

Obliterative surgery as a treatment option for Pelvic Organ Prolapse: a cohort study

A Cirurgia Obliterativa como opção terapêutica no Prolapso de Órgãos Pélvicos: um estudo de coorte

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Abstract

Overview and aims: Surgery for Pelvic Organ Prolapse (POP) is increasing with the aging of population. When maintenance of vaginal length and coital function is not a surgical goal, obliterative surgery is effective for POP treatment, especially in women with comorbidities. Our primary study goal was to evaluate the objective and subjective cure rates of different obliterative surgeries. We also aimed to characterize this population of women and the complications of this type of surgery.

Study design: We conducted an observational retrospective cohort study

Population: 82 patients who underwent obliterative surgery as a treatment for primary or recurrent POP.

Methods: Retrospective review of clinical charts, with descriptive and bivariate analysis.

Results: All women were sexually inactive and their mean age was 77.3 years-old. Overall, they had excessive weight and 97.6% of them had a POP-Q stage of III or more. The majority of these women had two or more comorbidities at time of surgery, and cardiovascular disease was the most severe in 40% of them. Twenty eight percent of them had already underwent a surgery for POP. There were only two cases of minor complications after surgery, specifically lower urinary tract infection. Overall, objective cure rate was 89.7% and subjective cure rate was 98.5%, for a mean time of follow-up of 18.5 months. We found no differences between different obliterative procedures. *De novo* urge urinary incontinence developed in 22% of patients.

Conclusions: Obliterative surgery is a good treatment option for severe POP, especially in women with anesthetic risk and no desire for future vaginal coitus. In our cohort we found excellent objective and subjective POP cure rates after obliterative surgeries, combined with low risks..

Keywords: Obliterative surgery; Colpocleisis; LeFort; Pelvic organ prolapse; Pelvic surgery

INTRODUCTION

Pelvic Organ Prolapse (POP) is a common condition and its incidence is increasing, presumably because of population's aging. Surgical treatment for POP may

be defined as reconstructive or obliterative¹⁻⁴. Obliterative surgery is an effective treatment for severe POP, specifically when maintenance of vaginal length and coital function are not among surgical goals. These surgeries are simple to perform, have short operative times, low estimated blood loss and can be performed under regional anesthesia. Thus, obliterative surgery is an option for elder women with symptomatic POP and multiple comorbidities^{1,5,6,7}.

The efficacy of obliterative surgery is reported to be excellent, with objective (defined as POP above the hymen) and subjective (defined as absence of symptoms) success rates reaching 98% and 93%, respectively^{3,8}.

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POP recurrence after obliterative surgery is rare, with an estimated rate of 4.2% in a large review by Mikos, *et al*⁹. However, the majority of evidence concerns short-term follow-up, with scarce information on long-term results¹⁰.

Obliterative surgery options are: LeFort procedure, which preserves the uterus, and colpocleisis, which may be performed in women with previous hysterectomy, or the surgeon may perform hysterectomy during the same operative time⁷. Evidence suggests that all procedures have identical efficacy. Preference for uterus preservation or hysterectomy is balanced between the risk of an additional procedure and future malignancy. However, strong data on this subject is lacking^{1,5,11}.

Morbidity associated with these surgeries is rare, with an estimated rate of 6.8-15%¹². Low urinary tract infection (UTI) is the most common postsurgical problem. Severe complications such as severe blood loss or pelvic organ injury are reported under 2% of cases^{1,5,7,13}. Up to 26% of patients may refer *de novo* urge urinary incontinence (UUI) after surgery, which may affect their quality of life⁸.

The primary objective of this study was to evaluate the objective and subjective cure rates of POP after different obliterative surgeries. We hypothesized that there were no differences between them. Secondary objectives included the characterization of patients submitted to obliterative surgery and evaluation of complications.

METHODS

This is a retrospective cohort study of 82 patients who underwent obliterative surgery as treatment for primary or recurrent POP, between January 2012 and September 2018, in Beatriz Ângelo Hospital, Portugal.

Eligible surgical procedures were: LeFort procedure, colpocleisis alone and vaginal hysterectomy (VH) plus colpocleisis. LeFort and colpocleisis were performed using the technique described by Buchsbaum *et al*¹. When VH was performed, Heaney technique was used¹⁴. Colpocleisis alone was performed in women with previous hysterectomy. Decision between LeFort and VH plus colpocleisis was made individually, considering patient's history of other gynecological or medical problems and personal motivations. Subjects were identified by their procedure's ICD-9 codes and operative reports were reviewed.

Patients inclusion criteria encompassed: women with symptomatic POP, not sexually active and not

wanting to resume vaginal coitus, that underwent one of the cited surgeries. Sexually active women or women wanting to resume vaginal coitus were offered alternative treatments. We did not perform concomitant surgery for stress UI in any patient. All procedures were performed by trained gynecologists from the Urogynecology Department.

After patient's selection, data from medical records was collected by a single investigator. Variables included: age, body mass index, number of vaginal births, newborn's weights, age at menopause, comorbidities, previous hysterectomy, previous POP surgery, history of urinary incontinence (UI), Pelvic Organ Prolapse Quantification (POP-Q) stage before and after surgery, use of pessary, obliterative surgery performed, duration of hospital in-stay, postsurgical complications, *de novo* or worsening of UUI, time of follow-up and recurrence of POP.

We used POP-Q stages, such as described by Persu, *et al.*, to evaluate POP severity before surgery and during follow-up¹⁵. This was established by a gynecological examination during the pre-operative visit, done by the gynecologist who then performed the surgery and secured follow-up. Surgical outcomes were assessed six months after the procedure and revised every six months until the last visit. Objective cure was defined as POP-Q ≤ 1 . Subjective cure was defined as absence of POP symptoms reported by the patient. To access this variable, we asked the patients for specific symptoms: feeling a protrusion in the vagina, pelvic heaviness, difficulty in bladder/bowel emptying improving with digital reduction of POP. We did not use standardized questionnaires to access these outcomes.

To access the presence of stress UI we asked the patients for urine leakage with cough, laugh, or other activity that increases abdominal pressure. For UUI, we asked these women for urinary frequency, nocturia or urge to urinate followed by involuntary urine loss. After surgery, we defined worsening of these symptoms based on patient's notion of them occurring more frequently or intensely than before. Again, we did not use any standardized questionnaires.

A database was elaborated using IBM SPSS Statistics 23.0 version. Descriptive and bivariable analysis were performed. Categorical variables are presented as frequencies and percentages and continuous variables as means and standard deviations. Normal distribution was checked using Shapiro-Wilk test. Bivariable analysis was performed using ANOVA and Chi-square. Reported p-values are two-tailed, with a $p=0.05$ indi-

cating statistical significance. Data supporting this study's findings is registered in Loures Hospital software and is available from the corresponding author.

RESULTS

Eighty-two women were included in the study. Mean age at time of surgery was 77.3 ± 5.8 years-old (minimum and maximum age of 65 and 96 years-old, respectively). Table I describes other characteristics of these patients, overall and separated by groups, concerning the type of obliterative surgery that they underwent. There were no statistical differences between groups. In all groups, mean BMI was above normal, with overall mean of 26.9 ± 4.2 kg/m².

Sixty-five patients (79.3%) had, at least, one medical comorbidity before surgery. On Table II we describe the most severe condition for each patient. The most frequent medical condition was cardiovascular disease, severely affecting 33 of these women (40.2%). Also, the majority of patients had to deal with two (34.2%) or more concomitant comorbidities (30.5%).

Patients' previous pelvic procedures are described in Table II. Considering that the number of patients in each group was small, we did not perform comparisons between groups. Thirty women (36.6%) had a history of previous hysterectomy, all for benign pathology. Also, 19.5% (n=16) had already underwent some previous POP surgery. Of the 10 patients who underwent previous VH, only half (n=5) had been submitted to an apical suspension procedure.

Considering POP-Q before surgery, 97.6% (n=80) of patients had POP-Q stage 3 (28%) or 4 (69.5%). The two cases presenting with POP-Q stage 2 had a history of previous VH and underwent colpocleisis. The majority of

patients (n=43) used a vaginal pessary before obliterative surgery, whether for months/years before deciding to undergo surgery (n=16) or after being referred to it (n=27).

Women stayed at the hospital during a mean time of 2.7 ± 0.9 days. There were no intrasurgical complications to report. Postsurgical non-complicated low UTI was present in two patients (2.4%). There were no other complications to report and there were no hospital readmissions.

These patients were followed at our center during a mean time of 18.5 ± 12.5 months, with follow-up time ranging from six to 56 months. Fourteen patients (17.1%) were lost to follow-up. Table III displays the objective (89.7%) and subjective cure (98.5%) rates of obliterative surgery. There were no significant statistical differences of both cure rates between different procedures. Concerning objective cure, we report rates of 85.7% for LeFort procedures, 92.0% for colpocleisis and 90.9% for VH plus colpocleisis ($p=0.764$). Likewise, all patients undergoing LeFort procedure or colpocleisis accounted for subjective cure, as well as 95.5% of VH plus colpocleisis patients.

During follow-up, POP recurred in seven patients (10.3%) and all were related to the anterior compartment. Three patients had a POP-Q stage 3 recurrence, two patients had stage 2 and other two had stage 1. Only one of these patients was symptomatic and resumed the use of vaginal pessary. On Figure 1 we demonstrate POP recurrence after 6, 12, 18 and 24 months of surgery.

We also studied the long-term development or worsening of UUI after surgery, as shown in Figure 2. Fifteen patients (22.1%) developed *de novo* UUI and, among women who had previous UUI or mixed UI (n=22), three (13.6%) denoted worsening of symptoms. There were no patients complaining of *de novo* or worsening of stress UI.

TABLE I. PATIENTS CHARACTERISTICS (CONTINUOUS VARIABLES)

Variable	Total (n=82)	LeFort (n=23)	Colpocleisis (n=30)	Vaginal Hysterectomy plus Colpocleisis (n=29)	p-value
Age (years), mean (SD)	77.3 (5.8)	78.3 (7.5)	77.8 (4.3)	76.1 (5.6)	0.349
BMI (kg/m ²), mean (SD)	26.9 (4.2)	25.6 (3.9)	27.9 (4.6)	26.9 (3.7)	0.141
Number of vaginal births, mean (SD)	2.5 (1.8)	2.9 (2.8)	2.1 (1.0)	2.6 (1.5)	0.301
Heaviest newborn (g), mean (SD)	3651 (539)	3771 (544)	3420 (532)	3842 (456)	0.066
Age of menopause (years), mean (SD)	49.5 (4.1)	50.0 (4.2)	49.2 (2.2)	49.5 (5.3)	0.764

SD – Standard deviation

TABLE II. PATIENTS CHARACTERISTICS (CATEGORICAL VARIABLES)

Variable	Total (n=82)	LeFort (n=23)	Colpocleisis (n=30)	Vaginal Hysterectomy plus Colpocleisis (n=29)
Medical comorbidities (most severe), n(%)				
No comorbidities	17 (20.7%)	5 (21.7%)	5 (16.7%)	7 (24.1%)
Cardiovascular	33 (40.2%)	6 (26.1%)	12 (40.0%)	15 (51.7%)
Endocrine	15 (18.3%)	7 (30.4%)	6 (20.0%)	2 (6.9%)
Renal	1 (1.2%)	1 (4.3%)	0	0
Bronchopulmonary	2 (2.4%)	1 (4.3%)	0	1 (3.4%)
Gastrointestinal	1 (1.2%)	0	1 (3.3%)	0
Neurological	4 (4.9%)	1 (4.3%)	0	3 (10.3%)
Osteoarticular	4 (4.9%)	2 (8.7%)	2 (6.7%)	0
Hematological	2 (2.4%)	0	2 (6.7%)	0
Oncologic	3 (3.7%)	0	2 (6.7%)	1 (3.4%)
Number of medical comorbidities, n(%)				
0	17 (20.7%)	7 (30.4%)	5 (16.7%)	5 (17.2%)
1	12 (14.6%)	3 (13.0%)	5 (16.7%)	4 (13.8%)
2	28 (34.2%)	4 (17.4%)	8 (26.7%)	16 (55.2%)
≥ 3	25 (30.5%)	9 (39.1%)	12 (40.0%)	4 (13.8%)
History of previous hysterectomy, n(%)				
No	52 (63.4%)	23 (100%)	0	29 (100%)
Abdominal	20 (24.4%)	0	20 (66.7%)	0
Vaginal	10 (12.2%)	0	10 (33.3%)	0
History of surgery for POP, n(%)				
No	66 (80.5%)	22 (95.7%)	17 (56.6%)	27 (93.1%)
VH	5 (6.1%)	0	5 (16.7%)	0
VH + McCall culdoplasty	5 (6.1%)	0	5 (16.7%)	0
Anterior Colporrhaphy	4 (4.9%)	0	3 (10.0%)	1 (3.4%)
Posterior Colporrhaphy	2 (2.4%)	1 (4.3%)	0	1 (3.4%)
History of previous UI, n(%)				
No	54 (65.9%)	16 (69.6%)	21 (70.0%)	17 (58.6%)
Stress UI	6 (7.3%)	1 (4.3%)	3 (10.0%)	2 (6.9%)
Urge UI	13 (15.9%)	4 (17.4%)	2 (6.7%)	7 (24.1%)
Mixed UI	9 (11.0%)	2 (8.7%)	4 (13.3%)	3 (10.3%)
POP-Q stage before surgery, n(%)				
2	2 (2.4%)	0	2 (6.7%)	0
3	23 (28.0%)	5 (21.7%)	11 (36.7%)	7 (24.1%)
4	57 (69.5%)	18 (78.3%)	17 (56.7%)	22 (75.9%)
Use of pessary, n(%)				
No	39 (47.6%)	12 (52.2%)	13 (43.3%)	14 (48.3%)
Yes	43 (52.4%)	11 (47.8%)	17 (56.7%)	15 (51.7%)

POP – Pelvic Organ Prolapse; POP-Q – Pelvic Organ Prolapse Quantification System; VH – Vaginal Hysterectomy; UI – Urinary Incontinence

DISCUSSION

Obliterative surgery is a treatment option for severe POP, often in elderly women, who do not want to preserve vaginal coitus.⁷ The main purpose of this study

was to evaluate objective and subjective cure rates of different obliterative procedures and, overall, our data shows optimal rates (89.7% and 98.5% respectively). Also, no differences in both cure rates were found between the three different surgeries that we compared

TABLE III. PROLAPSE OUTCOMES AFTER OBLITERATIVE SURGERY

	Total (n=68)	LeFort (n=21)	Colpocleisis (n=25)	Vaginal Hysterectomy plus Colpocleisis (n=22)	p-value
Objective cure ¹ , n(%)	61 (89.7%)	18 (85.7%)	23 (92.0%)	20 (90.9%)	0.764
Subjective cure ² , n(%)	67 (98.5%)	21 (100.0%)	25 (100.0%)	21 (95.5%)	0.346

1. Objective cure after surgery was defined as POP-Q equal or inferior to grade I.

2. Subjective cure after surgery was defined as absence of symptoms related to POP reported by the patient.

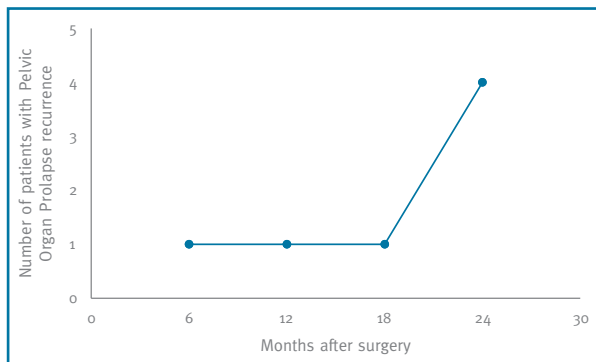


FIGURE 1. Recurrence of Pelvic Organ Prolapse during 6, 12, 18 and 24 months of follow-up

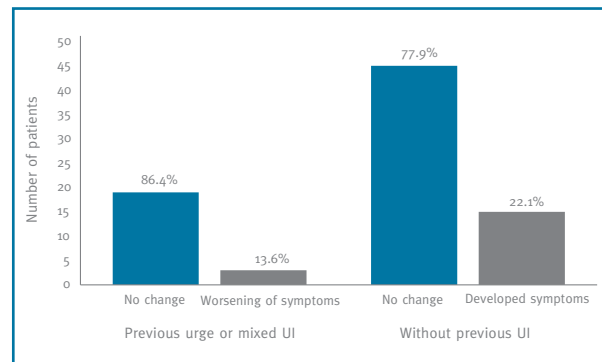


FIGURE 2. Worsening or development of urge urinary incontinence after obliterative surgery

(Le Fort procedure, colpocleisis alone and VH plus colpocleisis).

We also aimed to characterize our population. We found that these women were elder and had excessive body weight. Also, they had a mean of 2.5 vaginal births during their fertile life and the heaviest newborn generally weight over 3500g. These are all risk factors for POP and may have contributed to its occurrence. We also found that these characteristics did not differ between groups, which may indicate that these should not define our choice for the specific obliterative procedure (Le Fort versus colpocleisis alone versus VH plus colpocleisis). In a study by Bochenska, *et al.*, there were also no differences regarding patients' comorbidities, although women who underwent colpocleisis alone were older than those performing concomitant VH¹².

LeFort is performed over a uterus that is kept *in situ* and colpocleisis is commonly performed in women with previous or concomitant hysterectomy⁷. These are simple procedures, with minimal associated morbidity, and can be performed in women with multiple comorbidities, as it is also shown by our results. Al-

most one third of our patients were affected by, at least, three concomitant illnesses, and cardiovascular disease was the most severe problem in about 40% of them. These findings are also supported by other authors^{3,16}.

We should reflect and discuss with patients about uterine removal versus preservation. There is a clear indication for hysterectomy if there is uterine pathology¹. Otherwise, if no problem is encountered, hysterectomy at time of colpocleisis is still controversial¹². The risk for endometrial cancer in women older than 75 years-old is 0.6% and the risk for developing cervical cancer in women with normal cervical cytology is very small¹. Obliterative surgery without concomitant VH seems to be associated with less severe complications and less operative time, such as reported by Bochenska, *et al.*¹². However, after LeFort procedure, the uterus becomes inaccessible for clinical evaluation¹. Thus, when considering our surgical options, we need to balance the risks of an additional hysterectomy with the risks of leaving the uterus *in situ*. Also, we should screen these women for endometrial and cervical pathology before any surgery.

When performing obliterative surgery, the most im-

portant things to consider are the development of complications and the probability of POP recurrence. Complications are much rarer when compared to reconstructive surgeries for POP^{2,8}. The most common short-term complication after any obliterative surgery is UTI. Buchsbaum, *et al.* reported that up to one-third of patients could develop post-surgical UTI¹. Also, Hill, *et al.* stated that low UTI was accountable for over 80% of their complications⁵. In our study, only 2.4% of patients had postsurgical noncomplicated low UTI, which is in concordance with the literature (4.3% reported by Bochenska, *et al.*)¹². There were no major complications to report, such as bleeding requiring blood transfusion, pelvic organ injury or sepsis, neither did we have any hospital readmissions. Mueller, *et al.* report admissions in the intensive care unit of 2.8% and a hospital readmissions rate of 4.2%. Interestingly, Mueller and colleagues encountered less complications in patients treated in hospitals with greater volume of surgeries and also when a urogynecologist performed the surgery, rather than a general gynecologist or urologist¹⁷.

As for long-term morbidity, we report a 22.1% rate of *de novo* UUI and 13.6% of worsening of previous UUI, which could affect these women's quality of life, although we did not access this variable. This complication is inconsistently reported in the literature, but seems rather frequent. Deffieux, *et al.* report that up to 26% of patients could develop these symptoms⁸. Yet, some authors state that these symptoms are frequently transient and do not require major treatment. Some cases may even be solely related to natural progression of UI^{3,10}.

Cure rates after obliterative surgery are proven to be greater than 90% in most studies^{1,3,4,7,16}. In this study, we report overall objective and subjective cure rates of 89.7% and 98.7%, respectively, which is in accordance with the literature. These results suggest that, even when recurrence occurs, which is rare, it does not seem to bother these women's daily activities, so there is no need for further treatment. This is crucial, considering the comorbidities and anesthetic risks of these patients. In reverse, we report an overall recurrence rate of 10.3%, which is in concordance with the literature^{8,9}.

No differences were seen concerning cure rates between different obliterative surgeries. However, considering that the number of patients in each group was small, conclusions on this topic are limited. Studies comparing outcomes between different procedures are still lacking and there are no guidelines regarding the

choice of surgery for each patient⁵. In this study we did not compare immediate nor long-term complications between groups, because of the limited number of patients with surgical morbidity. Also, we did not have access to intraoperative data such as operating times and blood loss, which would have been pertinent. Surgical planning should be discussed with the patient and individualized choices should be made.

In all women who had POP recurrence during follow-up, it developed on the anterior compartment. We also found that these recurrences were more frequent after 18 or more months after surgery. Therefore, since recurrence may not appear rightly after surgery, a maintained follow-up is imperative.

Most studies on obliterative surgery have limited number of patients and poorly defined outcomes. As well, our study has limitations. As an observational retrospective study, it has inherent limitations, such as misclassification bias and bias related to the information available in clinical charts. The number of patients enrolled in this study is small, which is inherent to the paucity of women that undergoes these surgeries. Unfortunately, we did not have access to patients' operative times nor used quality of life questionnaires. Also, follow-up time is relatively short and we did not evaluate patients' satisfaction or regret after surgery, which are important long-term indicators. In further studies, we should use validated quality of life questionnaires to evaluate these patients' satisfaction after surgery.

Still, we consider that our study has some strengths, such as the fact that the outcomes are well defined. We also compared patients' characteristics and surgical outcomes between different obliterative surgeries, which is uncommonly encountered on the literature.

In conclusion, we found excellent objective and subjective POP cure rates after obliterative surgeries. Also, very few immediate complications were present. These surgeries seem good options for severe POP treatment in elder women with multiple comorbidities. However, we should not neglect that *de novo* or worsening of UUI symptoms could be a long-term problem. Prospective studies with well-defined outcomes and larger populations are needed to validate efficacy and safety of this type of surgeries.

DISCLOSURE OF INTEREST

The authors report no conflicts of interest.

CONTRIBUTION OF EACH AUTHOR:

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