

Short Communication

Safety and Efficacy of Vaginal Reconstruction in Elderly Women with Medical Co-Morbidities

Shannice R. Mabandla* and Tinh H. Duong

Adventist Health White Memorial, Los Angeles, USA

***Corresponding author**

Shannice Mabandla, Adventist Health White Memorial, Los Angeles, CA, USA, Email: shannicebaker@gmail.com

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Keywords

- Colpocleisis
- Elderly
- Medical co-morbidities
- Vaginal reconstruction

Abstract

Objective: To compare colpocleisis and vaginal reconstruction in elderly women with medical co-morbidities.

Methods: This is a retrospective cohort study of patients who underwent pelvic organ prolapse surgery between November 2015 and December 2018. Demographic information, operative data, and short-term outcomes were evaluated.

Results: One hundred three patients qualified for the study (23 colpocleisis, 80 vaginal reconstruction). Patients who chose colpocleisis were older (75.4 ± 6.3 years vs. 71.3 ± 4.8 years, $P = .01$) and were more likely to have a prior hysterectomy (39% vs. 16%, $P = .02$). Patients who had colpocleisis had similar severity of prolapse compared to those who chose vaginal reconstruction (Stage 3.6 ± 0.7 vs. 3.3 ± 0.7 , $P = .08$). Patients who chose vaginal reconstruction had greater blood loss (200 ± 132 ml vs. 106 ± 105 ml, $P = .01$) but did not require more transfusions. While procedure time was greater for those who had vaginal reconstruction (247 ± 54 min vs. 168 ± 34 min, $P = .01$), hospital length of stay were similar (1.1 ± 0.3 days vs. 1.7 ± 2.5 days, $P = .06$). There were no differences in major or minor complications. The rate of subjective recurrent prolapse with at least one year of follow-up was also similar (0% vs. 6%, $P = .58$).

Conclusion: Vaginal reconstruction is safe and feasible with good short-term success in elderly patients with medical co-morbidities.

Brief summary: Retrospective study comparing total vaginal reconstruction and colpocleisis in elderly women with medical co-morbidities. Vaginal reconstruction is safe and feasible with good short-term success.

INTRODUCTION

Life expectancy has increased according to the Federal Interagency Forum on Aging-Related Statistics, 2020. Life expectancy for women has increased to 85.7 years old [1]. Additionally, it is predicted that by 2034 the elderly population (77 million) in the US will outnumber those under 18 years old (76.5 million) [2]. Approximately one in five (20%) of US residents will be age 65 and older by 2030 [1,2]. The lifetime risk of having POP surgery is 1 in 8 (12.6%) [3].

There are many physiological changes that occur during the aging process. These changes are associated with increased number of comorbidities, which can potentially be challenging when elderly women need surgical intervention [4]. While some studies attribute the preexisting comorbidities to be the cause for preoperative morbidity and mortality; others claim that age alone can affect these outcomes [5-7]. The overarching belief is that pelvic floor disorders seldom increase morbidity and mortality therefore it is important to weigh risks and benefits of elderly women undergoing this elective surgery [4,7-9]. Some

believe that obliterative procedures have fewer perioperative complications than reconstructive procedures but this hasn't been thoroughly studied [6,10].

Many surgeons are reluctant to perform vaginal reconstructions on elderly women with comorbidities. Therefore many of these patients undergo colpocleisis. Fifty three percent of women over the age of 65 are sexually active [11]. Sixty nine percent feel that sex is an important part of a romantic relationship [12]. Given this, more elderly women undergoing prolapse surgery are requesting preservation of their vaginal canal. Therefore, we set out to compare the safety and efficacy of vaginal reconstruction to colpocleisis in elderly women with medical co-morbidities.

METHODS

This is a retrospective cohort study of all women that underwent pelvic organ prolapse surgery from November 2015 to December 2018. All procedures were performed by a fellowship trained FPMRS attending physician at Adventist Health White Memorial. A senior resident participated in all cases. Inclusion

criteria included (1) age greater than or equal to 65 years and (2) at least one major medical co-morbidity such as diabetes mellitus, hypertension, thyroid disease or cardiac disease. The type of operation was chosen by the patient after discussing risks, benefits, and alternatives of each procedure with the FPMRS attending physician. Patients having vaginal reconstruction were compared to those undergoing colpocleisis (either total or partial). Demographic information including age, gravidity, parity, body mass index, medical history, surgical history, and social habits were all evaluated. Preoperative quality of life measures were performed using standardized short form questionnaires which was filled out by the patient. Medical co-morbidities were identified using data compiled from medical chart review. Preoperative symptoms were assessed by both subjective and objective methods including patient intake questionnaires standardized exams. All operative data and short-term outcomes were abstracted from chart review including the operative report, post-operative progress notes, emergency department visits or hospitalizations after the surgery, and patient follow up in clinic. Complications were defined using the Modification of the Calvien-Dindo Classification. Major complications were defined as grade 2 or above whereas minor complications were defined as grade 1. The short-term subjective recurrence rate was defined as any recurrent patient symptoms (e.g. bulge) within 1 year after the operation. Continuous variables were analyzed with the Student's *t* test while categorical variables were analyzed with the Chi-square or Fisher's exact test, as appropriate. A 2-tail *P* value of $< .05$ was deemed statistically significant. The study received IRB approval from the Adventist Health White Memorial institutional review board.

RESULTS

A total of 266 patients underwent pelvic organ prolapse surgery from November 2015 to December 2018. One hundred

three patients met the inclusion criteria for this study. Twenty-three patients (22.3%) who underwent colpocleisis and 80 (77.7%) had vaginal reconstruction. Patient demographics are summarized in Table 1. Patients in the colpocleisis group were older, averaging 75.4 ± 6.3 years compared to 71.3 ± 4.8 years in the total vaginal repair group ($P = .01$). Women in the colpocleisis group were also more likely to have had a prior hysterectomy (39% vs. 16%, $P = .02$). There were no statistically significant differences between gravidity, parity, body mass index, and medical co-morbidities such as diabetes or hypertension, and social habits in our study population.

Sexual activity was the only statistically significant finding of the preoperative symptoms that were assessed. All of the women who underwent colpocleisis were not sexually active whereas 25% of women in the vaginal reconstruction group were sexually active ($P = .01$). Otherwise both groups had similar urinary symptoms, complaints of constipation, post void residual volumes, empty bladder cough leak, and pelvic organ prolapse quantification (POP-Q) stage (Table 2). Both groups had similar validated quality of life questionnaire scores.

The choice of surgery, ultimately made by the patient, was chosen using the physician-patient shared decision making model after extensive counseling was provided. Of those undergoing colpocleisis, nine patients had a total colpocleisis while the remainder had the Le Fort procedure. The vagina was closed to within three centimeters of the introitus to prevent significant posterior deviation of the urethra. A distal levator myorrhaphy and an extensive perineorrhaphy were routinely done to narrow the genital hiatus. Of those having vaginal reconstruction, four patients had laparoscopic sacrocolpopexy while the remainder had vaginal native tissue repair. A hysterectomy was routinely performed in the presence of apical prolapse if the patient had not had one prior. The preferred method of apical suspension

Table 1: Patient Demographics.

	Colpocleisis (n = 23)	Total Reconstruction (n = 80)	P
Age (years)	75.4 ± 6.3	71.3 ± 4.8	.01
Gravidity	4.4 ± 2.8	4.2 ± 2.1	.68
Parity	4.0 ± 2.8	3.7 ± 1.8	.62
Vaginal Delivery	4.0 ± 2.8	3.5 ± 1.5	.39
Operative Vaginal Delivery	1.2 ± 2.5	0.6 ± 1.0	.28
Cesarean Delivery	0.04 ± 0.2	0.2 ± 0.5	.11
BMI (kg/m ²)	27.7 ± 5.8	28.5 ± 4.8	.53
Medical History (%)			
Hypertension	70	65	.68
Diabetes Mellitus	44	45	.90
Thyroid Disease	30	13	.04
Surgical History (%)			
Hysterectomy	39	16	.02
Prolapse	22	28	.58
Incontinence	13	14	1.00
Social Habits (%)			
Tobacco	4	1	.40
Alcohol	0	1	1.00
Illicit Drugs	0	0	-

Results are presented as mean ± standard deviation or percent.

BMI = body mass index

Table 2: Pre-operative symptoms.

	Colpocleisis (n = 23)	Total Reconstruction (n = 80)	P
Urinary Symptoms (Self-report, %)			
Urge Incontinence	9	0	.05
Stress Incontinence	11	24	.33
Mixed Incontinence	61	55	.62
Difficulty Voiding	48	34	.22
Dysuria	4	4	1.00
Constipation (%)	41	46	.66
Sexually Active (%)	0	25	.01
Dyspareunia	-	47	-
Post-void Residual (ml)	79.4 ± 93.6	69.0 ± 91.3	.64
Cough Stress Leakage (after emptying)	4	3	.54
POP-Q Stage	3.6 ± 0.7	3.3 ± 0.7	.08
UDI-6	8.9 ± 5.8	8.1 ± 5.4	.64
Global QOL	4.6 ± 1.2	4.5 ± 1.3	.72

Results are presented as mean ± standard deviation or percent.
 POP-Q = pelvic organ prolapse quantification
 UDI = urogenital distress inventory
 QOL = quality of life

Table 3: Surgical Outcomes.

	Colpocleisis (n = 23)	Total Reconstruction (n = 80)	P
Procedure Time (min)	168 ± 34	247 ± 54	.01
EBL (ml)	106 ± 105	200 ± 132	.01
Transfusion (%)	0	0	-
Complications (%)	0	7	
Major	0	6	.40
Minor	0	1	
Length of Stay (days)	1.1 ± 0.3	1.7 ± 2.5	.06
Failed Discharge Voiding Trial (%)	17	23	.78
Recurrent Prolapse within 1 year (%)	0	6	.58

Results are presented as mean ± standard deviation or percent.
 EBL = estimated blood loss

was high uterosacral vault suspension in patients who were undergoing a hysterectomy whereas sacrospinous ligament suspension was favored in patient with a prior hysterectomy. Repair of the anterior and posterior compartments were also done when these defects were present.

Surgical outcomes are shown in Table 3. Procedure time was longer in the vaginal reconstruction group (247 ± 54 minutes vs. 168 ± 34 minutes, $P = .01$). Estimated blood loss was also increased in the vaginal reconstruction group (200 ± 132 mL vs. 106 ± 105 mL, $P = .01$). However, no patients in either group required a transfusion. Hospital length of stay, failed voiding trial at time of discharge, and 1 year recurrence rates were equivalent between the groups. The rate of complications (0% vs. 7%, $P = .40$) was comparable between the two groups. Of the six complications, one was a postoperative urinary tract infection diagnosed within 6 weeks of surgery treated with a short course of oral antibiotics. The other five are detailed in Table 4 and involved either intraoperative events or cardiac issues. All complications were diagnosed intraoperatively or in the immediate postoperative

hospitalization and were all treated prior to hospital discharge. The rate of subjective prolapse recurrence greater than one year from surgery was similar between the groups (0% vs. 6%, $P = .58$). Of those with subjective failure, only one patient desired treatment with the others reporting no significant bother from the prolapse.

DISCUSSION

There is a hesitancy among both patients and physicians to perform elective major surgeries on elderly patients with medical co-morbidities. This seems to be due to the physiological changes that take place as we age, which may increase morbidity and mortality [4]. There are few studies on complications following urogynecologic surgeries on elderly women and relatively no studies comparing colpocleisis and vaginal reconstruction in elderly women [4,6,7,9,13].

Gerten et al. claims that the most accurate factor for predicting postoperative complications are preexisting medical comorbidities [13]. There is an assumption that obesity is

Table 4: Details of major complications.

Patient	Complication	Comments
1	Enterotomy	Occurred in patient with 2 prior prolapse surgeries during vaginal dissection of enterocele sac. Full recovery after repair of enterotomy.
2	Cystotomy	Occurred in patient with 3 prior prolapse surgeries during laparoscopic dissection of bladder for sacrocolpopexy. Full recovery after simple closure.
3	Ureteral obstruction	Occurred during placement of uterosacral suspension sutures. Resolved with removal of suture.
4	Takotsubo Cardiomyopathy	Occurred on POD #1 in patient with no prior cardiac disease. Full recovery with supportive care only.
5	Postoperative MI	Occurred POD #1 in a patient with 3 vessel disease (>90% narrowing in each vessel) with no prior cardiac disease and a negative preoperative cardiac workup. Recovery with emergent stenting of vessels.

associated with increased morbidity after surgery due to the increased prevalence of co-existing medical condition or increased rates of infection and poor wound healing. However, in our study there was no statistical difference between the two surgical techniques and the associated body mass index ($P = 0.53$).

Sung et al. reports that there is an increased rate of complications in patients that underwent reconstructive versus obliterative surgery (24.7% vs 17%, $P < 0.01$) [6]. Moreover, Stepp et al. reports that operative time was the strongest predictor of morbidity in their study [4]. While we did have more complications in the vaginal reconstruction group, the rate of complications were not statistically significant in our study (0% vs 7%, $P = 0.4$) despite the increased procedure time in total vaginal reconstruction group. Moreover, intraoperative complications were more common in women with multiple prior prolapse surgeries. As such, patient with multiple prior surgical failures should be counseled on the possible increased risk of complications should they choose to have vaginal reconstruction.

Additionally, Vetere et al. reports morbidity is largely associated with blood transfusions due to acute blood loss [7]. In our study we found that the vaginal reconstruction did have increased blood loss but this increase did not generally necessitate a blood transfusion. Therefore, vaginal reconstruction did not increase morbidity from blood transfusions. There were two patients who had postoperative cardiac events. While increased blood loss may place patients at risk for cardiac events, neither patient had a blood loss greater than 500 ml and neither had drops in their hemoglobin that necessitated transfusions. One patient had a myocardial infarction secondary to significant narrowing of three cardiac vessels that was not detected on the preoperative cardiac clearance. The second patient was given the diagnosis of Takotsubo cardiomyopathy after her medical workup was essentially normal.

Sung et al. reported an overall mortality risk of 0.04% after an urogynecologic procedure [6]. They found elderly women have a 33% increased risk of perioperative complications and at a 13-fold increased risk of death when compared with younger counterparts. However, Stepp et al., found that perioperative morbidity was low and is not substantially different from other general gynecologic surgeries [4]. As expected with the low mortality risk for patients having urogynecologic procedures; we had no deaths in our study.

We do acknowledge several limitations to the study. Despite being larger than other similar studies, our sample size was still relatively small. This study may potentially lack power to detect differences in rare outcomes such as mortality. Additionally, the predominantly Hispanic population and single study site may limit generalizability. Overall, a longer follow-up may be needed as surgical failures may occur beyond the one year follow-up time.

Many advances in anesthesia, peri-operative support, and even surgical technique have improved surgical outcomes in the elderly population [8]. Additionally, there does not seem to be an association with morbidity rates and age alone [4]. Previous studies show that various prolapse surgery can be performed safely in the elderly population [4,8-9]. However, by comparing vaginal reconstruction to colpocleisis, our study show that vaginal reconstruction is safe to perform in elderly patients with medical co-morbidities, particularly as a primary procedure, in those desiring to preserve their vaginal canal and sexual options. The short term and long-term complications are minimal while the one year success rate is comparable to an obliterative procedure. Both colpocleisis and reconstructive surgeries improve quality of life [10]. Therefore, elderly women with comorbidities should be counseled regarding the safety and efficacy of both obliterative and reconstructive surgery. These women should not be denied reconstructive surgery based on medical comorbidities alone as vaginal reconstruction is safe to perform in this population.

AUTHOR CONTRIBUTION

SR Mabandla: Data collection, manuscript writing

TH Duong: Statistical calculations, manuscript editing

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