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Sacrospinous ligament fixation using long needle holder: a simple technique in low resource countries

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ABSTRACT

Objective. The objective of this study was the evaluation of sacrospinous ligament fixation using long needle holder for uterine prolapse.

Materials and Methods. This was a prospective study conducted over 10 patients including patients with uterine prolapse who were negative for hepatitis B, C virus and human immunodeficiency virus and excluding previous failure of ligament fixation. Right sacrospinous ligament fixation was performed using long needle holder through long posterior vaginal wall incision to suture a ligature to the back of the cervix or the vaginal vault and the ligament using Vicryl one suture, on a half-circle needle of 36 mm length. Primary outcome was evaluating the failure rate by recurrence at one year after surgery. Secondary outcome was assessing complications.

Results. The mean follow-up period was 1 year. No major intra- and post-operative complications occurred. Duration of surgery regarding ligament dissection and fixation was 30-45 min.

Conclusions. Transvaginal sacrospinous cervico and colpexy can be performed with uterovaginal prolapse using long needle holder. It is more tedious and time consuming but can be used in low resource countries. Dissection of the whole length of the posterior vagina wall is needed for easy entry of the large needle with more than one attempt may be needed at the same setting for transfixing the ligament. High incidence of surgeon's finger injury can occur but can be avoided with experience. This technique may be an alternative in low resource countries, when a Miya hook and Capio devices are not available.

INTRODUCTION

Sacrospinous colpexy became a favored method for restoring vaginal support in women with vault prolapse and uterine prolapse. Exposure of the sacrospinous ligament require adequate dissection of the pararectal space and avoiding injury to the rectum. Injury to the pudendal nerve and the in-

ternal pudendal vessels is avoided by placing the suture 1.5 cm medial to the ischial spine. Using a transvaginal approach, complications of laparotomy are avoided, and hospital stay as well as recovery to normal are shortened [1, 2]. Post-hysterectomy vault prolapse (PHVP) has been reported to range between 5 and 43% after hysterectomy. The two most accepted surgical techniques for pro-

lapse are sacrocolpopexy (LSC) and sacrospinous fixation (SF). Vaginal SF appears to be correlated to lower rectal damage (0.4%), pudendal or sciatic nerve injury (1.2%), urinary tract lesions (0.7%), hemorrhage (5.2%), chronic pain (2%), and postoperative urinary tract infections (14.7%), lower cost, and shorter operating time. Finally, the estimated learning curve for SF required only 20 cases to complete the procedure with a favorable anatomical outcome [3].

The aim of this study was to evaluate sacrospinous fixation using long needle holder in treatment of uterine prolapse as an alternative in low resource countries, when a Miya hook and Capio device are not available.

MATERIALS AND METHODS

A total of 10 women were included in the present study from January 2015 to December 2015 and the study was carried out at Shatby maternity university hospital, Egypt. The inclusion criteria were women with pelvic organ prolapse. Exclusion criteria were previous sacrospinous ligament fixation. Pelvic organ prolapse was characterized and staged according to the International Continence Society Pelvic Organ Quantification (ICS POP-Q) staging system. All women were treated with right sacrospinous ligament suspension of the cervix or the vagina in cases who developed that after vaginal hysterectomy. Patients were operated under regional anesthesia in lithotomy position. For sacrospinous fixation, a longitudinal incision was made in the posterior vaginal wall

to expose the rectovaginal space. The epithelium is dissected laterally and the pararectal space was opened on the right side. The suspension was done on the patient's right side because retraction of the rectum is easier and a right-handed surgeon can pass a suture. By a blunt finger dissection, a window was created between the rectovaginal space and ischial spine. Using the ischial spine as a prominent landmark, the sacrospinous ligament was palpated. Narrow mal-leable retractors were used to retract the vagina and rectum, to visualize clearly the sacrospinous ligament. In all cases, a delayed absorbable suture 1 vicryl on 36 mm half-circle round needle was used with a long needle holder. The suture was placed through the sacrospinous ligament starting from the superior border in an upside down direction and 2 cm medial to the ischial spine to the back of the cervix or the cardinal ligament after hysterectomy. After fixing the vaginal vault, anterior colporrhaphy and TOT were done as indicated then closure of the posterior vaginal mucosa and finally three sacrospinous sutures were tied. When healing occurs, vaginal epithelium was fused with the sacrospinous ligament and the vault remained suspended up. Vaginal pack and Foley's catheter were inserted for one to two days after surgery. Postoperatively, women were given broad-spectrum antibiotic for five days as per hospital routine as we are a low resource country with high prevalence of hospital and hygienic infections (**Figures 1-4**). Patients were followed up for one year after surgery where PV examination and complains were assessed and stage 0-1 was recognized as an objective cure.

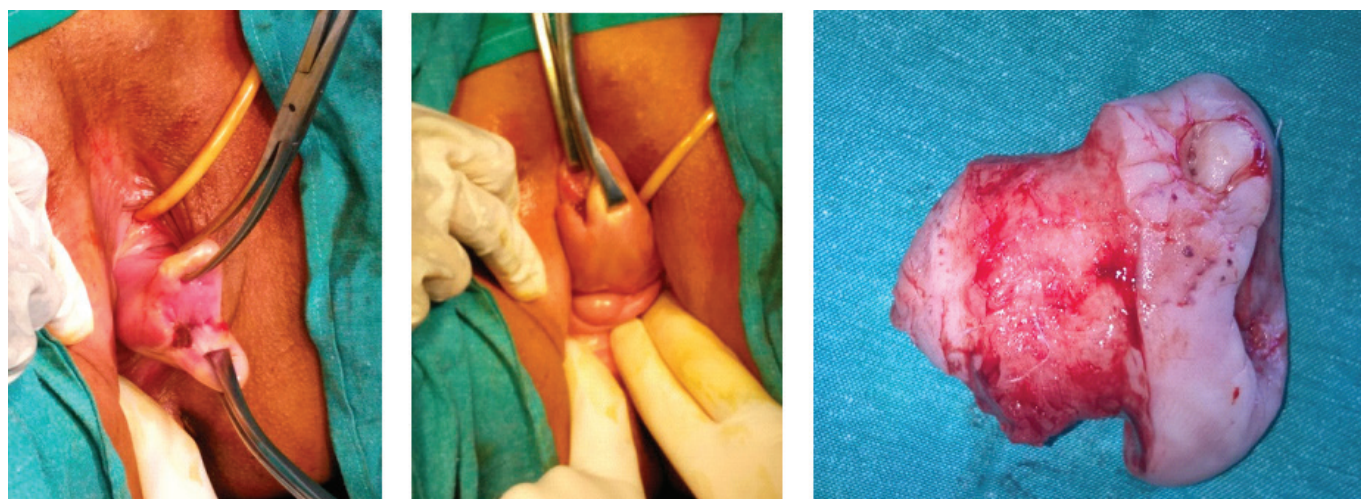


Figure 1. Elongated hypertrophic cervix and amputated cervix specimen associated with prolapse.

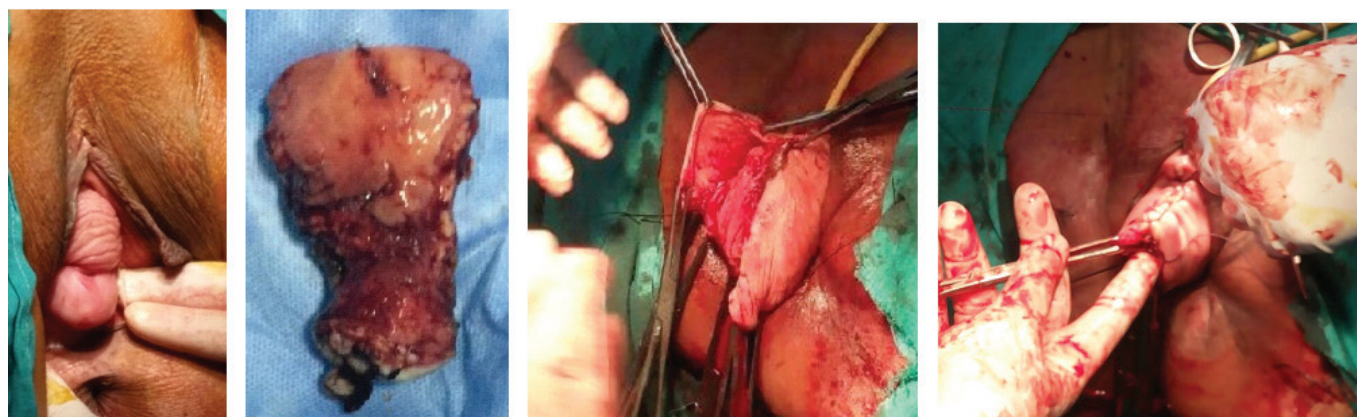


Figure 2. Uterine prolapse and vaginal hysterectomy then cystocele repair with prolapsed vagina vault before fixation.

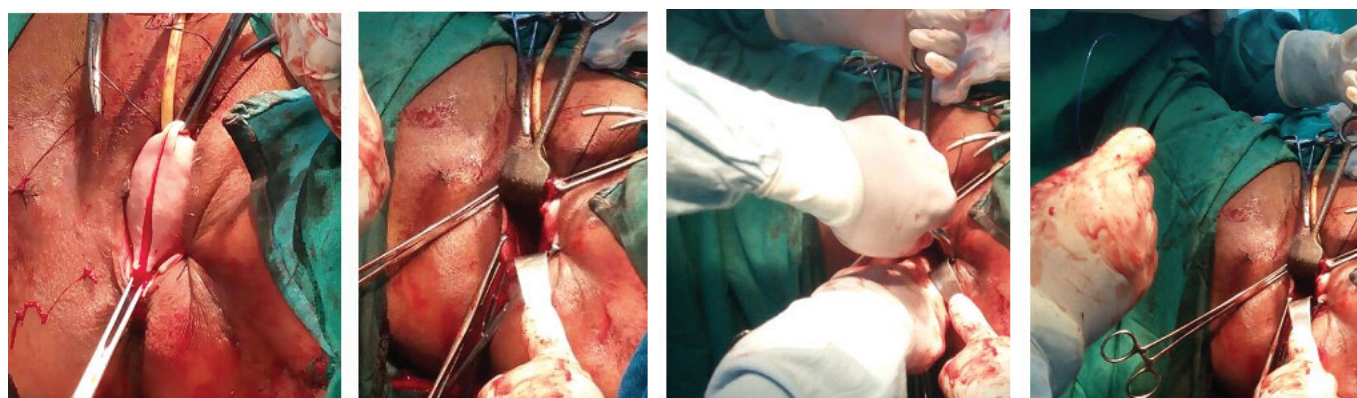


Figure 3. Posterior vaginal wall dissection from the vault or back or cervix till the hymen tags with dissection of pararectal space. Hand direction with the needle holder through the ligament with non-yielding of the suture on pull.

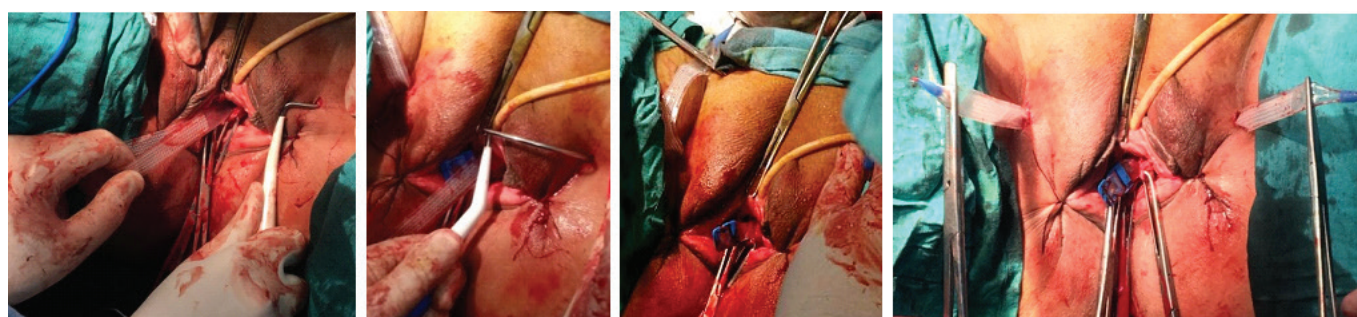


Figure 4. TOT surgery for stress incontinence.

RESULTS

Various surgical procedures are shown in **Table 1**. No major complications were reported. Follow-up examinations were performed over one year on all patients. Out of the 10 patients with prolapse, none had recurrences as defined by stage II or more with objective cure of stage 0-1.

DISCUSSION

The sacrospinous ligament suspension restores level I vaginal support. Pelvic floor dysfunction leads

to surgery in 11% of women in their lifetime. A recurrence of prolapse occurs in 25% within 5 years and the need for repeat surgery is 17% [1]. The rates of anatomic failure in published studies vary significantly. Beer and Kuhn reviewed the literature and found that the failure rates ranged from 3% to 37% [2]. Failure rates were higher in the anterior compartment and lower in the posterior and apical compartments. A successful anatomic outcome, defined as POP-Q stage 0 ("optimal") or stage 1 ("satisfactory"), was reported in 98% of women [4]. The relief from "vaginal pressure" or "bulge" symptoms were detected in 82% to 100% of women [5]. 94% of the women were sexually active. Dyspa-

Table 1. Patients' characteristics.

Case	Age (years)	Gravidity and parity	Mode of Delivery	Diagnosis	Operation performed	Duration of surgery
1	38	G3P3	Previous I CS	Elongated hypertrophied cervix with first degree uterine prolapse and perineorrhaphy	Cervical amputation with ligament fixation	60 min
2	70	G5P5	NVD	Procidentia	Vaginal hysterectomy with ligament fixation	90 min
3	62	G3P3	NVD	Second degree uterine prolapse with stress incontinence	Vaginal hysterectomy with ligament fixation and TOT	120 min
4	72	G6P6	NVD	Procidentia	Vaginal hysterectomy with ligament fixation	90 min
5	67	G3P3	NVD	Procidentia with stage III cystocele	Vaginal hysterectomy with ligament fixation and cystocele repair	90 min
6	56	G6P6	NVD	Second degree uterine prolapse	Vaginal hysterectomy with ligament fixation	105 min
7	40	G2P2	NVD	Pseudo-uterine prolapse with stage II rectocele	Cervical amputation with ligament fixation and rectocele repair with perineorrhaphy	95 min
8	73	G7P7	NVD	Stage III cystocele with first degree uterine prolapse	Vaginal hysterectomy with cystocele repair and ligament fixation	90 min
9	67	G4P4	NVD	Procidentia	Vaginal hysterectomy and ligament fixation	90 min
10	63	G3P3	NVD	Procidentia	Vaginal hysterectomy and ligament fixation	95 min

reunia was relieved in 68% to 100% of patients who had it preoperatively and developed in 0% to 20.8% of patients who did not have it preoperatively [6]. The three techniques of SSLF for passing the needle through SSL are Direct visualization, Deschamps ligature carrier by palpation, Miya hook ligature carrier by palpation, and Capiro hook. According to Pollak *et al.* the intra as well as post-operative complication were less with direct visualization technique (2%) when compared to Dischamps clamp. Delancey published an article using retractors and direct visualization of the ligament via an apical approach in the American Journal of Obstetrics and Gynecology in 1988, so we aimed to show our experience and applicability [7, 8].

At present, the conventional procedure to prevent PHVP at the end of hysterectomy is the McCall culdoplasty. However, in patients with severe POP, it is associated with higher than 10% risk of PHVP. Alternative techniques such as vaginal sacrospinous ligament fixation, ileococcygeous suspension, uterosacral ligament suspension and abdominal sacrocolpopexy can be performed also to prevent PHVP. Sacrocolpopexy has been described to be associated with a mesh-erosion risk up to 23% following hysterectomy plus concomitant laparoscopic sacrocolpopexy. This issue has been recently led to controversies and litigations, especially after the Food and Drug Administration (FDA) warning against the use of meshes for transvaginal POP repair. Hence, a call for alternative surgical treatment associated with reduced complications is mandatory, especially in patients who desire to maintain their sexual function after surgery [9].

CONCLUSIONS

Transvaginal sacrospinous cervico and colpopexy can be performed with uterovaginal prolapse using long needle holder. It is more tedious and time consuming but can be used in low resource countries. Dissection of the whole length of the posterior vagina wall is needed for easy entry of the large needle and more than one attempt is needed at the same setting for transfixing the ligament. High incidence of surgeon's finger injury can occur, but this can be avoided with experience. This technique may be an alternative in low resource countries, when a Miya hook and Capiro device are not available.

COMPLIANCE WITH ETHICAL STANDARDS

Authors contribution

A.S.E-A.: Project administration, data curation, writing – original draft, writing – review & editing.

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Study registration

N/A.

Disclosure of interests

The author declares that he has no conflict of interests.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study was approved by Alexandria University Ethics Committee.

Informed consent

Informed consent was obtained from the patient included in the study.

Data sharing

N/A.

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