

---

## GYNAECOLOGY

---

# Outcomes of Surgery for Pelvic Organ Prolapse in Songklanagarind Hospital, 10 Years' Experience

Siwatchaya Khanuengkitkong, M.D.\*,  
Thanapan Choobun, M.D.\*.

\* *Department of Obstetrics and Gynaecology, Faculty of Medicine, Prince of Songkla University, Hat-Yai, Songkhla 90110, Thailand*

### ABSTRACT

**Objectives:** To evaluate the type of surgery, outcome and peri-operative complication after surgical correction of pelvic organ prolapse in our institute.

**Materials and Methods:** This was a descriptive study that included 270 women who underwent surgery for pelvic organ prolapse in Department of Obstetrics and Gynecology between January 2001 and December 2011. Demographic data on age, body mass index, parity, route of delivery, previous gynecologic surgery, co-morbidities, and menopausal status were obtained. Clinical symptoms, diagnosis and stage of pelvic organ prolapse, and procedure related data including type of operation, adverse events, and the recurrence rate were reviewed from patient' charts. Descriptive statistics were used for analysis.

**Results:** Of the 270 women who underwent pelvic organ prolapse surgery, the mean age was 65.6 years old (range 43-87). Vaginal hysterectomy with anterior colporrhaphy and posterior colpoperineorrhaphy was the most common procedure (220 patients, 81.5%). The most common intra-operative complication was hemorrhage that required blood transfusion (12 patients, 4.4%). The most common post-operative complication was acute urinary retention (28 patients, 10.4%), followed by vaginal hematoma (7 patients, 2.6%). The median length of follow-up was 8 months (range 6-84), and the recurrence rate was 7.8%.

**Conclusion:** Peri-operative complication related to surgical correction for pelvic organ prolapse was moderate without serious complications occurred.

**Keywords:** pelvic organ prolapse, surgery, complication

**Correspondence to:** *Siwatchaya Khanuengkitkong, M.D., Department of Obstetrics and Gynaecology, Faculty of Medicine, Prince of Songkla University, Hat-Yai, Songkhla, 90110 Thailand, Tel: +66816787830, +6674451201, Fax: +6674429617, E mail: meawpetch@yahoo.com*

---

## ผลการผ่าตัดภาวะอุ้งเชิงกรานหย่อน ประสบการณ์ 10 ปี ในโรงพยาบาลสงขลานครินทร์

ศิวิชัย คณิงกิจก้อง, ธนพันธ์ ชูบุญ

### บทคัดย่อ

**วัตถุประสงค์:** เพื่อศึกษาชนิดของการผ่าตัด ผลการผ่าตัดและภาวะแทรกซ้อนระหว่างผ่าตัดผู้ป่วยที่มีภาวะอุ้งเชิงกรานหย่อน ในโรงพยาบาลสงขลานครินทร์

**วิธีดำเนินการวิจัย:** เป็นการศึกษาข้อมูลเชิงพรรณนาค้นย้อนหลัง ในผู้ป่วยที่รับการผ่าตัดรักษาอุ้งเชิงกรานหย่อน ของภาควิชา สูติศาสตร์ และนรีเวชวิทยา โรงพยาบาลสงขลานครินทร์ ตั้งแต่ มกราคม 2544 ถึง ธันวาคม 2554 โดยศึกษาข้อมูลพื้นฐาน ทั่วไป เช่น อายุ, ดัชนีมวลกาย, จำนวนบุตร, วิธีการคลอด, โรคร่วมทางนรีเวช, ประวัติการผ่าตัดทางนรีเวช, โรคประจำตัว และ ภาวะหมดประจำเดือน อาการที่เกี่ยวข้องกับภาวะอุ้งเชิงกรานหย่อน และข้อมูลเกี่ยวกับการผ่าตัด เช่น ชนิดของการผ่าตัด ผล การผ่าตัด, ภาวะแทรกซ้อนจากการผ่าตัด และการกลับเป็นซ้ำ โดยการทบทวนเวชระเบียนผู้ป่วย สถิติที่ใช้เป็นสถิติเชิงพรรณนา

**ผลการวิจัย:** ผู้ป่วยที่รับการผ่าตัดรักษาอุ้งเชิงกรานหย่อน จำนวน 270 ราย โดยมีอายุเฉลี่ย 65.6 ปี (ตั้งแต่ 43-87 ปี) วิธี การผ่าตัดมดลูกทางช่องคลอดและเย็บซ่อมช่องคลอดเป็นวิธีการผ่าตัดที่พบมากที่สุด จำนวน 220 ราย (ร้อยละ 81.5) ภาวะ แทรกซ้อนระหว่างผ่าตัดที่พบมากที่สุดคือ ภาวะเสียเลือดและได้รับเลือด พบจำนวน 12 ราย (ร้อยละ 4.4) ภาวะแทรกซ้อนหลัง ผ่าตัด พบภาวะปัสสาวะคั่งมากที่สุด จำนวน 28 ราย (ร้อยละ 10.4) รองลงมาคือ ภาวะห้อยเลือดในช่องคลอด จำนวน 7 ราย (ร้อย ละ 2.6) ค่ากลางของระยะเวลาการติดตามหลังผ่าตัดเป็นเวลา 8 เดือน (ตั้งแต่ 6-84 เดือน) อัตราการกลับเป็นซ้ำพบร้อยละ 7.8

**สรุป:** ภาวะแทรกซ้อนระหว่างการผ่าตัดภาวะอุ้งเชิงกรานหย่อนพบได้ปานกลางและไม่พบภาวะแทรกซ้อนที่รุนแรง

**คำสำคัญ:** อุ้งเชิงกรานหย่อน, การผ่าตัด, ภาวะแทรกซ้อน

---

## Introduction

Pelvic organ prolapse (POP) has been increasingly recognized as a significant health problem in all parts of the world. Fifty percent of cases are found in parous women<sup>(1)</sup>. The proportion of women with pelvic floor disorder increases with age, from about 10% between ages 20 and 39, to almost 50% women in 80 years and over<sup>(2)</sup>. It is roughly estimated that a doubling in the risk of prolapse occurs with every completed decade of life<sup>(3)</sup>. Nowadays, women live longer; thus, there will be an increasing proportion of older women in the population seeking pelvic floor health care providers. The incidence of pelvic organ prolapse varies depending on the affected compartment. The rate of uterine prolapse is 14.2%, and the rates of anterior and posterior compartment prolapse are 34.3%, and 18.6%, respectively<sup>(4)</sup>.

Surgical correction is an effective treatment option for pelvic organ prolapse. Furthermore, the reported lifetime risk of undergoing a single operation for prolapse or incontinence by age 80 was 11.1%<sup>(5, 6)</sup>. A previous study showed that the incidence of surgical correction for pelvic organ prolapse was 1.62 per 1,000 person-years<sup>(7)</sup>. The procedure can be performed by either the trans-abdominal or trans-vaginal route. The trans-vaginal method is the most common. Boyles, et al, reported that in the United States, the age-adjusted rate of procedures for vaginal hysterectomy was 0.7 per 1,000 women; it was 0.18 per 1,000 for abdominal hysterectomy for pelvic organ prolapse surgery and 1.0 per 1,000 for repair of the anterior and posterior compartments<sup>(8)</sup>. A recent study in the United States showed that the age-adjusted rate of inpatient procedures for prolapse remained unchanged for younger women (aged below 52 years); however, these rates declined by two-thirds in older women<sup>(9)</sup>.

From a previous study, the prevalence of peri-operative complications was as high as 46% including, 13% intra-operative and 33% post-operative<sup>(10)</sup>.

Sonklanagarind Hospital is an only tertiary-based-hospital in Southern Thailand. In Department of Obstetrics and Gynecology, we mainly perform conventional surgery for the correction of pelvic organ

prolapse. The aim of this study was to evaluate the type of surgery performed, the outcome, and the peri-operative complications of surgical correction for pelvic organ prolapse in our institute over a 10-year period.

## Materials and Methods

This was a retrospective descriptive study. The institutional review board of Songklanagarind Hospital approved the chart evaluation undertaken in this study. All women who underwent surgery for pelvic organ prolapse in Department of Obstetrics and Gynecology between January 2001 and December 2011 were enrolled in the study. The patients lost to follow-up post-operation or with missing data were excluded.

Patients had an initial pre-operative assessment that included a medical history, physical examination, and pelvic examination. Demographic data on age, body mass index, parity, route of delivery, previous gynecologic surgery, co-morbidities (including cardiovascular, diabetes, pulmonary disease, etc.) and menopausal status were obtained. Clinical symptoms such as chief complaint and associated symptoms of bladder and bowel were recorded. The diagnosis and stage of pelvic organ prolapse were determined. During the study period, the Baden-Walker grading system or the Pelvic Organ Prolapse Quantification system (POP-Q) were used to describe the stage of pelvic organ prolapse depending on the physician.

Procedure related data including type of operation, surgeon, duration of surgery, estimated blood loss and the intra-operative adverse events were reviewed from patient' charts. Type of anesthesia was obtained. Peri-operative complications related to the procedures, including both intra-operative and post-operative adverse events, were reviewed. Hemorrhage was defined as the amount of bleeding which required a blood transfusion (hematocrit level of < 25%). The method for evaluating post-void residual urine prior to discharge, by either bladder ultrasonography or intermittent catheterization, was also recorded. Normally, in our institute; a Foley catheter was placed for 1-7 days post-operatively, depending on the procedure and physician. Acute urinary retention was

defined as a patient who was unable to void or could not void well 7 days post-operatively with a post-void residual urine volume of more than 150 mL, and needing the indwelling catheter at home<sup>(11)</sup>. Urine volume was recorded. The length of hospital stay was calculated from the date the patient was admitted before surgery until the patient was discharged.

Data from the post-operative period were collected, such as the duration of follow-up, and the histo-pathological result of the hysterectomy specimens. The recurrence of pelvic organ prolapse was assessed by pelvic examination using the Baden-Walker grading system or the POP-Q system at the out-patient department during the follow-up period. Type, stage, and time of the diagnosis of recurrence were all reviewed.

Descriptive statistics were used for analysis. Statistical analysis was performed using the EpiData

3.1 program and analyzed by R software version 3.0.1 (The R Foundation for Statistical Computing 2008, Austria).

## Results

Of a total 284 women who underwent pelvic organ prolapse surgery during this period, 14 (4.9%) were lost to follow-up. Thus, 270 women were reviewed and analyzed in this study. The demographic data showed that the mean age ( $\pm$  SD) was  $65.6 \pm 8.4$  years old (range 43-87), mean BMI was  $24.5 \pm 3.7$  (range 15.4-38.0), and the parity was 4 (range 1-14). Two hundred sixty patients (96.3%) were post-menopausal; merely 24 (8.9%) were sexually active and 3 women (1.1%) had previously undergone a hysterectomy. Essential hypertension was the most common co-morbidity in these patients (43.3%), as shown in Table 1.

**Table 1.** Demographics data.

Demographic data	N=270
Mean age (years)	65.6 (43-87)
Mean BMI (kg/m <sup>2</sup> )	24.5 (15.4-38.0)
Parity*	4 (1-14)
Vaginal delivery	263 (97.4%)
Post-menopause	260 (96.3%)
Sexually active	24 (8.9%)
Previous gynecologic surgery;	39 (14.4%)
Abdominal hysterectomy	1 (0.37%)
Vaginal hysterectomy	2 (0.7%)
AP repair**	6 (2.2%)
Others	30 (11.1%)
Co-morbidities;	
Essential hypertension	117 (43.3%)
Diabetes Mellitus	31 (11.5%)
Others	28 (10.4%)

\*Mode

\*\*AP repair = anterior colporrhaphy with posterior colpoperineorrhaphy

Uterine fibroid was found to be the most common co-gynecologic disease (8 patients, 3%), followed by ovarian cyst (2 patients, 0.7%). The most

common leading symptom was a mass protruding from the vagina (260 patients, 96.3%), followed by abnormal voiding (7 patients, 2.6%). Pre-operative associated

voiding symptoms included: difficulty to urinate for 50 patients (18.5%), 47 patients (17.4%) had urinary incontinence, 40 (14.8%) had stress urinary incontinence, 5 (1.9%) had urgency urinary incontinence, and 2 (0.7%) had mixed urinary incontinence. Pre-operative bowel symptoms: 20 patients (7.4%) had constipation.

The diagnosis was made using the Baden-

Walker system for 144 patients (53.3%), and the remaining 126 patients (46.7) were diagnosed using the POP-Q system. The percentage of patients diagnosed as stage III was 60%, followed by stage IV and stage II for 21.1% and 18.1%, respectively. Of the 202 patients (74.8%) who had combined predominant compartment, 61 (22.6%) had anterior and 7 (2.6%) had posterior, as demonstrated in Table 2.

**Table 2.** Clinical characteristic.

Clinical characteristic	N=270
Grading/ Stage;	
I	7 (0.7%)
II	49 (18.1%)
III	162 (60.0%)
IV	57 (21.1%)
Predominant compartment;	
Anterior	61 (22.6%)
Posterior	7 (2.6%)
Combined	202 (74.8%)

Vaginal hysterectomy with anterior colporrhaphy and posterior colpoperineorrhaphy (AP repair) was performed in 220 patients (81.5%), followed by vaginal hysterectomy with AP repair and sacrospinous ligament fixation (SSF) in 13 patients (4.8%), as demonstrated in Table 3. The most common anesthetic method was a regional anesthesia with spinal block for 225 patients

(83.3%). The main surgeon was from the attending staff in 143 cases (53%), and the rest were performed by obstetrics and gynecology residents under the supervision of the attending staff (127 cases, 47%). The mean duration of procedure was 144 ± 55.9 minutes (range 35-400) and the mean estimated blood loss was 323.5 ± 135.9 mL (range 50-2,200).

**Table 3.** Procedure for correction of pelvic organ prolapse.

Procedure	N=270
Vaginal hysterectomy with AP repair	220 (81.5%)
Vaginal hysterectomy with AP repair with SSF	13 (4.8%)
AP repair	12(4.4%)
LAVH with AP repair	8 (3.0%)
Vaginal hysterectomy	5 (1.9%)
TAH with AP repair	5 (1.9%)
SSF with AP repair	3 (1.1%)
Others	4 (1.5%)

AP repair = anterior colporrhaphy with posterior colpoperineorrhaphy, SSF = sacrospinous ligament fixation  
LAVH = laparoscopic assisted vaginal hysterectomy, TAH = Total abdominal hysterectomy

Median length of stay was  $7 \pm 2.9$  days (range 3-17), and the median duration of post-operative catheterization was  $5 \pm 1.9$  days (range 1-13). The intra-operative complication rate was 4.8% (13 patients). The most common intra-operative complication was hemorrhage requiring blood transfusion (12 patients, 4.4%), followed by bladder injury (1 patient, 0.37%). The post-operative complication rate was 16.7% (45 patients). The most common post-operative complication was acute urinary retention in 28 patients (10.4%), followed by vaginal hematoma in 7 patients (2.6%), as shown in Table 4. There was no mortality reported.

The median duration of follow-up was 8 months

(range 6-84); the recurrence rate was 7.8% (21 patients). The mean time of recurrence was 14.8 months (range 2-84). The most common type of recurrence was the anterior compartment prolapse (11 patients, 52.4%), followed by the apical compartment (vaginal vault prolapse) (6 patients, 28.6%). The most common stage of recurrence was the Baden-Walker grading/POP-Q stage II (14 patients, 66.7%), followed by stage I (5 patients, 23.8%). The histo-pathological report of the uterus was abnormal in 50 patients (19.9%), defined as benign (uterine fibroid, adenomyosis, endometrial polyp, endometrial hyperplasia, etc.) in 49 patients (19.5%), and 1 patient (0.4%) had endometrial cancer.

**Table 4.** Complication related procedure.

Complication	N=270
Intra-operative;	
Massive hemorrhage	12(4.4%)
Bladder injury	1 (0.37%)
Post-operative;	
Urinary retention	28 (10.4%)
Vaginal hematoma	7 (2.6%)
Urinary tract infection	6 (2.2%)
Wound infection	3 (1.1%)
Medical related condition	1 (0.37%)

## DISCUSSION

This study included a total of 270 women who underwent surgical correction for pelvic organ prolapse over a 10-year period; 81.5% of these patients had vaginal hysterectomy with AP repair. It was the most common conventional procedure performed for the treatment of pelvic organ prolapse, followed by vaginal hysterectomy with AP repair and SSF for 4.8%. Treatment options depended on the skill of the surgeon, and the patient's condition, such as the affected compartment of the prolapse, stage of the prolapse and whether medically fit to tolerate long operative times. The previous study by Lambrou et al, showed 100 cases of reconstructive surgery with a variety of procedures performed. Of the procedure performed, 35% were

anterior and posterior colporrhaphy, while vaginal hysterectomy was performed in only 18% of cases<sup>(10)</sup>. Consistent with other studies, the most common procedure performed, 64-71% was repair of the anterior and posterior compartment. The mean age of patients was 53.2-56 years<sup>(9, 12)</sup>. However, the mean age in our study was 65.6 years old, which is higher than in previous studies. In our department, vaginal suspension and fixation or colpexy were performed less frequently compared with previous studies<sup>(8, 9)</sup>.

We reported the peri-operative complication rate was 21.5%, including 4.8% for intra-operative and 16.7% for post-operative. In a previous study, the prevalence of peri-operative complications was as high as 46%, including 13% intra-operative and 33% post-

operative<sup>(10)</sup>. In Jones' study, the overall complication rate was 29.4%<sup>(9)</sup>. The most common intra-operative complication was the hemorrhage requiring blood transfusion (4.4%), which was higher than in other studies<sup>(9, 10)</sup>. We reported the rate of bladder injury was 0.37%, which is lower than in Jones's study (1.1%); however, the total number of procedures performed in our study was small when compared with Jones's study<sup>(9)</sup>.

The post-operative complication rate was 16.7%, which is comparable to other studies<sup>(9, 10)</sup>. But the complication rate was higher than in Pakbaz's study, which reported a rate of 3% for post-operative complications, mainly intra-abdominal bleeding and vaginal vault hematomas. However, this study was only a survey<sup>(13)</sup>. The most common post-operative complication was acute urinary retention at 10.4%, which was higher than in the study by Jones et al, which reported a rate as low as 2.6%<sup>(9)</sup>. There were no serious complications that required re-operation or mortalities reported in our study. However, we did not include the long-term complications because the duration of follow-up was insufficient in some patients.

The median length of hospital stay was 7 days in our study, which is comparable to the study by Jones, in which the average length of stay was 8.5 days in 1979. However, the length of stay was shorter by 2 days in 2006<sup>(9)</sup>.

The median duration of follow-up was 8 months, with a recurrence rate of 7.8%. However, the range of recurrence varied between 2-84 months, which was a limitation of our study. The mean time of recurrence was 14.8 months. The most common type of recurrence was anterior compartment prolapse at 52.4%. The previous study reported the recurrence rate was 3.7 per 100 woman-years, and the most frequent prolapse was anterior compartment (87%)<sup>(14)</sup>.

Interestingly, the final histo-pathological report of the uterus showed endometrial cancer in 1 patient (0.4%), which was asymptomatic pre-operatively, and required re-operation in order to stage and treat the malignancy. In cases such as this, we suggest thoroughly examining the specimen, including the frozen section, if available.

In this study, we collected the epidemiologic data of the patients who underwent reconstructive surgery for pelvic organ prolapse over a 10-year-period. Hence, this study described the surgical management of pelvic organ prolapse in the setting of a single tertiary-based-hospital. We hope to develop our system for better treatment, and to improve our surgical skill in female reconstructive surgery for pelvic organ prolapse. We still have some limitations such as the variety of type of procedure, and short duration of follow-up. This was a retrospective study, in which data were collected over a period of time when the follow-up protocols and the duration of follow-up varied in our department, depending on the physician.

## Conclusions

Vaginal hysterectomy with anterior colporrhaphy and posterior colpoperineorrhaphy was the most common type of reconstructive surgery for pelvic organ prolapse. Peri-operative complication related to surgical correction for pelvic organ prolapse was moderate; no serious complications occurred. The recurrence rate was acceptable. However, long term follow-up may be required for detection of long-term complications and recurrence.

## Potential conflicts of interest

The authors declare no conflict of interest.

## References

1. Maher C, Feiner B, Baessler K, Adams EJ, Hagen S, Glazener CM. Surgical management of pelvic organ prolapse in women. *Cochrane Database Systematic Rev* 2010;4:CD004014
2. Nygaard I, Barber MD, Burgio KL, Kenton K, Meikle S, Schaffer J, et al. Prevalence of symptomatic pelvic floor disorders in US women. *JAMA* 2008;300:1311-6.
3. Swift S, Woodman P, O'Boyle A, Kahn M, Valley M, Bland D, et al. Pelvic Organ Support Study (POSST): the distribution, clinical definition, and epidemiologic condition of pelvic organ support defects. *Am J Obstet Gynecol* 2005;192:795-806.
4. Hendrix SL, Clark A, Nygaard I, Aragaki A, Barnabei V, McTiernan A. Pelvic organ prolapse in the Women's Health Initiative: gravity and gravidity. *Am J Obstet Gynecol* 2002;186:1160-6.
5. Olsen AL, Smith VJ, Bergstrom JO, Colling JC, Clark

- AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. *Obstet Gynecol* 1997;89:501-6.
6. Fialkow MF, Newton KM, Lentz GM, Weiss NS. Lifetime risk of surgical management for pelvic organ prolapse or urinary incontinence. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;19:437-40.
  7. Mant J, Painter R, Vessey M. Epidemiology of genital prolapse: observations from the Oxford Family Planning Association Study. *Br J Obstet Gynaecol* 1997;104:579-85.
  8. Boyles SH, Weber AM, Meyn L. Procedures for pelvic organ prolapse in the United States, 1979-1997. *Am J Obstet Gynecol* 2003;188:108-15.
  9. Jones KA, Shepherd JP, Oliphant SS, Wang L, Bunker CH, Lowder JL. Trends in inpatient prolapse procedures in the United States, 1979-2006. *Am J Obstet Gynecol* 2010;202:501-7.
  10. Lambrou NC, Buller JL, Thompson JR, Cundiff GW, Chou B, Montz FJ. Prevalence of perioperative complications among women undergoing reconstructive pelvic surgery. *Am J Obstet Gynecol* 2000;183:1355-60.
  11. Darrach DM, Griebing TL, Silverstein JH. Postoperative urinary retention. *Anesthesiol Clin* 2009;27:465-84.
  12. Stepp KJ, Barber MD, Yoo EH, Whiteside JL, Paraiso MF, Walters MD. Incidence of perioperative complications of urogynecologic surgery in elderly women. *Am J Obstet Gynecol* 2005;192:1630-6.
  13. Pakbaz M, Mogren I, Lofgren M. Outcomes of vaginal hysterectomy for uterovaginal prolapse: a population-based, retrospective, cross-sectional study of patient perceptions of results including sexual activity, urinary symptoms, and provided care. *BMC Women's health* 2009;9:9.
  14. Fialkow MF, Newton KM, Weiss NS. Incidence of recurrent pelvic organ prolapse 10 years following primary surgical management: a retrospective cohort study. *Int Urogynecol J* 2008;19:437-40.