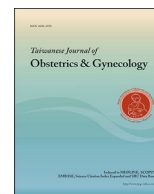


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## Original Article

# Obliterative LeFort colpocleisis for pelvic organ prolapse in elderly women aged 70 years and over

Soo-Cheen Ng <sup>a, b</sup>, Gin-Den Chen <sup>a, b, \*</sup><sup>a</sup> Department of Obstetrics and Gynecology, Chung Shan Medical University Hospital, Taichung, Taiwan<sup>b</sup> School of Medicine, Chung Shan Medical University, Taichung, Taiwan

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## ABSTRACT

**Objective:** Treatment of genital prolapse in elderly women is challenging. The aim of this study was to evaluate the long-term postoperative patient satisfaction and objective improvement in women aged 70 years and over with high stages of pelvic organ prolapse treated with obliterative LeFort colpocleisis.

**Materials and methods:** From January 2003 to December 2013, female patients aged 70 years and over who underwent colpocleisis surgery were included in this study. We reviewed the charts for preoperative and postoperative medical history, severity of prolapse, urodynamic studies, and early postoperative complications related to this procedure in these patients. Subjective outcomes were assessed by a nursing coordinator who interviewed patients by telephone in June 2014.

**Results:** Colpocleisis was performed in 22 elderly patients and 59% patients were of advanced age ( $\geq 80$  years). The mean postoperative follow-up duration was 48.1 months (range, 7–118) months. Six patients (27.3%) had died of medical problems at the time of the telephone interview. Fourteen patients (87.5%) reported a successful outcome after the operation and two patients (12.5%) reported improvement. For present satisfaction, 93.8% of patients reported that they were satisfied.

**Conclusion:** Colpocleisis should be considered as one of the surgical options for treating advanced pelvic organ prolapse in elderly patients who do not wish to preserve vaginal function for sexual intercourse. Copyright © 2016, Taiwan Association of Obstetrics & Gynecology. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

Pelvic organ prolapse (POP), is a disorder that decreases quality of life due to associated symptoms, recurrent urinary tract infections, and frequent surgical interventions in women [1]. In most countries, POP usually occurs in middle, elderly, or advanced age ( $\geq 80$  years) female patients [2]. Pelvic reconstructive surgery is especially challenging in elderly and advanced age women with high stage POP (POP-Q ordinal stage  $\geq$  III) [3]. Most of these women have comorbidities such as cardiovascular diseases, chronic pulmonary diseases, impaired renal function, or prolonged duration of diabetes mellitus, which increases the incidence of adverse outcomes during and after surgical intervention [4].

The current trend of surgical management for POP includes hysterectomy, colporrhaphy with or without polypropylene mesh repair, sacrospinous colpopexy or sacral colpopexy according to the severity of prolapse in different vaginal compartments [5]. Although the use of synthetic mesh in pelvic reconstructive surgery may reduce the postoperative recurrence rate, this must be weighed against the disadvantages, which include longer operating time, greater blood loss or mesh exposure, which requires removal, especially in elderly women [6–8]. In contrast to the pelvic reconstructive surgeries mentioned above, colpocleisis is an obliterative procedure for women with uterovaginal or vaginal vault prolapse, who do not wish to preserve vaginal function for sexual intercourse [9–11]. The procedure was first described by Leon Le Fort in 1877 and the modified operation is still being performed today.

We conducted this study to evaluate the long-term postoperative patient satisfaction and objective improvement in women aged 70 years and over with high stages of POP treated with obliterative colpocleisis. We also evaluated the feasibility and safety of this surgical procedure in these women of advanced age.

\* Corresponding author. Department of Obstetrics and Gynecology, Chung Shan Medical University Hospital, 110, Section 1, Chien-Kuo N. Road, Taichung, 40201, Taiwan.

E-mail address: [gdchentw@hotmail.com](mailto:gdchentw@hotmail.com) (G.-D. Chen).

## Materials and methods

From January 2003 to December 2013, female patients aged 70 years and over, who underwent obliterative colpocleisis surgery for POP at Chung Shan Medical University Hospital were included in this study. All patients had high-stage uterine prolapse or vaginal vault prolapse in combination with advanced anterior and posterior compartment prolapse especially cystocele. The preoperative stage of genital prolapse was classified by the POP-Q staging system. A Papanicolaou smear and transvaginal sonography were performed before surgery to exclude cervical and uterine pathology. Endometrial sampling or diagnostic dilatation and curettage may be performed to exclude any suspected endometrial pathology. Before the operation, all the patients were counselled about the desire for future vaginal intercourse. The pelvic operations were performed by two urogynecologists approved by the Taiwan Urogynecology Association (G.D.C. and S.C.N.). In patients with severe stress urinary incontinence, anti-incontinence surgery with a midurethral sling inserted concurrently was performed as indicated. We reviewed the charts for preoperative and postoperative medical history, pelvic examinations that determine the severity of POP, urodynamic studies, early postoperative complications, or adverse effects related to this procedure in these patients. The study protocol was approved by the Chung Shan Institutional Review Board.

All colpocleisis operations were carried out under general anesthesia. For thromboembolism prophylaxis, we used compression bandaging during the perioperative period. We did not perform concomitant hysterectomy in patients with uterovaginal prolapse. Briefly, the operation began with the marking of two rectangles in both the anterior and posterior vaginal mucosa and were then removed after dissection. The muscularis layers of the anterior and posterior vagina were brought together with a serial row of imbricating sutures with delayed absorbable sutures. The vaginal mucosa without dissection was sutured into a tunnel for drainage purposes. After obliteration of the vagina, perineorrhaphy was performed with plication of the levator ani muscle and perineal body, which reduced the size of the genital hiatus further. The intraoperative variables such as operation time, total blood loss, complications and concomitant surgery were obtained from the charts.

Subjective outcomes were assessed by a nursing coordinator who interviewed patients by telephone in June 2014. The interview was carried out with the patient's care-giver if the patient had died at the time of the interview. A global improvement questionnaire for POP was used to assess the treatment outcome. Regarding the patient's overall impression of the procedure, two main questions were asked of these women. For their perception of the operation's outcome: "Do you consider this operation to have been: successful, an improvement, or a failure? If you consider it a failure, when did it start to fail?" For present satisfaction: "Compare your present situation with that before the operation, do you feel satisfied with the outcome, and if not, when did your dissatisfaction begin and what are the symptoms that bother you?"

Data were analyzed using SPSS version 18.0 (IBM, Armonk, NY, USA) and are presented as mean  $\pm$  standard deviation, median, or percentage, depending on the variables. Student *t* test and paired *t* test were used to compare the continuous data before and after the operation. A *p* value of  $<0.05$  was considered to be a statistically significant difference.

## Results

Obliterative colpocleisis was performed in 22 elderly female patients ( $\geq 70$  years) with advanced POP ( $\geq$  stage III) from 2003 to

2013 at Chung Shan Medical University Hospital. The mean postoperative follow-up duration was 48.1 months (range, 7–118 months). The mean age of the patients was 81 years (range, 70–96 years) as shown in Table 1. Thirteen (59%) patients were of advanced age ( $\geq 80$  years). Seven (31.8%) patients had previous pelvic reconstructive surgery for POP. Twenty (90.9%) patients had at least one medical comorbidity and 13 (59.1%) patients had two or more medical comorbidities. Hypertension was the most common medical comorbidity. Other medical comorbidities included diabetes mellitus, cardiac disorders, chronic obstructive pulmonary disease, and dementia. Most of the patients presented with voiding difficulties and sensation of a dragging mass outside the vaginal introitus before surgery. Detrusor overactivity was the most common urodynamic diagnosis before surgery, followed by voiding dysfunction.

There were no intraoperative complications such as bladder or bowel perforation, blood transfusion needed or hematoma formation during the operations. The mean operation time was 78 minutes (range, 30–135 minutes) and the mean total blood loss was 153.8 mL (range, 30–450 mL; Table 2). Only one patient had concomitant anti-incontinence surgery with transobturator midurethral sling insertion. Five patients underwent suburethral Kelly-type operation with plication of pubourethral ligament. The median hospital stay after operation was 2.6 days (range, 1–5 days). The mean duration of Foley catheterization was 2.4 days (range, 1–7 days). Seven patients (31.8%) had voiding difficulty after removal of the Foley catheter. These patients were taught to perform intermittent self-catheterization by the patient herself or by her caregiver. There were no significant differences in the uroflowmetry parameters before and after the colpocleisis operation (Table 3).

Six patients (27.3%) had died of medical problems at the time of the telephone interview. Fourteen patients (87.5%) reported a successful outcome after the operation and two patients (12.5%) reported improvement. None of the patients reported surgical failure

**Table 1**  
Characteristics of the study groups ( $n = 22$ ).

Parameters	values
Age (y)	81 $\pm$ 5.5 (70–96)
70–79	9 (40.1)
80–89	12 (54.5)
> 90	1 (4.5)
Body mass index (kg/m <sup>2</sup> )	23.86 $\pm$ 5.03
Vaginal deliveries	6 (1–9)
Previous prolapse surgery	7 (31.8)
Previous hysterectomy	6 (27.3)
Medical comorbidity	
Hypertension	16 (72.7)
Diabetes mellitus	4 (18.2)
1 comorbidity	20 (90.9)
$\geq 2$ comorbidities	13 (59.1)
Follow up (mo)	48.1 (7–118)
Preoperative LUTS	
Voiding difficulty	15 (68.1)
Overactive bladder	10 (45.5)
Urinary incontinence	5 (22.7)
Urodynamic diagnosis <sup>a</sup>	
Detrusor overactivity	12 (63.2)
Oversensitive bladder	5 (26.3)
Voiding dysfunction <sup>b</sup>	7 (36.8)
Urodynamic stress incontinence	5 (26.3)
Mixed urinary incontinence	3 (15.8)

Values are given as mean  $\pm$  standard deviation, median (range), or *n* (%).

LUTS = lower urinary tract symptoms.

<sup>a</sup> Denominators differ because of missing data.

<sup>b</sup> voiding dysfunction was defined as maximal flow rate  $< 15$  mL/s and post void residual urine  $\geq 100$  mL.

**Table 2**  
Perioperative and postoperative parameters.

Parameters	Values
Operation time (min)	78.05 ± 26.57 (30–135)
Blood loss (mL)	153.81 ± 120.23 (30–450)
Hospitalization (d) <sup>a</sup>	2.68 ± 1.29 (1–5)
Duration of Foley insertion (d)	2.41 ± 1.33 (1–7)
Postoperative voiding difficulty <sup>b</sup>	7 (31.8)

Values are given as mean ± standard deviation (range), or n (%).

<sup>a</sup> Duration of hospitalization after operation.

<sup>b</sup> Defined as postvoid residual urine ≥ 100 mL or ≥ 1/3 of bladder capacity; n (%).

**Table 3**  
Uroflowmetry parameters before and after colpopcleisis.

	Preoperative	Postoperative <sup>a</sup>	<i>p</i>
Maximal flow rate (mL/s)	15.64 ± 13.78	14.486 ± 12.28	0.726
Voided volume (mL)	181.86 ± 122.11	184.45 ± 102.54	0.931
Voiding time (s)	26.38 ± 14.77	54.29 ± 76.78	0.118
Post void residual urine (mL)	38.64 ± 56.78	57.73 ± 69.03	0.304

Values are given as mean ± standard deviation.

<sup>a</sup> postoperative uroflowmetry was performed at the time of Foley removal.

after the operation. Fifteen patients (93.8%) reported present satisfaction and one patient (6.25%) was dissatisfied due to nocturia and stress urinary incontinence. Telephone interviews with the caregivers of patients who had died revealed that they were all satisfied with the operation outcome.

## Discussion

The present study revealed that there is a high success rate after colpopcleisis in women aged 70 years and over (mean age 81 years) with advanced pelvic organ prolapse. On self-assessment, 87.5% of the patients reported that the operation was successful. None of the patients reported failure after a mean follow up of 48.1 months. In addition, the patient's present time satisfaction (93.8%) was also high after this surgical procedure. This subjective outcome is similar with a retrospective case study involving 325 patients who underwent LeFort colpopcleisis, in which 93% of the patients reported being cured or greatly improved [4]. Other studies have also reported high surgical satisfaction after colpopcleisis [12]. However, the follow-up times were short in these studies; the mean follow-up time was 45 weeks in the study of Zebede et al [4] and 12 months in the study of Fitzgerald et al [12]. Long-time follow-up was limited by mobility issues, transportation issues, and other medical problems in the advanced-age population. Our mean postoperative follow-up duration was 48.1 months (range, 7–118 months). To overcome the limitations of patient follow-up periods, we assessed the subjective outcomes with telephone interviews by a trained nursing coordinator. Our study revealed that 27.3% of the patients had died of medical problems at the time of the telephone interview. The results of the present study highlight that the long-term anatomical outcome after surgery is not the major concern in the treatment of POP in these elderly women. Instead, operations with fewer peri- or intraoperative morbidities, operations with less postoperative discomfort, high patient satisfaction, and the improvement of quality of life are the main considerations.

The prevalence of medical comorbidities is high in older women. In our study, 59.1% of patients had two or more medical comorbidities and this is similar to that reported in previous studies [3,4]. No mortality occurred among our patients related to the operation. In contrast, a 1.3% mortality rate was reported in Zebede et al's study of 325 elderly women within 3 months after the

colpopcleisis operation [4]. These included two pulmonary emboli, one myocardial infarction, and one sepsis as the causes of mortality. Postoperative morbidity and mortality prevention are major issues in the elderly surgical population. For thromboembolism prophylaxis, we routinely use compression bandaging perioperatively and advise our patients to ambulate soon after surgery. Adequate postoperative pain control is also mandatory especially for elderly women with cardiovascular disease. In a study that reported short-term follow-up results of a total vaginal mesh operation (prolifer) in 62 women over 80 years of age with POP, 40.3% of the patients developed minor complications in the early postoperative period, 17.7% of the patients had moderate to severe postoperative pain, and 6.5% of patients had persistent moderate perineal and gluteal pain for a period of 3–6 months [13]. None of our patients who underwent the colpopcleisis operation, complained of moderate to severe pain during the hospital stay or the outpatient follow up according to a visual analogue pain scale. The most common postoperative complication was voiding difficulty in 31.8% of our patients. However, the preoperative and postoperative uroflowmetry parameters were not significantly different in these patients. The patients with voiding difficulty were taught to perform ISC by the patient or the patient's caregiver. None of the patients required ISC after the 1-month postoperative follow-up.

The mean operation time was 78 minutes (30–135 minutes) and mean blood loss was 153.8 mL (30–450 mL) in our study. However, when we compared the duration of hospital stay and the operation time among the patients with blood loss > 150 mL (*n* = 6) and ≤ 150 mL (*n* = 16), there were no statistically significant differences in these two parameters. The range of operative blood loss was large for these patients, and this may highlight the fragility of pelvic floor tissues, poor coagulation function or bleeding diathesis in this advanced age group. Ghezzi et al [3] compared various pelvic reconstructive surgical methods in 138 women aged 75 years or older and obliterative colpopcleisis had a shorter operation time and less estimated blood loss compared with surgery involving vaginal hysterectomy with or without colporrhaphy. In another study from The Netherlands with 128 women aged 80 years or older who underwent surgery for POP, 49% of the patients received vaginal hysterectomy with colporrhaphy and only 12% of these patients received a colpopcleisis operation [14]. In total, 21(16.4%) patients required a blood transfusion perioperatively, and this was quite high compared to our study group that performed colpopcleisis only (16.4% vs. 0%). Obliterative colpopcleisis was not performed frequently in these studies, which may be due to unfamiliarity with the technique.

In our study, 26% of the patients had urodynamic stress incontinence but only one patient received a transobturator midurethral sling operation. However, this was the only patient who was dissatisfied with the operation outcome due to persistent stress urinary incontinence and nocturia postoperatively. There has been much concern about the effect of colpopcleisis and concomitant midurethral sling on voiding function especially in elderly patients who have voiding dysfunction before surgery.

In a retrospective study involving 210 patients who underwent colpopcleisis, 77% of the patients underwent concurrent suburethral sling placement [15]. The authors reported an overall 92.5% subjective stress continence rate and a low sling revision rate (0.6%). A suburethral sling was inserted in 40 patients with stress urinary incontinence and preoperative voiding dysfunction was defined as postvoid residual urine > 100 mL. Postoperative voiding dysfunction persisted in five patients (12.5%) and two patients (5%) required intermittent self-catheterization. Another study also reported an improvement in urinary symptoms without causing significant urinary retention in 38 patients with concomitant colpopcleisis and midurethral sling operation [16].

The limitations of our study include that this is a non-comparative descriptive study, a lack of postoperative objective assessment due to patients' medical comorbidities, poor mobility and poor access to medical services. The other limitation of this study is that the number of patients is small. The strength of our study is the long-term follow-up after an obliterated colpocleisis operation in an advanced-age group with high stage POP.

In conclusion, our study demonstrated that LeFort colpocleisis results in a high subjective success rate and present time satisfaction. Colpocleisis should be considered as one of the surgical options for treating advanced POP in elderly patients who do not wish to preserve vaginal function for sexual intercourse. This procedure can be performed in advanced vaginal stump prolapse and also with preservation of the uterus. It does not require deep and extensive tissue dissection as with transvaginal mesh insertion and also avoids an intra-abdominal approach as with sacral colpopexy. All urogynecologists should be familiar with this surgical procedure and provide it as one surgical option for elderly patients with advanced POP.

### Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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