

Original Article

Uterine Preservation or Hysterectomy at Sacrospinous Colpopexy for Uterovaginal Prolapse?

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Abstract: This study retrospectively compared 34 women who had a sacrospinous hysteropexy and 36 who had a vaginal hysterectomy and sacrospinous fixation for symptomatic uterine prolapse. All women underwent independent review and examination, with a mean follow-up of 36 months in the hysterectomy group and 26 months in the hysteropexy group.

The subjective success rate was 86% in the hysterectomy group and 78% in the hysteropexy group ($P=0.70$). The objective success rate was 72% and 74%, respectively ($P=1.00$). The patient-determined satisfaction rate was 86% in the hysterectomy group and 85% in the hysteropexy group ($P=1.00$). The operating time in the hysterectomy group was 91 minutes, compared to 59 minutes in the hysteropexy group ($P<0.01$). The mean intraoperative blood loss in the hysterectomy group was 402 ml, compared to 198 ml in the hysteropexy group ($P<0.01$). The sacrospinous hysteropexy is effective in the treatment of uterine prolapse. Vaginal hysterectomy may not be necessary in the surgical treatment of uterine prolapse.

Keywords: Hysterectomy; Sacrospinous hysteropexy; Uterine prolapse

Introduction

Vaginal hysterectomy is considered to be the operation of choice for uterovaginal prolapse [1]. The pathological

cause of uterine prolapse is loss of integrity of the uterosacral cardinal ligament complex and weakening of the pelvic diaphragm, allowing uterine descent below the levator plate. Hysterectomy alone fails to address this problem [2]. The McCall culdoplasty, uterosacral ligament plication, and sacrospinous or prespinous fixations are procedures to resupport the vaginal vault at the time of vaginal hysterectomy. Increasingly, women are choosing to avoid hysterectomy [3]. Delay in childbearing until a later age, a belief that the uterus plays a role in sexual satisfaction [4] and successful conservative treatments for the control of menorrhagia [5] all diminish the need for hysterectomy. In women wishing uterine preservation the following surgical options are available: Manchester repair [6], sacral hysteropexy [7] (cervix secured to the sacrum) or sacrospinous hysteropexy [8] (cervix to the sacrospinous ligament). The sacrospinous ligament fixation after vaginal hysterectomy is an established treatment for marked uterovaginal prolapse [9–13]. In women requesting uterine preservation excellent outcomes have been achieved with the sacrospinous hysteropexy (uterus to the sacrospinous ligament) [8,12,14]. There are no studies comparing sacrospinous hysteropexy with sacrospinous fixation performed at the time of hysterectomy. The aim of this study is to determine the efficacy of these procedures and to determine the role of vaginal hysterectomy at prolapse surgery for uterovaginal prolapse.

Patients and Methods

Between June 1992 and June 1998, 34 women underwent sacrospinous hysteropexy and 36 vaginal hyster-

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ectomy and sacrospinous fixation of the vault in the management of symptomatic uterovaginal prolapse to or beyond the introitus with straining. Before surgery all patients underwent a standardized history and site-specific vaginal examination. Examination was carried out in the left lateral position using a Sims speculum during a Valsalva maneuver. Prolapse was graded using a modified Baden–Walker classification [15]. First degree was defined as prolapse to the level of the mid-vagina. Second degree was prolapse to the level of the introitus, and third degree was prolapse beyond the introitus. Uterine preservation was considered in women with normal cervical cytology and no abnormal uterine bleeding. Uterine preservation was offered to all suitable women and they self-selected to hysterectomy or hysteropexy. Preoperative urodynamic evaluation was performed in women with bladder dysfunction.

All surgery was performed by or under the supervision of the senior authors (MC and MS). The sacrospinous fixation was performed as previously described [12], with the vaginal vault being fixed to the right sacrospinous ligament using two no. 1 PDS (polydioxanone sutures, Ethicon) at the completion of the vaginal hysterectomy. The sacrospinous hysteropexy was performed as previously described [8]. Uterine curettage was routinely performed at the commencement of the procedure. The posterior vaginal wall was then incised from the introitus to the cervix and the pouch of Douglas was opened through a high incision on the peritoneum. The rectovaginal fascia is dissected from the vaginal mucosa using sharp and blunt dissection, laterally to the pelvic side wall.

The right sacrospinous ligament was identified between the ischial spine and sacrum. Three sutures were placed through the right sacrospinous ligament using the Miya hook: two Gore-tex (CV-2 Gore, USA) sutures and 1 PDS. One Gore-tex suture was plicated to each uterosacral ligament at the point of insertion on the cervix and each end of the no. 1 PDS suture was secured through a full-thickness bit of the vagina at the apex of the incision. The peritoneal sac was closed above the insertion of the uterosacral ligaments with a pursestring no. 0 PDS. Fascial defects were repaired as required, depending on the preoperative and intraoperative assessment. Anterior colporrhaphy was not routinely performed. A perineorrhaphy was routinely incorporated in the posterior colporrhaphy. After the rectovaginal fascia plication the Gore-tex fixation sutures were laid on the fascia and the posterior vaginal wall mucosa was closed to the mid-vaginal point above the sutures. The three fixation sutures were then tied, – PDS first, Gore-tex last – and the posterior colporrhaphy and perineorrhaphy completed.

Long-term follow-up was achieved in 56 women, 27 who underwent sacrospinous hysteropexy and 29 who had vaginal hysterectomy and sacrospinous fixation. Of the 14 women lost to follow-up, 7 had since died, 3 suffered senile dementia and 4 were unable to be contacted. Eight women in each group were included in a previous publication with short-term follow-up [12].

Between November 1998 and March 1999 the 56 women underwent independent evaluation by a non-surgical author who was unaware of the surgery performed. Evaluation included a standardized questionnaire and site-specific vaginal examination, and patient satisfaction was recorded using a visual analog scale (0–100) as previously described [16]. Women with no symptoms of genital prolapse were classified as a subjective success. Objective successes were those women who on examination had no vaginal prolapse beyond the halfway point of the vagina. Women who had undergone repeat prolapse surgery were classified as a subjective and objective failure. A patient-determined success were those women who rate their surgery as 80 or greater on the visual analog scale.

Menopause was defined as the cessation of menses for longer than 12 months. Constipation was defined as the presence of chronic straining at defecation. Sexual activity was a self-reported yes or no. Dyspareunia was the occurrence of significant pain associated with vaginal intercourse. These definitions were used in the pre- and postoperative evaluations.

Fisher's exact test and Student's *t*-test were used to compare dichotomous and means of continuous variables, respectively. Adjustment for unequal variables in Student's *t*-test used Satterthwaite's approximation [17]. For the purpose of this paper, an α level of 5% determined statistical significance.

Results

Table 1 lists the demographic details. There was no significant differences in age, parity, body mass index, incidence of previous surgery, constipation, sexual activity, menopausal status, urinary stress incontinence, degree of cervical prolapse or length of follow-up. Preoperatively, grade 2 or greater cystocele was seen in

Table 1. Patient characteristics used in matching: continuous variables described using mean \pm standard deviation (range) and dichotomous variables described using frequency (percentage)

	Sacrospinous and vaginal hysterectomy <i>n</i> = 29	Sacrospinous hysteropexy <i>n</i> = 27	<i>P</i> value
Age (yr)	63 \pm 14 (35–81)	65 \pm 18 (23–87)	0.65 [†]
Parity	3 (0–8)	3 (0–10)	1.00 [§]
Body mass index (kg/m ²)	26 \pm 3 (22–33)	28 \pm 9 (19–60)	0.30 [†]
Menopause (<i>n</i>)	23 (79%)	23 (85%)	0.73*
Previous prolapse or continence surgery (<i>n</i>)	5 (17%)	4 (15%)	1.00*
Constipation (<i>n</i>)	7 (24%)	6 (22%)	0.75*
Stress incontinence (<i>n</i>)	1 (3%)	2 (7%)	0.61*
Sexually active (<i>n</i>)	16 (55%)	12 (48%)	0.79*
Vault prolapse grade 2 (<i>n</i>)	17 (59%)	20 (74%)	
grade 3 (<i>n</i>)	12 (41%)	7 (26%)	0.27*
Length follow-up (months)	33 \pm 28 (3–88)	26 \pm 23 (5–81)	0.34 [†]

[†] Student's *t*-test, [§] the median test and * Fisher's exact test were used in statistical comparisons.

76% of the hysterectomy group and 67% of the hysteropexy group ($P = 0.56$), and rectoceles in 62% and 67%, respectively ($P = 0.79$). Enteroceles were detected at surgery in 69% and 76%, respectively ($P=0.55$). Anterior colporrhaphy was performed concomitantly in 79% of the hysterectomy group and 70% of the hysteropexy group ($P = 0.54$). Posterior colporrhaphy was performed in 76% and 78%, respectively ($P = 1.00$).

Perioperative details are recorded in Table 2. The mean operating time in the hysterectomy group was 91 minutes, compared to 59 minutes in the hysteropexy group ($P<0.01$). The mean intraoperative blood loss in the hysterectomy group was 402 ml, compared to 198 ml in the hysteropexy group ($P<0.01$).

The mean length of review was 33 months in the hysterectomy group and 26 months in the hysteropexy group ($P = 0.34$). The subjective success rate (no awareness of prolapse) was 86% in the hysterectomy group and 78% in the hysteropexy group ($P = 0.70$). The objective success rate (no prolapse beyond the mid-vaginal point) was 72% and 74%, respectively ($P = 1.00$). The patient-determined satisfaction rate was 86% in the hysterectomy group and 85% in the hysteropexy group ($P = 1.00$). The mean number of days to return to activities of daily living was 34 following the hysterectomy and 32 after the hysteropexy ($P = 0.64$). The site-specific surgical outcome is described in Table 3.

Postoperatively, no patient required blood transfusion and there were no thromboembolic events. Three women reported significant buttock pain postoperatively, 1 in the hysterectomy group and 2 after the hysteropexy. Two women in the hysteropexy group became pregnant and completed pregnancies, one a twin pregnancy. Both were delivered by cesarean section. Five women underwent further gynecological surgery. In the hysterectomy group there was one vaginal repair and one abdominal sacral colpopexy for prolapse. In the hysteropexy group 2 women required a vaginal hysterectomy and repair for uterine prolapse, one 2 years postpartum. One woman had an abdominal hysterectomy for menorrhagia. Postoperatively, 59% in the hysterectomy group and 63% in the hysteropexy group were sexually active ($P = 0.79$) with 3% and 7% respectively reporting dysparenia. Two

Table 2. Perioperative details. Variable means and standard deviation (range) were reported

	Sacrospinous and vaginal hysterectomy <i>n</i> = 29	Sacrospinous hysteropexy <i>n</i> = 27	<i>P</i> value
Duration of surgery (min)	91 ± 19 (60–145)	59 ± 16 (40–110)	<0.01
Blood loss (ml)	402 ± 188 (100–800)	198 ± 106 (50–500)	<0.01
Inpatient days	7.5 ± 3.2 (3–14)	6.4 ± 3.8 (1–12)	0.23
Catheter days	4.4 ± 4.6 (1–18)	4.1 ± 5.7 (1–28)	0.27

Student's *t*-test was used for statistical comparisons

Table 3. Anatomic results

	Sacrospinous and vaginal hysterectomy <i>n</i> = 29 (%)	Sacrospinous hysteropexy <i>n</i> = 27 (%)	<i>P</i> value
Objective success	21 (72)	20 (74)	1.00
Cystocele (>grade 1)	8 (28)	6 (22)	1.00
Vault (>grade 1)	2 (7)	6 (7)	1.00
Enterocele (>grade 1)	1 (3)	0	1.00
Rectocele (>grade 1)	1 (3)	0	1.00

Statistics by Fisher's exact test.

women from the hysterectomy group and 1 in the hysteropexy group complained of urinary stress incontinence.

Discussion

Uterine prolapse has long been considered an indication for vaginal hysterectomy. As women's lifestyle and beliefs change many may request uterine preservation, and the aim of this paper is to establish the efficacy of the sacrospinous hysteropexy in women with symptomatic uterovaginal prolapse. Excellent outcomes have been reported with the sacrospinous hysteropexy in women with uterovaginal prolapse requesting uterine preservation. Sacrospinous hysteropexy has been described by three investigators in 35 women wishing to retain the uterus [8,12,14], 24 to retain fertility and 11 to preserve the uterus. Follow-up has been reported in 33. Five women have completed pregnancies (all vaginal deliveries) and 1 (20%) required surgery for uterine prolapse. There was only one failure in 28 women undergoing sacrospinous hysteropexy who did not become pregnant. Follow-up varied from 6 weeks to 6 years. The question remains, is sacrospinous hysteropexy a suitable option for women with uterovaginal prolapse requesting uterine preservation for non-childbearing reasons? There is a paucity of information available on the efficacy of the sacrospinous hysteropexy and no comparative studies with sacrospinous colpopexy performed at the time of vaginal hysterectomy. This study allows the assessment of the advantages and disadvantages of performing vaginal hysterectomy for women undergoing surgery for uterovaginal prolapse.

No significant differences exist between the two groups in potential known confounders, including age, menstrual status, parity, body mass index, previous continence or prolapse surgery, constipation, sexual activity, degree of prolapse, coexisting stress incontinence and length of review. Two women completed successful pregnancies (1 twin) following the sacrospinous hysteropexy. There were no differences in the subjective, objective or patient-determined outcomes between women undergoing sacrospinous hysteropexy and those undergoing vaginal hysterectomy and sacrospinous fixation for symptomatic uterovaginal prolapse.

The objective advantages of the sacrospinous hysteropexy over the hysterectomy and sacrospinous fixation include a clinically and statistically significant decrease in blood loss and operating time. This may be an added advantage in the medically infirm, where a reduction in surgical intervention is desired. Uterine preservation allowed 2 women to complete their family without symptomatic prolapse.

The disadvantages of uterine preservation in this series are small. Women continue to need surveillance for cervical or uterine cancer. No woman developed cervical dysplasia or postmenopausal bleeding in this series. Women with a uterus who use hormone replacement therapy need to take progesterone to minimize the risk of endometrial cancer. Continuous hormone replacement treatment regimens reduce the need for regular menses, which some women find distasteful while using cyclical hormone replacement regimens. The failure rate of the sacrospinous hysteropexy in the two women who challenged the repair by term pregnancy was 50% and higher than the 20% previously reported [8]. One woman required a total abdominal hysterectomy for menorrhagia.

Postoperatively, approximately 60% of women in both groups were sexually active, with low rates of dyspareunia in both groups. Sexual satisfaction in the sexually active women was not recorded.

The idea of uterine preservation at prolapse surgery is not new. In 1934, Bonney stressed that the uterus plays a passive role in uterovaginal prolapse [18]. Alternatives to the sacrospinous hysteropexy include the Manchester repair and sacral hysteropexy. In the Manchester procedure, after partial cervical amputation the uterosacral cardinal complex is shortened and reattached to the cervix. The Manchester repair is quicker to perform and has less blood loss than the vaginal hysterectomy for uterovaginal prolapse [6]. The problems with the Manchester repair include recurrence of prolapse in excess of 20% in the first few months [19], a decrease in fertility, and pregnancy wastage as high as 50% [20,21]. Future sampling of the cervix for cytology and the endometrium for histology can be difficult owing to vaginal re-epithelialization or cervical stenosis.

Limited numbers of sacral hysteropexies have been reported where the cervix is directly or indirectly attached to the sacrum [7]. The sacrospinous hysteropexy avoids the increased morbidity of the abdominal approach, and retains the option to proceed abdominally if recurrent prolapse arises. Hysterectomy following a sacral hysteropexy could be complicated by the difficult dissection required to remove the cervix and mesh from the sacrum.

This study is limited by being retrospective, but there were no differences in known confounders between the groups, and follow-up by the continence nurses, not associated with the surgery, eliminated observer bias.

The sacrospinous hysteropexy can be safely offered to women with symptomatic uterovaginal prolapse requesting uterine preservation. Vaginal hysterectomy may not

be necessary in the surgical correction of uterovaginal prolapse and may serve to increase the morbidity of the surgical procedure. Further prospective evaluation of the role of vaginal hysterectomy in this group is required.

References

1. Cardozo L. Urogynaecology. New York: Churchill Livingstone, 1997:321–350
2. Marana HR, Andrade JM, Marana RR, et al. Vaginal hysterectomy for correcting genital prolapse. *J Reprod Med* 1999;44:529–534
3. Wilcox LS, Koonin LM, Pokras R, et al. Hysterectomy in the United States, 1988–1990. *Obstet Gynecol* 1994;83:549–555
4. Masters WH, Johnson V. Human sexual response. Boston: Little Brown, 1966:238
5. Barrington JW, Bowen-Simpkins P. The Levonorgesterel intrauterine system in the management of menorrhagia. *Br J Obstet Gynaecol* 1997;104:614–616
6. Thomas AG, Brodman ML, Dottino PR, et al. Manchester procedure vs. vaginal hysterectomy for uterine prolapse. *J Reprod Med* 1995;40:299–304
7. Costantini E, Limbi R, Micheli C, Parziani S, Porena M. Colposacropexy with Gore-tex mesh in marked vaginal and uterovaginal prolapse. *Eur Urol* 1998;34:111–117
8. Kovac SR, Cruikshank SH. Successful pregnancies and vaginal deliveries after sacrospinous uterosacral fixation in five of nineteen patients. *Am J Obstet Gynecol* 1993;168:1778–1786
9. Nichols DH. Sacrospinous fixation for massive eversion of the vagina. *Am J Obstet Gynecol* 1982;142:901–904
10. Cruikshank SH, Cox IN. Sacrospinous fixation at the time of vaginal hysterectomy. *Am J Obstet Gynecol* 1991;164:1072–1076
11. Shull BL, Capen CV, Riggs MW, Kuehl TJ. Preoperative and postoperative analysis of site-specific pelvic support defects in 81 women treated with sacrospinous ligament suspension and pelvic reconstruction. *Am J Obstet Gynecol* 1992;166:1764–1771
12. Carey MP, Slack MC. Transvaginal sacrospinous colpopexy for vault and marked uterovaginal prolapse. *Br J Obstet Gynaecol* 1994;101:536–540
13. Paraiso MF, Ballard LA, Walters MD, Lee JC, Mitchinson AR. Pelvic support defects and visceral and sexual function in women treated with sacrospinous ligament suspension and pelvic reconstruction. *Am J Obstet Gynecol* 1996;175:1423–1431
14. Richardson DA, Scotti RJ, Ostergard DR. Surgical management of uterine prolapse in young women. *J Reprod Med* 1989;34:388–392
15. Baden WF, Walker TR. Genesis of the vaginal profile: a correlated classification of vaginal relaxation. *Clin Obstet Gynecol* 1972;15:1048–1054
16. Maher CF, Dwyer PL, Carey MP, Gilmour DL. Burch colposuspension for repeat retropubic continence surgery. *Br J Obstet Gynaecol* 1999;106:719–724
17. Steel RGD, Torrie JH. Principles and procedures of statistics, 2nd edn. New York: McGraw-Hill, 1980
18. Bonney V. The principles that should underline all operations for prolapse. *J Obstet Gynaecol Br Emp* 1934;41:669–683
19. Williams BFP. Surgical treatment in uterine prolapse in young women. *Am J Obstet Gynecol* 1996;95:967–972
20. O'Leary JA, O'Leary JL. The extended Manchester operation. *Am J Obstet Gynecol* 1970;107:546–505
21. Naya y Sanchez RM, Velasco VR, Garcia TL. Manchester operation: late complications and obstetric future. *Ginecol Obstet Mex* 1973;33:457–459

EDITORIAL COMMENT: This is the first study to compare sacrospinous hysteropexy with sacrospinous fixation. The patients were not randomized but were offered the choice of procedure. All patients had prolapse

to at least the introitus. The results were comparable, but there was a mixture of short- and long-term follow-ups. There was a high recurrence rate in those who became

pregnant. The major site of recurrence was cystocele. This procedure should be used cautiously in patients with pre-existing anterior segment defects.

Review of Current Literature

Prevalence of Perioperative Complications among Women Undergoing Pelvic Reconstructive Surgery

Lambrou NC, Buller JL, Thompson JR, Cundiff GW, Chou B, Montz FJ

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The study aim was to report on the intraoperative and postoperative complications of reconstructive pelvic surgery, and attempt to identify associated risk factors. Cases selected included those in which pelvic reconstructive surgery had been performed with or without associated hysterectomy, and the retrospective review was performed in 100 consecutive patients. The mean number of surgeries per patient was five, and the mean operating time 225 minutes. All patients received prophylactic antibiotics. Complications occurred in 46% of patients, 13 intraoperative and 33 postoperative. Most of the intraoperative injuries involved the urinary tract, with cystotomy in 6, and ureteral injury in 2. Postoperatively, there were gastrointestinal complications in 7, infections in 11 (wound 4, pneumonia 3, abscess 2, urinary 2), anemia in 6, and pulmonary embolus in 3. The latter problems occurred even though all patients wore pneumatic compression stockings at surgery, and 28% had heparin prophylaxis. There were 15 readmissions in 8

patients. The main factors associated with complications in this study was the number of surgical procedures performed, which was associated with increased blood loss.

Comment

The usual factors associated with increased perioperative risk were cited by the authors as age, underlying medical disease, obesity and malignancy. The number of surgical procedures performed per patient may be a significant factor in raising the risk in this group of patients to that of patients with malignancy. Blood loss was related to the number of complications, and it was also related to the number of surgical procedures performed per patient. It would also seem that time may have been an independent factor, in that more procedures would generally require more time and be associated with greater blood loss. It would have been useful to know the number of procedures related to how many patients had how many surgical procedures, and to have the patients assigned to those having peritoneal entry or not at surgery. Surgery must be carefully planned in all patients, and the most stringent preoperative assessments made in order to reduce intraoperative and postoperative complications. This may include consultation with general internists, specialty physicians and anesthesiologists.