

The degree of satisfaction of women undergoing surgical repair of prolapse, compared with clinical and urodynamic findings

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Summary *Objective: To assess the degree of satisfaction of women undergoing surgical repair of prolapse, compared with the clinical and urodynamic findings.*

Materials and Methods: 72 women hospitalized for pelvic organ prolapse (POP) were enrolled in this prospective study. Patients underwent clinical evaluation and urodynamic study before and 4 months after POP repair. Women were assessed for urinary symptoms by micturition diary and patient perception of intensity of urgency scale. Women were also questioned about defecation and sexual life. POP repair was performed in all cases without the use of a mesh. Subjective evaluation was performed by patient global impression of improvement questionnaire.

Results: 56 women were evaluable. Improvements were found in all micturition symptoms and in particular in voiding symptoms. Feeling of vaginal bulging disappeared in all patients. A slight improvement was found in constipation; 62% of patients had a normal sexual life but 27% refrained from sexual activity. Judgement of patients was between "much improved" and "very much improved".

Conclusions: Disappearance of the feeling of vaginal bulging was by far the best result. Improvements were found in most of the symptoms particularly in voiding symptoms and urodynamic findings.

KEY WORDS: Genital prolapse; Pelvic organ prolapse surgery; Voiding dysfunction; Urodynamics; Sexual function.

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INTRODUCTION

Pelvic Organ Prolapse (POP) is an abnormal loss of support of one or more of the pelvic organs leading to prolapse into or outside the vagina (1). It is a condition affecting up to 30% of women (2) and is the most common indication for hysterectomy in women older than 55 years (3). POP may be totally asymptomatic or it may affect the quality of life of women causing physical, psychological and sexual limitations. (2). Women with POP often present a complexity of symptoms in relation to the POP stage and the structures involved (urethra, bladder, uterus, bowels and rectum): urinary symptoms such as incontinence or poor stream, hesitancy, straining to void, incomplete emptying, recurrent urinary tract infec-

tions; obstructed defecation with the need to strain or reduce the bulge digitally to defecate; sexual disorders, perineal pain and vaginal bulging (4-7) may be described by the patients. However a lot of the studies evaluated only some specific aspects of the question such as the presence of overactive bladder symptoms (OAB) and/or detrusor overactivity before and after POP repair (8-13), the impact of prolapse surgery on sexual function (14) or anorectal disorders (4).

In this study we considered women with POP to assess changes in symptoms and urodynamic findings before and after prolapse repair, comparing them with the degree of satisfaction of patients.

MATERIALS AND METHODS

From January 2014 to September 2014, 72 women (mean age 64 years; range 48-82) hospitalized for POP were enrolled in this prospective study. All patients underwent a detailed clinical evaluation including a complete history and physical examination. Patients with neurological disease, pelvic tumors, previously treated with pelvic surgery and particularly with hysterectomy, POP repair, urinary incontinence surgery and radiation therapy, were excluded. POP was evaluated and graded according to pelvic organ prolapse quantification (POP-Q) with the patients in the lithotomy position and maximum straining effort. All patient underwent urodynamic investigation; the study was performed without the prolapse reduction because such reduction can relieve urologic symptoms, which can have an influence on the evaluation of the lower urinary tract function. The study included spontaneous uroflowmetry with post void residual measurement, water cystometry (filling rate 30 ml/min; catheter used: 6 Fr double lumen; patients' position: sitting) with pressure/flow study. Parameters evaluated were maximum flow rate (Q_{max}), post-void residual urine (PVR), cystometric capacity (CC), detrusor pressure at maximum flow ($P_{det}Q_{max}$) and detrusor overactivity (DO). Patients were assessed for urinary symptoms. Urinary storage symptoms (daytime frequency, nocturia and urinary incontinence) were evaluated by 3-day micturition diary; voiding symptoms and post micturition symptoms (hesitancy, straining, terminal

dribble and feeling of incomplete bladder emptying) were evaluated by individual perception. Urgency was assessed by Patient Perception of Intensity of Urgency Scale (PPIUS) represented by a 5-point scale from 0 (no urgency) to 4 (urge incontinence). Women were also questioned about the impact of POP on their sexual life and defecation. All patients underwent POP repair without the use of a mesh and a standard fascial anterior repair was performed when anterior compartment was involved; the repair was often carried out in conjunction with transvaginal hysterectomy. None of these patients underwent simultaneously surgery for urinary incontinence. All procedures were performed by the same surgeon. Post operative assessment was undertaken at 4 months. Patients repeat urodynamic study, 3-day micturition diary and clinical evaluation. Afterwards, the subjective evaluation of symptoms and the degree of satisfaction of patients after POP repair were assessed with Patient Global Impression of Improvement questionnaire (PGI-I): this is a 7-point scale from "very much improved" (score 1), to "very much worse" (score 7). The research was approved by the Institutional Review Board and the Local Ethics Committee and all patients signed informed consent before starting the study.

Statistical analysis was performed using the MedCalc software package (version 14.12.0). Data were expressed as means \pm SD. Comparisons were carried out using the Wilcoxon test for paired samples and chi square test. A p value $<$ 0.05 was considered significant.

RESULTS

Of the 72 women initially enrolled, 56 (mean age 63 years, range 48-79) agreed to repeat urodynamic study and clinical evaluation and were evaluable for the study. The vaginal compartment involved and the stage of POP are described in Table 1: a great number of women with POP stage III^o-IV^o and a greater involvement of the anterior and central vaginal compartment were observed. The surgical procedures undertaken are described in Table 2. Vaginal hysterectomy with anterior repair was the most performed surgical treatment. Patients' characteristics with symptoms and sexual activity expressed in percentages before and after surgery with patients' evaluation of clinical results are summarized in Table 3. Improvements were present in urinary symptoms particularly in voiding symptoms but increased daytime frequency, nocturia, urgency and urinary incontinence persisted respectively in 32, 43, 36 and 41 percent of patients after surgery. A slight improvement was found in constipation but the best clinical result was found in feeling of vaginal bulging, which disappeared after surgery in all patients. Improvements were found in sexual activity with 62% of women describing a normal sexual life after POP repair but 27% of patients refrained completely from sexual activity because of discomfort or pain and for fear of damaging POP repair. The degree of satisfaction of patients after surgical POP repair was 1.7 of PGI-I scale that is a judgment between "much improved" and "very much improved", confirming the efficacy of this treatment in improving the quality of life of patients. Table 4 presents a statistical analysis of urinary symp-

Table 1.
Compartment involvement and stage of prolapse sec. POP-Q.

Compartment involvement	Stage (sec. POP-Q)			
	N ^o	I ^o	II ^o	III ^o -IV ^o
Anterior	56	0	4	52
Central	52	0	0	52
Posterior	4	0	0	4

Table 2.
Procedure undertaken.

Type of procedure	N ^o
Vaginal hysterectomy + anterior repair only	48
Vaginal hysterectomy + anterior and posterior repair	4
Anterior repair	4

Table 3.
Patient characteristics, evaluation of clinical results, symptoms and sexual activity before and after surgery.

	Before surgery N ^o of patients (%)	After surgery N ^o of patients (%)
Patients n ^o	56	
Age	63 (48-79)	
BMI	25.4 (18.5-33.3)	
PGH	1.7	
Symptoms		
Increased daytime frequency	36 (64)	18 (32)
Nocturia	33 (59)	24 (43)
Urgency	33 (59)	20 (36)
Urinary incontinence	27 (48)	23 (41)
Hesitancy	47 (84)	9 (16)
Straining	29 (52)	3 (5)
Terminal dribble	36 (64)	9 (16)
Feeling of incomplete bladder emptying	44 (78)	9 (16)
Constipation	17 (30)	15 (27)
Gas or solid stool incontinences	0 (0)	0 (0)
Vaginal bulge	52 (93)	0 (0)
Sexual activity		
Normal sexual activity	10 (18)	35 (62)
Sexual activity affected by prolapse	35 (62)	0 (0)
No sexual activity because of prolapse	5 (9)	0 (0)
No sexual activity because of surgery		15 (27)
No sexual activity for other reasons (widows, sisters)	6 (11)	6 (11)

Table 4.
Urinary symptoms evaluated with statistical analysis.

Urinary symptoms	Before surgery	After surgery	p
Daytime frequency	9.8 \pm 2.48	8.36 \pm 1.77	< 0.0001
Nocturia	1.13 \pm 1.3	0.59 \pm 0.75	0.0229
Urgency	1.34 \pm 1.21	0.64 \pm 0.81	0.0002
Urinary incontinence	1.18 \pm 1.43	0.54 \pm 0.94	0.1092
Hesitancy	47	9	< 0.0001 *
Straining	29	3	< 0.0001 *
Terminal dribble	36	9	< 0.0001 *
Feeling of incomplete emptying	44	9	< 0.0001 *

Statistical analysis performed with Wilcoxon test for paired samples except (*) performed with chi square test.

Table 5.
Urodynamic findings before and after surgery.

	Before surgery	After surgery	p
Urodynamic parameters			
Q _{max} (ml/S)	12.29 ± 5.79	13.88 ± 4.80	0.0071
PVR (ml)	64.94 ± 59.39	42.65 ± 33.35	0.0405
CC (ml)	435.69 ± 178.84	420.88 ± 166.83	0.0635
DO (n° of patients)	11	6	0.1879 *
PdetQ _{max} (CmH2o)	36.71 ± 20.18	30.65 ± 10.30	0.0029

DO expressed in number of patients. Statistical analysis performed with Wilcoxon test for paired samples except () performed with chi square test.*

toms. All parameters evaluated except urinary incontinence, showed statistically significant improvements. Urodynamic parameters analyzed are reported in Table 5. A significant increase in Q_{max} with a reduction of PVR were found at uroflowmetry. CC did not show a significant change in cystometry but a reduction in the values of PdetQ_{max} was found in pressure/flow study. The number of patients with DO decreased without a statistical significance.

DISCUSSION

We evaluated the degree of satisfaction of the women using PGI-I questionnaire because it included an overall assessment of the outcome of the surgical therapy. We also evaluated, before and after POP repair, variations in individual symptoms using both statistical investigation and variations in percentages. This method enabled us to observe how the statistically significant reduction of a symptom was often associated with the persistence of the same symptom in a sizeable percentage of patients. Improvement in the urinary symptoms particularly in voiding and post micturition symptoms was found after POP repair. However, while micturition symptoms decreased, the number of symptomatic patients was still sizeable: 32% out of 64 (daytime frequency) and 43% out of 59 (nocturia). Urgency evaluated by PPIUS significantly improved, but 36% out of 59 of patients were still symptomatic. OAB symptoms usually improve after POP surgical repair or replacement of pessaries (11, 8, 15), but they can remain after treatment due to other causes as ischemic changes produced by aging (16); furthermore, about 20% of women develop OAB after surgery (9). There is no agreement about a relationship between prolapsed compartment, stage and symptoms. Some authors believe that the involvement of the anterior compartment is the main cause of OAB symptoms (17, 15): the distension of stretch receptors of the urothelium due to the descent of the trigone into the anterior vaginal wall and the denervation of autonomic nerve supply to the detrusor muscle caused by the urethral obstruction are considered the main causes (12, 15, 18, 19-21). In this study the significant improvement shown by voiding and post micturition symptoms were due to the improvement of obstruction caused by POP repair. The increase of Q_{max}, the reduction of PVR and the reduction of pdetQ_{max} at urodynamic study confirm these results. Several studies have shown that obstruction is frequently observed in women with severe prolapse (22-24) and

POP repair produces improvement in both obstruction and urodynamic findings (8, 16, 22-25). However, no significant change in urodynamic findings after surgery were recorded by Stanton SL *et al.* (27) and Rosenzweig *et al.* (28). Ling *et al.* (29), in their research, pointed out that 70% of patients with severe POP and elevated PVR with voiding difficulty symptoms had urodynamic evidence of obstruction only in one third of cases. Unsatisfactory results after POP repair can be found in patients with impaired detrusor contractility, such as in three cases we observed. Decreased detrusor contractility may depend on aging of patients as well as the persistence of the obstruction as occurs in men with prostatic hypertrophy. DO decreased after surgery but not significantly in this study in line with the results of other authors (13). As for OAB, following POP repair, DO can improve or persist when the causes are different from prolapse or even arise *de novo*, due to the surgery.

Feeling of vaginal bulging was found in 93% of patients before surgery and four months after POP repair it disappeared in all women: this is the best surgical outcome. Vaginal bulging is related to the POP stage and 52 out of 56 evaluable women showed a stage III-IV.

Disappearance of vaginal bulging was particularly emphasized by patients during clinical evaluation performed 4 months after surgery. A significant correlation between POP stage and vaginal bulging was described by Marijke *et al.* (17) and vaginal bulging was considered the main aspect related to prolapse by Pakbaz *et al.* (30). Constipation was the principal negative factor of defecation, whereas no cases of gas or solid stool incontinences was observed. This finding is probably related to the only 4 patients with involvement of the posterior compartment present. A relation between posterior compartment prolapse and bowel disorders including incontinence of flatus, were described by Marijke *et al.* (17) and Jelovsek *et al.* (4). After POP repair only 2 out of 17 women were asymptomatic but constipation is a symptom also found in patients with involvement of different vaginal compartments; furthermore, it is unlikely that prolapse is a significant contributor to constipation (4). Normal sexual activity improved after POP repair with 62% of women reporting a normal sexual life compared to 18% observed before surgery. This data is in agreement with findings of other authors (31, 32). An interference of POP with sexual activity was reported by Pakbaz *et al.* (30) in more than 30% of women. We performed POP repair without the use of mesh. The use of mesh is neither associated with a worsening in sexual function nor with an increase in the *de novo* dyspareunia compared with traditional colporrhaphy (14). The occurrence of dyspareunia after mesh is described in a percentage ranging between 5% and 28%. (33). However 27% of patients in our experience refrained completely from sexual activity because of discomfort or pain as well as of the fear of damaging POP repair. Many studies have been carried out on POP and we now have access to a lot of data. Various aspects of POP have been analysed for a better understanding especially of the cause of symptoms, their relationship with the degree of prolapse, the prolapsed compartment and the effect that surgery can have on symptoms. The complexity of symptoms and the dynam-

ics of the vaginal compartments after surgery make it difficult to evaluate the effects of surgery (34, 35). Furthermore, a simple anatomical correction of prolapse may not be able to improve the symptoms (36). There are still many different opinions about prolapse and data are often contradictory. To a large extent this could be attributed to the great variability of patients. In our study, however, nearly all the patients presented III°-IV° grade prolapse of anterior and central compartment. However, hysterectomy performed in almost all cases of POP repair may be a potential source of bias and the few cases with involvement of the posterior compartment can explain the few defecation symptoms reported by patients. Furthermore, the older age of women enrolled could itself be a cause of symptoms.

CONCLUSIONS

Improvements in different percentages were found in most of the symptoms considered but the disappearance in all patients of the feeling of vaginal bulging represents the best surgical outcome. Significant improvements were also found in voiding symptoms and urodynamic findings.

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