ORIGINAL ARTICLE

Outcome of laparoscopic sacrocolpopexy with anterior and posterior mesh

Xiromeritis P[1], Marotta ML[1], Royer N[2], Kalogiannidis I[3], Degeest P[2], Devos F[2]

[1] Gynecology, Catholic University of Louvain, U.C.L., Brussels, Belgium
[2] Uro-Gynecology clinic, St-Elisabeth hospital, Namur, Belgium
[3] 4th Department of Gynecology, Aristotle University of Thessaloniki, Greece

Abstract

Aim: The assessment of the postoperative outcome following laparoscopic sacrocolpopexy using anterior and posterior mesh.

Material and Methods: In the study were included one hundred and ten women (mean age 62 years with range from 34 to 78) who had laparoscopic sarcoplexy the period 2001-2005. They were contacted and completed postal questionnaires more than one year after surgery and had a follow up in the uro-gynaecology clinic.

Results: The median follow up was 21 months. Eighty-three of them (75.4%) answered the postal questionnaire. Good satisfaction was defined as complete disappearance of all genito-urinary symptoms. Moderate satisfaction was defined as a partial disappearance of symptoms, or de novo less annoying symptoms. Dissatisfaction was defined as no change in symptoms, and /or de novo important symptoms.

The overall rate of good satisfaction was 74.7% (62/83), moderate satisfaction 15.6% (13/83), and only 9.6% (8/83) were not satisfied. There was no statistical difference among the six different groups (sacrocolpopexy only, plus TVT, plus TVT and hysterectomy, sacrocolpopexy and previous hysterectomy, sacrocolpopexy and TVT with previous hysterectomy), concerning the pre and post operative clinical signs and post operative symptoms. There was a statistically significant difference (p=0.038) regarding dissatisfaction and prolapse relapse between the group that had a previous total hysterectomy combining sacrocolpopexy with TVT and all other groups. The most frequent post operative symptoms were stress incontinence, dysuria and constipation. No severe complications and mesh erosion were observed, despite the two cases of mesh detachment.

Conclusions: Laparoscopic double synthetic mesh sacrocolpopexy seems to be a safe and effective treatment of genito-urinary prolapse, with good overall long term outcomes and benefits of the minimal access approach. The presence of the remaining cervix after subtotal hysterectomy, seems to enhance the results of laparoscopic sacrocolpopexy.. Further randomised studies are needed to confirm our results and to compare this method to open and/or vaginal approach. Hippokratia 2009; 13 (2): 105-109

Key words: sacrocolpopexy, laparoscopy, mesh

Corresponding author: Xiromeritis P, 7, G. Lassani street, 54622 Thessaloniki, Greece, Tel/Fax: +302310 231691, e-mail: noutsis@hotmail.com

Genito-urinary prolapse is a common disease that requires a global approach which includes all the compartments. Sacrocolpopexy with anterior and posterior mesh (the Scali technique, 1974)[1] allows an anatomical restoration with preservation of the sexual function.

The laparoscopic approach is a modern and efficient answer for this functional surgery. It combines the advantage of a similar technique to the open route compared to the vaginal approach, without the need for a large abdominal incision, abdominal packing and extensive bowel manipulation. There are no prospective randomised studies comparing laparoscopic and vaginal sacrocolpopexy.

Laparoscopic sacrocolpopexy has been reported by a number of authors and has seen promising results in the short term[2-5].

In our retrospective study, a follow up of a series of patients, who had a laparoscopic sacrocolpopexy using the Scali technique, is described. This study takes into account the pre-operative assessment and correlates it with the overall satisfaction of the patient and post-operative examination.

Methods

During the period of 2001 to 2005, one hundred and ten women had a laparoscopic sacrocolpopexy using an anterior and a posterior mesh. This was either combined or not with a simultaneous laparoscopic subtotal hysterectomy and/ or the insertion of a tension free vaginal tape (TVT), from our department. The main indications for sacrocolpopexy surgery were either grade 3-4 genito-urinary prolapse or symptomatic grade 2, according to the

The study was conducted at the St-Elisabeth Hospital, Namur, Belgium

Baden et Walker grading system[6], or stage II to IV according to the ICS classification[7]. Eighty three out of one hundred and ten answered a postal non-validated questionnaire at least a year after surgery, regarding the satisfaction, prolapse, urinary, bowel symptoms and sexual function. Five out of the 110 were deceased at the time of the study, and twelve did not answer the postal questionnaire. Information concerning the pre-operative and post-operative assessment was taken from the medical files. The median follow up was 21 months. This study was approved by the hospital's Ethical committee and an informed postal contentment was obtained by the patients.

Surgery was performed by the same team of surgeons in all cases.

The Scali technique was used for the laparoscopic sacrocolpopexy. This involves the laparoscopic insertion of an anterior and posterior mesh (GyneMesh®, gynecare) after a dissection of the anterior and posterior vaginal vault and the rectum. The anterior mesh is attached to the anterior vaginal vault and the posterior mesh is sutured to the levator ani. Both of them are sutured to the sacral promontory by laparoscopic suturing using Ethibond® 2-0 with extra corporal knotting technique. The meshes are then covered with the parietal peritoneum, using a continuous laparoscopic absorbable suture[8].

The learning curve of the Scali technique lasted about a year.

The patients were divided in six groups for the purpose of this study. Among the 83 women studied, 21/83 (25.3%) had only a laparoscopic sacrocolpopexy (group A); 21/83 (25.3%) had a sacrocolpopexy and a TVT insertion (group B); 9/83 (10.8%) had a sacrocolpopexy and a TVT insertion, and a previous total hysterectomy (group C); 12/83 (14.5%) had a previous total hysterectomy and a laparoscopic sacrocolpopexy (group D); 12/83 (14.5%) had a simultaneous laparoscopic subtotal hysterectomy and a sacrocolpopexy (group E); 8/83 (9.6%) had a simultaneous laparoscopic hysterectomy and a sacrocolpopexy and a TVT insertion (group F). These are the six different groups (A, B, C, D, E, F) studied. All women were examined before surgery and had a urodynamic testing. A clinical examination was performed six weeks after surgery and then once a year.

The postal questionnaire had three categories regarding the global satisfaction. Good satisfaction was defined as complete disappearance of all genito-urinary symptoms. Moderate satisfaction was defined as a partial disappearance of symptoms, or de novo less annoying symptoms. Dissatisfaction was defined as no change in symptoms, and /or de novo important symptoms.

The statistical analysis was performed using SPSS (version 11 for Windows). The student's t-test was used for the comparison of the mean values between the different groups of variables with continuous outcomes. The χ^2 and Fischer's exact test analysis were used for cross-tabulated data. Differences between groups were considered statistically significant at $p<0.05$. All p values are two-sided.

Table 1: Patient's characteristics.

Patients characteristics	**Patients N=83**	
Age (average) (Range)	62 years (34 to 78)	
BMI (mean ± SD) (kgr/m2)	24.6 ± 3.2	
Parity (median)	2	
	N	**%**
Preoperative signs 1 sign e"2 signs	 10 73	 12 88
Prolapse Cystocele Rectocele	 78 68 34	 94 82 41
Prolapse according to the ICS classification Stage II Stage III StageIV	 20 48 15	 24 58 18

Results

Patient demographic data are shown in Table 1. The average age of patients was 62 years old (range 34 to 78). The average Body Mass Index was 24.6 (std 3.2). The median parity was 2. Associated stress incontinence with indication of a TVT insertion was found in 45% (38/83) of the patients, before surgery.

The mean operative time was 105 (range 70-160) minutes for the sacrocolpopexy only. The median hospitalization time was 3 days (range 2 to 5).

The global rate of good satisfaction was 74.7% (62/83) and that of moderate satisfaction was 15.6% (13/83). No statistical significant difference was found between the six groups mentioned above, regarding good satisfaction

The global rate of patient dissatisfaction after the sacrocolpopexy was only 9.6% (8/83). A difference between all groups was found with a trend of statistical significance (p=0.07). There was a statistical significant difference between the group who had a sacrocolpopexy and a TVT insertion, and a previous hysterectomy (group C), and all the other groups. The rate of dissatisfaction was 33.3% (3/9) p=0.038, which is probably related to the 33.3% (3/9, p=0.038) frequency of post-operative vaginal vault prolapse in this group.

Using the questionnaire, 83 patients reported any new or old prolapse, urinary, intestinal, sexual or any other symptoms that appeared after surgery. Forty five point

eight per cent (38/83) of patients had no such symptoms. The results among the six groups are shown in table 2. The highest percentage of absence of symptoms (75%) was found in groups E and F. There was a statistical significant difference when comparing the six groups (p=0.03). Only 11.1% (1/8, p=0.03)) of group C had no symptoms.

Only 9.6% (8/83 p=0.15)) had the sensation of prolapse. As we mentioned above, 33.3% had the symptom of a prolapse in group C (3/9 p=0.038).

28.9% (24/83) had urinary symptoms (mixed incontinence, urgent miction), 22.9% (19/83) had intestinal symptoms (mainly constipation). No statistical significant difference was found between the six groups, except for the urinary symptoms (55.6% or 5/9) of group C, where the difference had a statistical trend (p=0.11).

Only one patient (1.2%, 1/83) coming from the group with a previous hysterectomy (group D), answered that she had difficulties during sexual intercourse. This case represents the 8.3% (1/12) of group D (p=0.14).

As mentioned before, a clinical examination was performed six weeks after surgery and then once a year. 94% (78/83) of the women studied had no clinical signs of prolapse in any compartment (stage 0). The differences between the six groups were statistically insignificant.

One patient (1.2% or 1/83) coming from group A, had a stage IV prolapse after surgery, which was due to a detachment of the two meshes. A second laparoscopic surgery occurred to repair the sacrocolpopexy.

Four patients (4.8% or 4/83), two from group A, one from group D (detachment of the anterior mesh) and one from group F, had evidence of stage II prolapse of the anterior vaginal wall after surgery. No statistical significant differences between groups were found.

Only two patients (2.4% or 2/83) were found with stage II prolapse of the posterior vaginal wall after surgery; one from group E and one from F. No statistical significant differences were found between groups.

Two patients (2.4% or 2/83) had a detachment of the mesh. The one from group A experienced a detachment of both meshes after 3 weeks and the one from group D, had a detachment of the anterior mesh after 4 weeks. They both had a second laparoscopy in order to repair the sacrocolpopexy.

One patient (1.2%) developed an abdominal wall hematoma resulting to a secondary moderate anaemia, in the region of the right trocar insertion. It was managed conservatively.

As mentioned before, twenty four patients (28.9%) had urinary symptoms (12/24 had stress incontinence, 11/24 had urgent miction, and 1/24 had frequent infectious cystitis) after surgery.

Four of them (4/24) had de novo stress incontinence (4/83 or 4.8%) and all of them had a new surgery for TVT insertion.

Also seven others (7/24) had persistent stress incontinence, among the 38 patients (7/38 or 18.4%) who had a TVT insertion (group B,C,F). One of them (group C) had a re-insertion of a TVT.

The patients complaining of dysuria or urgent micturition (11/24), had a medical treatment of anticholinergic agents. Only two of them (2/83 or 2.4%) had de novo urgent micturition.

All patients had colofibers administered orally for a month after their surgery. The patients who had persistent de novo constipation (19/83 or 22.9%) continued the same medical treatment. It was resolved within 6 to 9 months of treatment.

Table 2: Post–operative symptoms between the six groups.

Groups of patients n=83	**No post-operative symptoms.** n=38, p=0.03	**Prolapse** n=8 p=0.15	**Urinary symptoms** n=24 p=0.2	**Intestinal symptoms** n=19 p=0.3	**Sexual symptoms** n=1 p=0.3
Group **A**, n=21	8 cases or 38.1%	2 cases or 9.5%	8 cases or 38.1%	6 cases or 28.6%	No case
Group **B**, n=21	8 cases or 38.1%	2 cases or 9.5%	4 cases or 19%	7 cases or 33.3%	No case
Group **C**, n=9	1 case or 11.1%	3 cases or 33.3%	5 cases or 55.6%	3 cases or 33.3%	No case
Group **D**, n=12	6 cases or 50%	1 case or 8.3%	4 cases 33.3%	1 case or 8.3%	1 case or 8.3%
Group **E**, n=12	9 cases or 75%	No case	2 cases or 16.7%	1 case or 8.3%	No case
Group **F**, n=8	6 cases or 75%	No case	1 case or 12.5%	1 case or 12.5%	No case

Discussion

According to the recent Cochrane meta-analysis[9], abdominal sacral colpopexy was associated with a lower rate of recurrent vault prolapse and less dyspareunia than the vaginal sacrospinous colpopexy. The longer recovery of that, compared to the vaginal surgery could be balanced using the laparoscopic approach[10]. In the absence of controlled randomised studies comparing laparoscopic and open sacrocolpopexy, retrospective trials have shown that the two procedures have comparable clinical outcomes, that duration of surgery is longer in the laparoscopic group but hospital stay, blood loss and postoperative pain are in favour of laparoscopy[10,11].

The largest retrospective trial of laparoscopic sacral colpopexy is a cohort of 325 patients published by Rozet et al on 2005[5]. The satisfaction rate was 96% during an average follow-up after 14.6 months. There were no patient complaints of sexual dysfunction. There was a 4% recurrence rate of prolapse, 3 vaginal erosions, 2 urinary retentions that required a TVT section, 1 bowel incarceration, 1 spondylitis and 2 mesh infections. Although the cohort size is large, there is no statistical analysis or result analysis according to the different previous or associated pelvic surgeries.

In our study, 94% of the women studied had no clinical signs of prolapse in any compartment (stage 0), and the overall satisfaction rate was 74.7%, after laparoscopic sacrocolpopexy. The rate of dissatisfaction was 9.6%, mainly from patients who had a previous hysterectomy and a concomitant TVT insertion. This is probably related to the 33.3% (3/9, p=0.038) frequency rate of post-operative vaginal vault prolapse in this group. A possible explanation could be that there is no sufficient and or resistant tissue in order to preserve a durable and successful fixation of the meshes in the vaginal vault. This could reflect the importance of the cervix in the sacrocolpopexy. All the patients of groups C and D had a previous total hysterectomy, without any remaining cervix

Further studies are needed to confirm this hypothesis and to dissuade laparoscopic double mesh sacrocolpopexy when previous total hysterectomy has occurred.

On the other hand, 75% (p=0.03) of the patients who had synchronous laparoscopic subtotal hysterectomy and sacrocolpopexy, had no post-operative symptoms.

Rozet et al[5], in their series of 363 patients, reported that 6% of patients with de novo stress incontinence in preoperatively continent patients submitted to laparoscopic sacrocolpopexy alone. In our study, there were four cases of stress incontinence (4.8%). This data suggests the existence of a minimal risk to develop post-operative stress incontinence after laparoscopic sacrocolpopexy because of possible change in vaginal axes.

In addition to this, there were three cases of de novo dysuria or urge micturition (3/83 or 3.6%). The post-operative hypocontractile bladder could be due to sympathetic stimulation, resulting from surgical trauma, pain, local irritation or the presence of an ano-urethral reflex[12]. These complications are small and further electro-physiology studies are needed to confirm the above hypothesis. Twenty two point nine pr cent (22.9%) de novo constipation was observed, probably resulting from the fact that elevating the posterior vaginal wall by sacrocolpopexy may alleviate obstruction and decrease the need to splint or strain. Another hypothesis is that the dissection of the levator ani and the posterior vaginal vault could provoke a certain degree of pararectal nerve lesions, resulting in rectoplegia. Prophylactic medical treatment to all patients is needed, and in our study all cases of de novo constipation were resolved within 6 to 9 months.

The relapse of cervix prolapse, prolapse of the anterior vaginal wall and prolapse of the posterior vaginal wall is low (1.2%, 4.8%, 2.4% respectively), with no statistical significant difference between groups, and it occurred within the first year. The relapse of prolapse could be due to surgical error, an inadequate fibrosis inherent to the laparoscopic approach that may diminish the surgically obtained elevation, or because a dehiscence of the supporting fibrous bands from the paravaginal tissue, presumably precipitated by the early return to normal activity intrinsic to this technique. Our rate is rather smaller or at least comparable to the rate of Rozet et al 2005[5] of 4%, using also two meshes. In both studies, there is a lower rectocele relapse compared to those where one mesh is placed[13], despite of Antiphon's opinion[14].

The largest prospective controlled study[15] evaluating functional and objective anatomical outcome of laparoscopic sacrocolpopexy showed in a cohort of 101 patients, that the objective cure rate after surgery was 92% and the main site of recurrence was the anterior compartment (5.9%). The anterior compartment recurrence is explained by the authors, as a result of a significant paravaginal defect not sufficiently repaired by laparoscopic sacrocolpopexy alone.

There was no case of mesh erosion in our study, which was probably due to: a) the fixation of the posterior mesh with the levator ani musculature avoiding the posterior vaginal erosion, b) to the mesh's reperitonealisation, and c) the lack of contamination by the absence of vaginal opening (even during hysterectomy).

Our retrospective study has its limitations and weaknesses, even with the small patient sample. In addition to this, the postal questionnaire used, was not a validated questionnaire.One of the advantages of the laparoscopic sacrocolpopexy is to spare the vaginal tissue compared with the vaginal surgical approaches. That is why we preferred to mention the only case of post operative sexual dysfunction, without the intention to do any assessment of sexual dysfunction, considering also the vast range of age between the patients (34 to 78).

On the other hand, this is the first study with a separate statistical analysis between the different groups of patients who had laparoscopic sacrocolpopexy associated with other surgical procedures.

Adequate laparoscopic suturing and knot-tying skills

are essential in performing this procedure. It has been classified as a slightly difficult procedure (degree of difficulty 3/5)[16]. The learning curve is not steep to surgeons who already practice laparoscopy, except for the anatomical references and dissection, that can be easily learned.

Robotic assistance with the laparoscopic method will help surgeons who are not formally trained in laparoscopy to perform advanced skills. Elliott[17] et al performing laparoscopic single mesh sacrocolpopexy with the use of robotic assistance, concluded to a decreased hospital stay, low complication rates and high patient satisfaction with a minimum follow-up of 1 year. A recent retrospective study[18] in 77 cases with a mean follow-up of 7 months, concluded that the DaVinci robotic system can be adjunctively used to facilitate laparoscopic sacrocolpopexy for patients with various stages of prolapse with good success rates and patient satisfaction.

Conclusion

In our study, laparoscopic double synthetic mesh sacrocolpopexy is a safe and effective treatment of genitourinary prolapse, with high cure and global postoperative satisfaction rates, offering the benefits of the minimal access approach. The presence of the remaining cervix after subtotal hysterectomy, seems to enhance the results of laparoscopic sacrocolpopexy. Further randomised studies are needed to confirm our results and to compare this method to open and or vaginal approach, in order to establish a surgical approach algorithm according to the patient's needs and the surgeon's skills.

Acknowledgments

Panayotidis C, M.D., MRCOG, Unicersity of Manchester, acknowledgments for his advices in the study planning, Angie Berlemi MBA, acknowledgment for manuscripts's English language correction.

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