Sacrospinous Fixation for Vaginal Vault Prolapse: Anatomical and Functional Outcomes and Quality-of-Life Assessment

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Objectives: To evaluate long-term anatomical and functional outcomes and quality of life in women who had sacrospinous fixation for post-hysterectomy vaginal vault prolapse.
Methods: A retrospective study of patients who underwent sacrospinous fixation for post-hysterectomy vaginal vault prolapse from June 2004 to August 2010 at the United Christian Hospital, Hong Kong, was conducted. Prolapse was assessed by using the Pelvic Organ Prolapse Quantification system; details of symptoms were collected at follow-up. Quality of life was assessed with the Pelvic Floor Distress Inventory–20 and the Pelvic Floor Impact Questionnaire–7.
Results: During the study period, 28 patients were identified. The overall success rate of sacrospinous fixation was 89.3% (vaginal vault prolapse of stage I or no prolapse) with a mean follow-up of 39 months (range, 9-70 months). Recurrence of cystocele and rectocele occurred in 47.6% and 16.7% of patients, respectively. Urinary and bowel symptoms were improved following surgery. The complication rate was low and complications were managed conservatively. The mean scores for the Pelvic Floor Distress Inventory–20 and the Pelvic Floor Impact Questionnaire–7 were 21 of 300 and 5 of 300, respectively.
Conclusion: This study suggests that sacrospinous fixation is an effective and durable operation for vaginal vault prolapse, and with low morbidity.
Hong Kong J Gynaecol Obstet Midwifery 2013; 13(1):86-90

Keywords: Hysterectomy; Pelvic organ prolapse; Quality of life; Sacrococcygeal region/surgery; Treatment outcome

Introduction

Vaginal vault prolapse is a complication after abdominal and vaginal hysterectomy. Vaginal vault prolapse is defined as descent of the vaginal cuff scar below a point that is 2 cm less than the total vaginal length above the plane of the hymen[1]. A retrospective follow-up of 448 women who had undergone hysterectomy, using the definition described by Baden et al[2], showed that the condition occurred following 11.6% of hysterectomies performed for prolapse and 1.8% of those performed for other indications[3]. Sacrocolpopexy and sacrospinous fixation are surgical treatments for vaginal vault prolapse. Sacrospinous fixation is superior to the abdominal approach in terms of complication rate, blood loss, postoperative discomfort, duration of hospital stay, recovery time, and cost-effectiveness[4]. Patients who may particularly benefit from this procedure include those who have poor surgical risks, and are elderly or physically frail patients. However, there are concerns over higher rates of recurrence and dyspareunia[5,6]. The aim of this study was to evaluate the treatment outcomes and complication rates of sacrospinous fixation in a local hospital.

Methods

The study was performed in the Department of Obstetrics and Gynaecology, United Christian Hospital, Hong Kong, with the approval of the Research Ethics Committee of the Hospital Authority. Written informed consent was obtained from all patients. Patients with vaginal vault prolapse who underwent sacrospinous fixation from June 2004 to August 2010 were enrolled and the medical records of the patients were retrospectively reviewed.

All operations were performed by, or under the direct supervision of, one urogynaecologist using a standardised technique. Briefly, a longitudinal incision was made to

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the posterior vaginal wall and the rectum was dissected away from the vaginal mucosa. The right ischiorectal fossa was entered by blunt dissection. The ischial spine and the sacrospinous ligament were identified. One stitch of a 2-0 polydioxanone suture (PDS) was anchored to the ligament by using a Miya hook under direct vision at approximately 2 cm medial to the ischial spine. The passed suture was retrieved with a suture hook and was divided into two. The vaginal vault was then suspended to the ligament using PDS. Anterior and posterior repair were done, if indicated, using buttressing stitches of Vicryl 2-0, and the incision along the vaginal mucosa was closed with continuous interlocking Vicryl 2-0 sutures. A Foley catheter was inserted after the operation and was kept in situ for 24 hours. Patients were discharged on day 4 if voiding was normal. Follow-up was done after 6 weeks and 4 to 6 months depending on the patients' symptoms, and yearly thereafter.

The primary outcome measure was anatomical cure of prolapse. The degree of pelvic organ prolapse was assessed using the International Continence Society Pelvic Organ Prolapse Quantification system[7]. Successful treatment was defined as no prolapse or vaginal vault prolapse of stage I, i.e. point C was more than 1 cm above the level of the hymen ring. Secondary outcome measures were urinary and bowel symptoms, and quality of life.

The degree of pelvic organ prolapse was defined by the intraoperative findings, and details of patients' functional performance were retrieved from the medical records. All patients were requested to attend for one extra follow-up during the research period to provide more comprehensive and updated assessments. A detailed history was taken of the prolapse and urinary and bowel symptoms. Physical examination was done to assess the degree of pelvic organ prolapse. Patients were also invited to complete two questionnaires: the Pelvic Floor Distress Inventory (PFDI)–20 and the Pelvic Floor Impact Questionnaire (PFIQ)–7. These two questionnaires assess condition-specific health-related quality of life for women with pelvic disorder[8,9]. The PFDI-20 comprises 20 questions assessing symptom distress and consists of three scales: the Urinary Distress Inventory–6, the Pelvic Organ Prolapse Distress Inventory–6, and the Colorectal-Anal Distress Inventory–8. The PFIQ-7 comprises seven questions and measures the impact of bladder, bowel, and vaginal symptoms on women's daily life. The full score for each questionnaire is 300. For those who did not attend follow-up during the research period, their physical findings and symptoms were retrieved from the records of their latest follow-up.

Results

From June 2004 to August 2010, 28 patients who had undergone sacrospinous fixation for post-hysterectomy vaginal vault prolapse were identified. The mean age at the time of operation was 74 years (range, 59-88 years). All patients were postmenopausal and sexually inactive. The mean and median follow-up duration after operation was 39 months (range, 9-70 months). The patients' characteristics and previous and concomitant surgeries are listed in Table 1.

All patients presented with vaginal vault prolapse; six (21.4%) had stage II prolapse, 20 (71.4%) had stage III prolapse, and two (7.1%) had stage IV prolapse. Twenty-one (75.0%) and 12 (42.9%) patients had cystocele and rectocele of grade II or more, respectively.

Eight (28.6%) patients had stress incontinence, 11 (39.3%) had urge incontinence, 11 (39.3%) had urgency, and 14 (50.0%) had voiding difficulty. Four patients (14.3%) had constipation, but none had faecal or flatus incontinence.

Twenty-three (82.1%) patients had anterior repair and 12 (42.9%) had posterior repair at the time of sacrospinous fixation. Four (14.3%) patients had vaginal tapes inserted, and two (7.1%) had failed laparoscopic

Table 1. Demographic features and patients' characteristic (n=28)

Characteristic	Data*
Age (years)	74 (59-88); 74
Parity	3.7 (0-10); 3
Body mass index (kg/m^2)	24.4 (18.6-38.1); 22.5
Follow-up (months)	39 (9-70); 39
Previous prolapse surgery	10 (35.7%)
Preoperative prolapse assessment	
Apical prolapse	28 (100%)
Anterior prolapse	21 (75.0%)
Posterior prolapse	12 (42.9%)
Preoperative functional assessment	
Stress incontinence	8 (28.6%)
Urge incontinence	11 (39.3%)
Urgency	11 (39.3%)
Voiding difficulty	14 (50.0%)
Constipation	4 (14.3%)
Anal incontinence (faeces or gas)	0

* Data are presented as mean (range); median or No. (%)

Table 2. Surgical treatment, duration of operation, and blood loss (n=28)

Additional operations	No. of patients	Mean (range)	
		Operating time (mins)	Blood loss (ml)
Anterior repair	13	88 (59-130)	203 (10-450)
Posterior repair	4	76 (60-90)	193 (20-300)
Anterior repair + posterior repair	6	98 (70-120)	130 (50-200)
Anterior repair + posterior repair + tension-free vaginal tape	3	122 (110-130)	200 (10-300)
Laparoscopic colposuspension and paravaginal repair, failed laparoscopic sacrocolpopexy	1	245	150
Anterior repair + transobturator tension-free vaginal tape, failed laparoscopic sacrocolpopexy	1	249	50

sacrocolpopexy and underwent sacrospinous fixation instead. The overall operating time ranged from 59 to 249 minutes. Table 2 shows the operations performed and Table 3 shows the complications.

Four patients (14.3%) had blood loss of >300 mL, but none required blood transfusion. Seven (25.0%) patients had buttock pain after operation, which was relieved by oral analgesics. No patients had sciatica or neuropathy resulting from the procedure. Four (14.3%) patients had urinary tract infections, two (7.1%) had wound infections, and one (3.6%) had vault haematoma that resolved with antibiotic treatment. Five (17.9%) patients had short-term voiding difficulty after operation, most of which resolved within 5 days; only one (3.6%) patient needed prolonged catheterization and the Foley catheter was removed 1 month after the operation. No voiding difficulty was noted on follow-up.

The success rate for sacrospinous fixation was 89.3% (n=25) at a mean follow-up of 39 months. Three (10.7%) patients had recurrence of vaginal vault prolapse. Ten (47.6%) of 21 patients with anterior prolapse preoperatively had recurrence, all of which occurred in the first 3 years. Two (16.7%) of 12 patients with posterior prolapse preoperatively had recurrence within 2 years. Table 4 shows the anatomical assessment results before and after the operation.

Overall, only two prolapse operations were done after sacrospinous fixation. One patient had recurrence of both vaginal vault prolapse and cystocele 2 months after operation, and underwent colpocleisis after failed conservative management with a ring pessary. One patient had recurrence of vaginal vault prolapse complicated by retention of urine at 5 years and underwent repeated sacrospinous fixation. One patient with recurrence of vaginal vault prolapse had point C at 1 cm beyond hymen ring. She was asymptomatic and preferred conservative management.

Twenty-one (75.0%) patients were considered cured of stress incontinence. De-novo stress incontinence was reported in four (20.0%) of 20 patients. Urgency and urge incontinence persisted in nine and eight of 11 patients (81.8% and 72.7%), respectively, after operation. De-novo urge incontinence was reported in five (29.4%) of 17 patients and de-novo urgency was reported in three

Table 3. Complications of surgery (n=28)

Complications	No. (%)
Major complications	
Bladder injury	0
Rectal injury	0
Haemorrhage (>300 ml)	4 (14.3)
Minor complications	
Buttock pain	7 (25.0)
Vault haematoma	1 (3.6)
Vault infection	2 (7.1)
Urinary infection	4 (14.3)
Acute retention of urine	5 (17.9)

Table 4. Anatomical assessment before and after operation (vaginal vault prolapse greater than or equal to stage II) [n=28]

Type of prolapse	No. (%)		
	Preoperative	Recurrence	New
Apical	28 (100.0)	3/28 (10.7)	-
Anterior	21 (75.0)	10/21 (47.6)	0
Posterior	12 (42.9)	2/12 (16.7)	0

Table 5. Functional assessment before and after operation

Type of incontinence / other outcome	No. (%)		
	Preoperative (n=28)	Recurrence	New
Stress incontinence	8 (28.6)	2/8 (25.0)	4/20 (20.0)
Urge incontinence	11 (39.3)	8/11 (72.7)	5/17 (29.4)
Urgency	11 (39.3)	9/11 (81.8)	3/17 (17.6)
Voiding difficulty*	14 (50.0)	1/14 (7.1)	1/14 (7.1)
Constipation	4 (14.3)	0 (0)	0 (0)

* Voiding difficulty was regarded as intermittency, voiding with straining, and retention of urine

(17.6%) of 17 patients. Fourteen (50.0%) patients had preoperative voiding difficulty, which was cured in 13 (92.9%) after operation. Only one (7.1%) patient had symptom recurrence and one (7.1%) had de-novo voiding difficulty. Functional outcomes are shown in Table 5.

Only 15 (53.6%) patients completed the quality-of-life questionnaires. Of those who did not complete the questionnaire, four (14.3%) had died, three (10.7%) had dementia, three (10.7%) were lost to follow-up, and three (10.7%) could not attend for extra follow-up during the study period. The mean scores of the PFDI-20 and PFIQ-7 were 21 of 300 and 5 of 300, respectively (Table 6).

Table 6. Results of the PFDI-20 and PFIQ-7 questionnaires (n = 15)

Questionnaire	Mean (range)
PFDI-20	21/300
POPDI-6	7/100 (0-29)
CRADI-8	4/100 (0-16)
UDI-6	10/100 (0-33)
PFIQ-7	5/300 (0-43)

Abbreviations: PFDI = Pelvic Floor Distress Inventory; POPDI = Pelvic Organ Prolapse Distress Inventory; CRADI = Colorectal-Anal Distress Inventory; UDI = Urinary Distress Inventory; PFIQ = Pelvic Floor Impact Questionnaire

Discussion

Sacrospinous fixation is one of the treatment options for vaginal vault prolapse. Sacrospinous fixation is considered to have a higher failure rate than sacrocolpopexy. Abdominal sacrocolpopexy has been proven to be a lasting and effective procedure for vaginal vault prolapse with cure rates between 90% and 100%[10-12]. However, there are risks of injury to the presacral and perirectal vessels, with life-threatening haemorrhage and mesh erosion. Success rates of sacrospinous fixation have been reported to be 85 to 90%[13,14]. In this study, the success rate was high at 89.3%, with only two patients needing repeat operation.

The complication rates were low and none involved injury to the blood vessels or nerves. Paraiso et al[15] reported a 37% cystocele rate after 243 women had undergone sacrospinous fixation. In the study by Fatton et al[16], co-existing cystocele was repaired with mesh at the time of surgery, and cystocele rate was 9.2% after a mean of 2-year follow-up. In this study, the rate for co-existing cystocele was high at 75%; anterior repair was done with buttressing stitches at the time of operation. The cystocele recurrence rate within 3 years was 47.6%. This reflects a weakness in the repair technique in addition to the effect of the deviated vaginal axis after sacrospinous fixation.

Patients in this study were relatively old so many of them had co-morbidities and shorter operating time was desired. The mean operating time (with the exclusion of 2 patients with failed laparoscopic sacrocolpopexy) was 92 minutes, which was shorter than that for abdominal and laparoscopic sacrocolpopexy[5,17].

It is known that sacrospinous fixation can cause dyspareunia due to the changed vaginal axis after operation. Thus, only sexually inactive women were offered this surgery, and the effect of sacrospinous fixation on sexual function was not assessed in this study.

This study has some limitations. The number of patients was small as prophylactic procedures were excluded from the study. The mean duration of follow-up was only 39 months; follow-up duration was limited by patients' lifespans and some patients defaulted follow-up because of co-morbidities. Although only 15 quality-of-life questionnaires were completed and no preoperative results were available for objective comparison, the scores for both the PFDI-20 and the PFIQ-7 were low, suggesting minimal disturbance to quality of life. However, it would

be preferred to have PFDI-20 and PFIQ-7 assessment before and after surgery for better comparison.

Conclusion

Sacrospinous fixation is a safe and effective treatment option for vaginal vault prolapse, with a success rate of 89.3% demonstrated in this study. The patients' quality of life was generally high despite common urinary symptoms. Longer-term results are needed and preoperative assessment for quality of life could produce better evaluation of the changes associated with this operation.

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