

# The study of paravaginal repair in 110 Japanese

## Paravaginal repair in Japan

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### Abstract

**Introduction:** We should investigate whether we could perform safe and effective operations without using artificial materials, and should re-validate the methodology of the paravaginal repair.

**Methods:** 110 women with symptomatic cystocele of Grades 2 to 4 according to Pelvic Organ Prolapse Quantitative Description were operated. Before and after the operation, the symptoms of genital prolapse, patients' satisfaction and sexual life were evaluated.

**Results:** Operation through a paravaginal approach to repair paravaginal fascia without using a mesh provided a low postoperative morbidity and a high cure rate. The operation time was short and the amount of estimated blood loss was small. Patients' symptoms and QOL were remarkably improved. 12 females improved their dyspareunia.

**Conclusions:** Operation for cystocele through a paravaginal approach without using a mesh was a very good treatment method for the patients who selected the operation using no artificial materials.

Key words : cystocele, paravaginal approach, paravaginal fascia

### Introduction

Cystocele is caused by flaccidity of the supporting tissue in the anterior wall of vagina [1]. In 1909, White reported the paravaginal repair method in which the side wall of vagina was sutured with the arcus tendineus to repair cystocele [2]. In 1913, Kelly suggested the method "anterior repair" in which reinforcement of the vesicopelvic fascia were performed at the midline region [3]. In 1976, the concept of paravaginal defect attracted attention again by the report of Richardson [4], and the operation

with evaluating the site and degrees of damage of individual supporting tissue with the thought of site-specific defect started to be common[5]. However, when Ulf Ulmsten et al. suggested the integral theory in 1993 [6], the whole situation was changed. The operations using artificial materials that met the integral theory started getting a log of attention. When Tension Free Vaginal Tape (TVT) operation to repair the pubopelvic ligament in patients with stress urinary incontinence was introduced [7], the anterior repair combined with TVT operation started to



be performed in many cases. The reason is that urethral hypermobility is observed in most cases of cystocele [8]. In 2001, Petros reported female pelvic reconstructive surgery using a mesh and posterior intravaginal slingplasty (posterior IVS) to repair the uterosacral ligament [9]. Today, a lot of anterior repairs are performed in gynecology and urology departments in Japan, and TVT, a mesh and posterior IVS have been combined to cover the shortcomings of the anterior repair. These materials are made of polypropylene. They are still artificial, and the risks caused by inserting unnecessary artificial materials can not be ignored. We should investigate whether we could perform safe and effective operations without using artificial materials, and should re-validate the methodology of the paravaginal repair. To investigate these matters, we performed consistent operation in 110 patients with cystocele in this study.

## Material and methods

### Patients

Among women with cystocele who visited our Urogynecology department between April 2003 and December 2006, we studied 110 patients with Grades 2 to 4 according to Pelvic Organ Prolapse Quantitative Description (POP-Q) [10] who received repair operation for the paravaginal defects. We chose these patients when they wanted the operation without artificial materials after a full explanation about all treatments for cystocele.

Data used in this study including inpatient and outpatient settings were obtained from clinical files, hospital files, operative records, and verification by telephone. After

informed consent was obtained, these patients required the operation not using artificial materials. Before and after operation, the degrees and symptoms of genital prolapse were evaluated by POP-Q and Pelvic Floor Distress Inventory (PFDI), respectively; and patients' quality of life (QOL) by Pelvic Floor Impact Questionnaire (PFDQ) [11]. The presence of incontinence was evaluated by a pad-weighting test. The patients were followed up 12 months after operation. The follow-up for these patients are still on-going. Regarding the sexual life, the patients were required to undergo medical examination and interview for their genitalia after operation.

Statistical analysis was based on the Mann-Whitney test for non-parametric continuous variables and Fisher's exact test for categorical variables.  $P$  value  $< 0.05$  was considered significant. Cure was defined as when there is no recurrence of cystocele (Grades 2 to 4) and no urinary incontinence symptoms are present. The following diagnosis and operation were performed for paravaginal defects.

### Paravaginal repair operation

In this study, only paravaginal repair, or the combination of paravaginal repair and anterior repair was performed. After local anesthesia, patients lay in the dorsal lithotomy position. First,

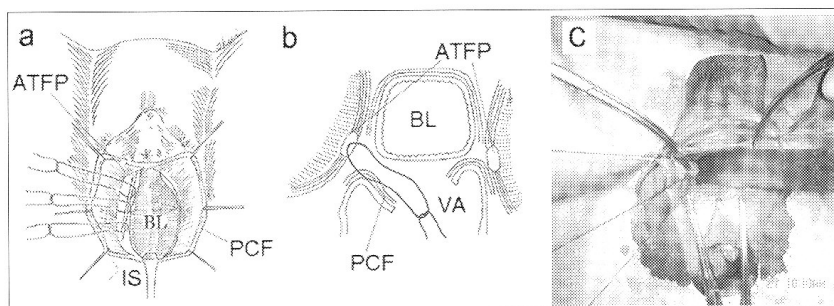


Figure 1:Paravaginal repair

urethrocytostocopy was performed to preoperatively observe locations and movements of the urethra and bladder. A transverse incision was made at the upper end of anterior vagina, and 2 sites of the center of the incision were pinched by forceps, and a longitudinal incision 0.5mm in length was made. A longitudinal incision was further made on the vaginal anterior wall to the point 1.5cm distant from the urethra. When there were paravaginal defects, we could easily reach the lateral cavity of the bladder and rectum. Blunt exfoliation was performed till the ischiadic spine was felt. The white-liner tendinous tissue running from the ischiadic spine posteriorly to the pubic arch, which was the arcus tendineus, was confirmed on palpation. To bond the lateral wall of the vagina to the lateral wall of the pelvis including the arcus tendineus, 2-0 unabsorbed thread was used. The last unabsorbed thread was strung at 1-1.5cm intervals from the arcus tendineus proximal to the ischiadic spine to the cervical region of the bladder. After all the threads were passed through the arcus tendinous, they were passed through the back side of anterior vaginal mucosa, which located between the marking sutures on the urethra side and on the vaginal upper end. The threads were passed to the region where the lateral vaginal sulcus could adhere to the t arcus endinous without tension. If sagging was observed at the center of the vesicopelvic fascia even after paravaginal repairs of both sides, it was plicated by the horizontal mattress suture before the threat was tied up. After the stump of vagina was sutured with 0 absorbed thread, the threads used for paravaginal repair were tied up from the near side. The locations of urethra and bladder were

confirmed by urethrocytostocopy many times during operation. When urethral stricture was observed, urethral dilation with metal was performed. The exfoliated vaginal wall was sutured in a longitudinal direction with a 0 absorbed thread. The stump of vagina was closed in a transverse direction.

## Results

Among 259 patients who visited our department with major complaint of cystocele, 110 patients had cystocele of POP-Q Grades 2 to 4 that was indicated for operation. They had paravaginal defects, and they received paravaginal repair.

Data	n=110
Age (mean $\pm$ SD; years)	67.2 $\pm$ 7.5
BMI (mean $\pm$ SD; kg/m <sup>2</sup> )	23.2 $\pm$ 3.2
Age of menopause (mean $\pm$ SD; years)	49.2 $\pm$ 4.2
Duration of cystocele (mean $\pm$ SD; months)	60.0 $\pm$ 12.0
Operation Time (mean $\pm$ SD; minutes)	46.5 $\pm$ 12.5
Estimated blood loss (mean $\pm$ SD; ml)	12 $\pm$ 7.5
Hospital stay (mean $\pm$ SD; hours)	20.0 $\pm$ 4.0

SD: standard deviation  
Table 1 :Demographic Data

Mean age ( $\pm$  SD) of subjects was 67.2  $\pm$  7.5 years, mean BMI ( $\pm$  SD) was 23.2  $\pm$  3.2 kg/m<sup>2</sup>. Since 118 patients were thought to have paravaginal defects at the time of visiting in outpatients' office, our predictive value was 93.2%; which was nearly equal to that reported in literature [12]. Eight patients who did not have paravaginal defects received only anterior repair. Among 110 women with paravaginal defects, 69 (62.7%), 25 (22.7%) and 16(14.5%) patients had cystocele of Grades 2, 3 and 4, respectively. The results of a preoperative pad-weighting test were 0-5g in 109 patients (99.0%) and 5-10g in 1 (1.0%). Twenty-three patients (20.9%) had a history of incontinence for a period of time. During operation, we decided not to combine

TVT, and to perform only placation in all patients. Six patients (5.4%) newly complained of stress urinary incontinence after operation, and the amount of incontinence was 10-15g according to a pad-weighting test. These 6 patients did not have a preoperative history of incontinence. Four patients requested and received TVT later. In residual 2 patients, incontinence disappeared due to elimination of obesity. Mean post-void residual volume ( $\pm$  SD) was  $32 \pm 12.1$ ml before operation and  $4.0 \pm 4.0$ ml after operation. Urination disorder was observed in 39 patients (35.4%) before operation; i.e., urgency in 39 patients, pollakisuria in 30, dysuria in 28 and urethral stricture in 22 (there were duplicated complications). Urination disorder was improved after operation in 38 patients except one. This patient was accompanied by diabetic neuropathic bladder. No patient had urinary retention after operation.

Mean operative time ( $\pm$  SD) was  $46.5 \pm 12.5$  minutes. Mean estimated blood loss ( $\pm$  SD) was  $12 \pm 7.5$ ml, and blood loss was not more than 5ml in 72 patients (65.5%). Mean hospital stay ( $\pm$  SD) was  $20.0 \pm 4.0$  hours, and hospital stay was not more than 4 hours in 67 patients (60.9%).

Table 2 showed the results of PFDI, and PFDQ

Symptom scale	PFDI			Quality of life scale	PFIQ		
	Preoperative	Postoperative	p		Preoperative	Postoperative	p
Mean UDI (/300)	88.9	24.6	<0.0001	Mean UIQ (/300)	70.9	18.0	<0.0001
Mean CRADI (/400)	85.5	32.6	<0.0001	Mean CRAIQ (/400)	33.2	10.6	<0.0001
Mean POPDI (/300)	111.0	31.8	<0.0001	Mean POPIQ (/300)	45.2	8.0	<0.0001

Table 2: Pre- and Post-operative scores of PFDI and PFIQ (n=110)

UDI Urinary Distress Inventory, CRADI Colo-Recto-Anal Distress Inventory, POPDI Pelvic Organ Prolapse Distress Inventory, UIQ Urinary Impact Questionnaire, CRAIQ Colo-Recto-Anal Impact Questionnaire, POPIQ Pelvic Organ Prolapse Impact Questionnaire

respectively. All results of PFDI and PFDQ were remarkably improved after operation ( $p < 0.0001$ ). The median postoperative follow-up period as outpatients was 21 months (from 12 to 60 months), and no genital prolapse or incontinence recur at the current moment, and the follow-up has been continuously performed in 102 patients (92.7%). At the 12 months after operation, 68 (61.2%), 38 (34.5%) and 4 (3.6%) patients had cystocele of Grades 0, 1 and 2, respectively. Two patients of Grade 2 and 4 patients of Grade 1 have urinary incontinence symptoms.

One hundred and three patients (94%) acknowledged their dyspareunia at the medical interview. All patients explained the reason for a pain, during sex act, caused due to their pelvic organ prolapse. One of them was able to have sex. In the internal examination one year after operation, it was concluded that 106 patients were able to perform sexual activity, but 87 patients did not want it at the medical interview. The reasons were given as follows: (1) they can enjoy life with their husbands even without sexual activity (87 patients), (2) they do not have an interest in sexual activity (80 patients), (3) they have trauma histories for sexual activity during the pelvic organ prolapse (34 patients), and (4) they do not need

to bear a child (29 patients) (including multiple answers). Therefore, we do not know the existence of improvement of their dyspareunia. Only 12 females wanted sexual activity and improved

their dyspareunia after operation (Figure 2).

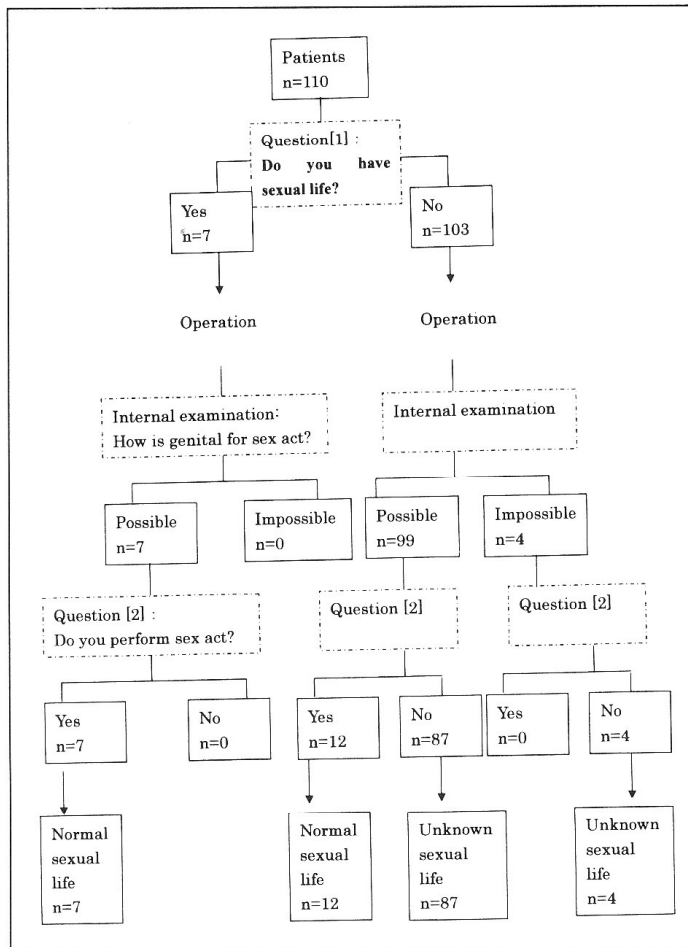


Figure 2: Pre- and postoperative evaluation of sexual activity and dyspareunia

## Discussion

We performed paravaginal repair in 110 women with symptomatic cystocele of POP-Q Grades 2-4 who had paravaginal defects and did not require operation with any artificial materials. Through our study, we could clarify the advantages of paravaginal repair.

We could perform paravaginal repair with short operation time and the small amount of blood loss. It was also important that we could perform paravaginal repair under sacral-epidural, local and intravenous anesthesia. Most patients could leave hospital within 4 hours after operation. Advantages of paravaginal repair included no requirement of urethral catheter that could cause pain after

operation. Since patients had almost no pain, no special nursing care at home was necessary after the day surgery. Our cure rate was high (92.7% one year after operation) and was close to the rates reported in literature [12, 13, 14]. The results of PFDI and PFDQ, which were indicators of general genital prolapse, were remarkably improved, and the cost of this operation was low. Therefore, paravaginal repair might be a good operation that was effective and easy to receive for patients [12]. If patients did not prefer artificial materials, the two-stage operation, in which operation without artificial materials (e.g., paravaginal repair) was firstly performed and operation using artificial materials was subsequently performed only in patients with recurrence, might be one of options.

Most patients with cystocele complain of urination disorder, and the reason for this has been thought to be increase of post-void residual volume due to deformation of the bladder. However, in this study, a complication of urethral stricture was observed in 20% of patients, and was effectively treated by intraoperative urethral dilation with metal. In addition, it is known that patients with cystocele develop anuresis after operation, but our improvement of using urethrocystoscope made it possible to fix the urethra to an appropriate location. This might cover the shortcomings of paravaginal repair, and showed a special medianing in urologists' performing this operation.

In this study, few patients had incontinence after operation. Therefore, we should reconsider the necessity of preventative TVT or Transobturator (TOT) on performing operation for cystocele. A variety of methods [15] have been reported to predict whether incontinence occurs after operation. However, an effective and widely-used method has not been established yet. Generally, occurrence of incontinence is predicted based on operators' experienced judgment. The trend of

using artificial materials has been encouraged by the following reasons: 1) it is difficult to obtain patients' consent that they will be re-hospitalized to receive operation for incontinence after the first operation for cystocele, and 2) the number of patients who get knowledge from mass media and internet and attached to artificial materials increased. However, making an effort to explain different types of operation methods might be more useful for patients' QOL than inserting a preventive artificial tape that was not necessary or recommending operation using a mesh whose effect was still uncertain.

In our Urogynecology Department, there were a variety of demands such as a mesh, IVS and TOT. We should provide appropriate techniques based on a variety of factors including patients' QOL, operators' experience and evidence-based medicine (EBM).

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