

#550 Mid-term performance of laparoscopic sacrocolpopexy using polytetrafluoroethylene mesh "ORIHIME"

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Introduction

Polytetrafluoroethylene (PTFE) is a potential material for the reconstruction of pelvic floor as it is chemically stable with rare degradation and seldom causes tissue reactions. It has been used for a long time in various medical fields such as artificial blood vessels, therapeutic cardiac patches and meshes for abdominal wall hernias.

Table 1 shows the characteristics of the PTFE mesh "ORIHIME"[®]. The pore size is almost the same as that of Gynemesh[®]PS and it weighs about twice as much as Gynemesh[®]PS. The result of the breaking strength test is shown in Table 2. The minimum breaking load is larger than that of Gynemesh[®]PS and Polyform[®] and the material is tough enough to be used for pelvic floor repair.

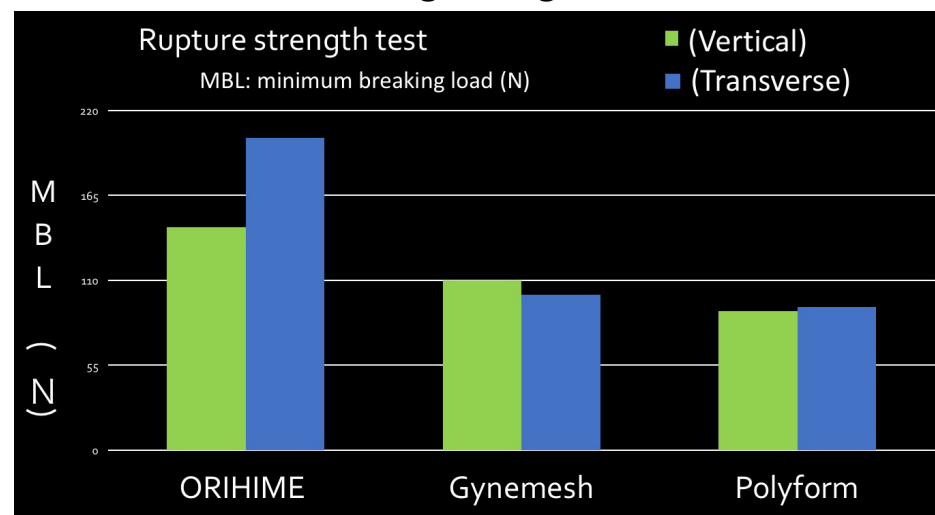
In addition ORIHIME[®] can be visualized by computed tomographic images⁽¹⁾, and this characteristic makes it possible to identify the changes in the mesh shape after surgery as well as the cause of recurrence (Fig1).

When we use the PTFE mesh for the reconstruction of POP, we have to devise ways of coping with deviation of mesh arms. Since the friction coefficient is much smaller than that of polypropylene, deviation of mesh arms in the TVM procedure may hinder the reconstruction. In contrast, when the PTFE mesh is used in the procedure of laparoscopic sacrocolpopexy, the deviation of the mesh can be prevented by using non-absorbable strings for all the sutures. Furthermore, it is expected to cause few mesh-related complications such as mesh contraction and chronic pain in the long term because the material does not bring much tissue reaction or degradation.

Table 1. Characteristics of the PTFE mesh "ORIHIME"[®].

	ORIHIME (Kono)	Polyform (Boston)	Gynemesh (J&J)
material	PTFE	Polypropylene	Polypropylene
mesh size	150×200mm 300×300mm	100×150mm 150×200mm	100×150mm 250×250mm
pore size	macroporous 2490μ	macroporous 1480μ	macroporous 2600μ
weight	95g/m ²	40g/m ²	50g/m ²
thickness	280μ	180μ	415μ

Table 2. Result of the breaking strength test



Objectives

The aim of the study is to confirm the feasibility of LSC with PTFE mesh "ORIHIME"[®] by investigating the mid-term outcomes of LSC with "ORIHIME"[®].

Materials and Methods

The materials were 31 patients with POP who underwent LSC using "ORIHIME"[®] between August 16th and October 16th in 2018. The age was 65.7±7.4 (47-77), BMI 22.7±2.1 (16.7-27.5), average number of vaginal deliveries 2.1(1-3)

The breakdown of the most descending parts was as follows: anterior wall 16, apical 12, anterior wall and apical 3. As for the POPQ stage, 8 were at stage IV, 22 at stage III and 1 at stage II.

Subtotal hysterectomy was performed in 30 patients by French style LSC using double mesh. The remaining 1 patient had already undergone hysterectomy. The shapes of the mesh are shown in Fig.2. The surgical procedure was performed according to that of Watziez⁽²⁾. Fig.2 shows the pictures of ORIHIME used as posterior mesh(A), anterior mesh(B), integrated anterior and posterior mesh at the uterine cervical stump(C) and the whole shape after sutured to the promontorium(D). The distal end of the posterior mesh was sewn to the both sides of the puborectal muscle with non-absorbable threads and the distal end of the anterior mesh was sewn to the anterior vaginal wall with 5 stitches of non-absorbable threads. Both anterior and posterior mesh and the cervical tissue were integrated with 3 stitches of non-absorbable threads. The proximal end of the anterior mesh was sutured to the anterior longitudinal ligament at the level of L5 with a stitch of non-absorbable thread (Video). The tension of the mesh was set to loosen slowly under a pneumoperitoneum pressure of 8 bar. The patients were followed up for three years after operation. We investigated the recurrence and complications. All values were described using the mean±standard deviation (SD) and analyzed with EZR, which is a graphical user interface for R. For continuous variables, Student's t-test was used for analysis. The significance level was set at the p-value <0.05.

Fig.1 ORIHIME visualized by CT

These CT images below are the mesh after TVM operation.

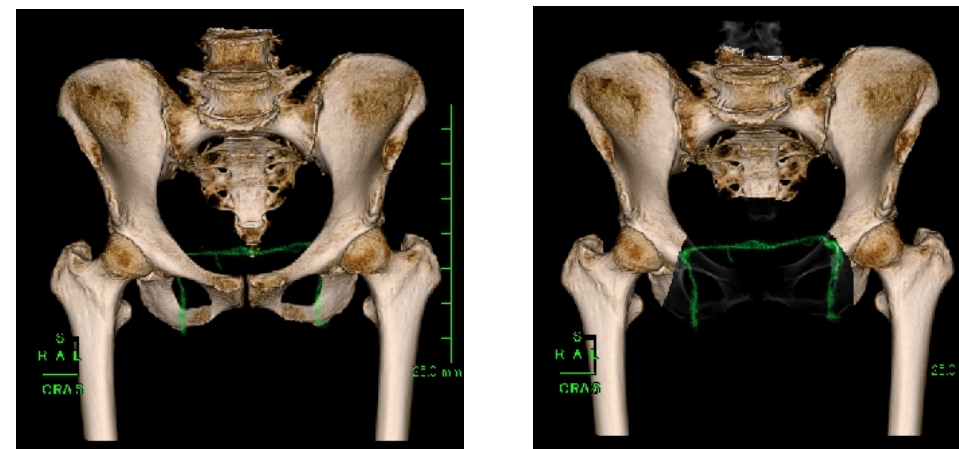
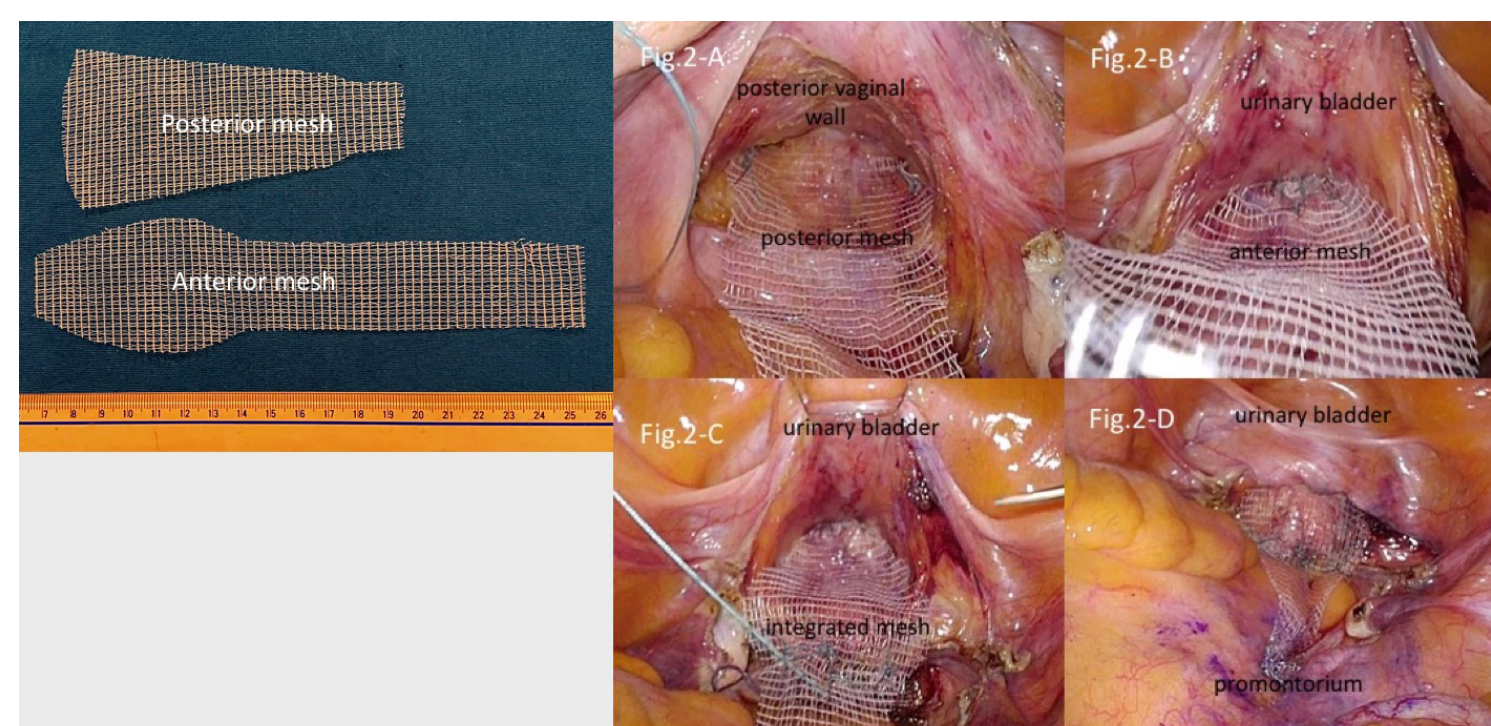
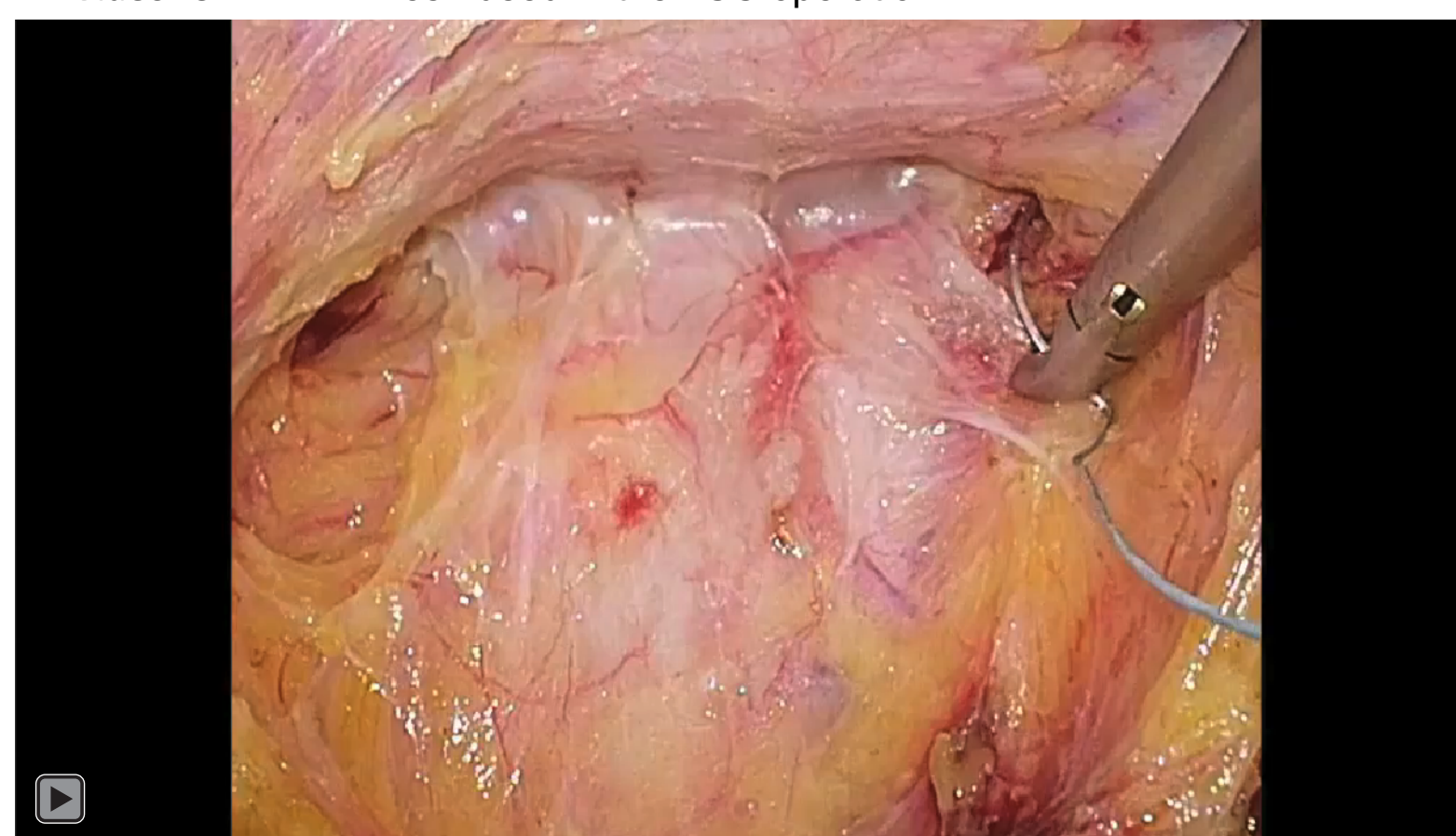


Fig.2. Shape of the mesh and mesh in the operation



Video ORIHIME mesh used in the LSC operation



Results

Table 3. Summary of the operation

Procedure	double mesh LSC n=31
Uterus	Subtotal hysterectomy 30 After total hysterectomy 1
Operation time (min.)	145±26 (106-185)
Blood loss (gr.)	9.3±9.9 (5-50)
Perioperative complication	none

Table 4. Mid-term complications including recurrence

Complication or recurrence	n=31
Mesh related complications	none
Stress urinary incontinence	8 (25%)
Recurrence of POP: n=3 (9.6%) (appearance time after operation)	anterior prolapse (3 months) cervical ptosis (2 years) distal rectocele (3 years)

Discussion

We experienced no mesh related complication up to 3 years after operation.

Incidence of stress urinary incontinence is almost the same as reported previously with PP mesh.

Recurrence rate is almost the same as reported previously with PP mesh.

The merits of LSC with ORIHIME will be as follows.

- 1) The chemical stability and rare tissue reaction of this material will make the stability of the mesh better for a long time.
- 2) This mesh can be visualized by CT imaging after operation.

Conclusions

Considering the result, LSC with PTFE mesh is feasible in reconstructing the female pelvic floor.

References

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