty and pelvic floor repair (anterior colporrhaphy with posterior colpoperineorrhaphy) with or without bilateral salpingo-oophorectomy.

Surgical details, operative, & immediate postoperative complications are shown in Table-2 and Table-3. Per operative blood transfusion was needed in 10 patients. There was no bladder or rectal injury. A study conducted by Chene et al. (2008) showed that 2 patients had bladder injury during cystocele repair and 1 patient suffered rectal injury during rectocele repair [8]. Our institution lacks cystoscopy facility, so routine cystoscopy could not be performed during the procedure. Thus, high uterosacral ligament vault suspension was avoided.

Two patients returned to theatre for a laparotomy for post-operative intra-abdominal bleeding in the first 24 hours post-operatively. Niblock et al. (2017) experienced similar complication with same number of patients. One case in our study needed examination under anaesthesia and tight vaginal packing helped control of oozing [9].

Five patient had post-operative urinary retention and managed conservatively with a period of intermittent self – catheterization. Six patients were treated in same way in a study conducted by Niblock et al., 2017⁹.

All patients were seen again at 6 months, 12 months & 24 months post operatively. Vaginal vault remained entirely in place in 100 cases at 6 month & 90 cases at 24 months. Stage 1 decompensation involved none of the cases at 6 months and 9 cases at 24 months. The one patient with stage 2 needed no surgical treatment. After McCall culdoplasty, vaginal vault at

point C ≥ 2 cm or stage 0 is considered as a successful outcome.

There was only 1 patient with cystocele and none had rectocele at 6M, 12M and 24M. The results are set out in Table-4.

This McCall technique gives good functional results with a satisfactory sexual function in addition to good anatomical results. None of our patient had deep dyspareunia. 20 were not sexually active pre-operatively. Out of 85 sexually active patients post operatively only 4 patient reported intromission dyspareunia at 6 months and at 24 months. We managed these cases by counseling and application of lubricant during coitus. Application of local estrogen was helpful too (Table 5) [11]. Our results are consistent with those of Chene et al., 2008 [8] and Colombo and Milani, 1998 [12] who found a sexual activity maintained with no dyspareunia in 81.2% and 75% respectively.

Post operative vaginal length (measured by graduated Ayer's spatula) was preserved in 84 cases, which is 8- 9 cm and less than 7 cm only in 16 cases at 24 months (Table 6). Weber et al., 1995 [13] found no significant correlation between vaginal length and sexual function particularly symptoms of deep dyspareunia and vaginal dryness.

Conclusion:

The McCall culdoplasty did not lead to a disruption of the vaginal axis and gave excellent anatomical and functional results in maintaining support after vaginal hysterectomy especially in sexually active patients. Again, it is a feasible, safe and effective surgical option in elderly patient at low anaesthesiological risk. As our population ages and quality of life is improving, health care services need to give more attention to this group of people. Clinicians should be able to screen, diagnose and trained up to perform corrective surgeries. Restoration of supports of uterus by vaginal hysterectomy and McCall culdoplasty proved to be effective surgical method to prevent post operative vault prolapse.

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