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DETRUSOR CONTRACTILITY IMPAIRED TEMPORARILY IN PATIENTS UNDERGOING PELVIC ORGAN PROLAPSE SURGERY, WHICH IMPROVED AFTER THREE MONTHS

Hypothesis / aims of study
Clinically, voiding difficulty occurs in some patients undergoing pelvic organ prolapse (POP) surgery, though such unfavourable effects were usually temporary. However, this bladder functional change is not fully investigated. In this study, we attempted to assess the lower urinary tract function in the immediate and mid-term postoperative period.

Study design, materials and methods
Twenty five women with advanced anterior vaginal wall prolapse underwent transvaginal cystocele repair using a tension-free polypropylene mesh. The preoperative, 1 week and 3 months postoperative evaluation were performed by pressure flow study (PFS). Detrusor overactivity (DO), maximal flow rate (Qmax), detrusor pressure at Qmax (Pdet at Qmax), voided volume, and bladder contractility index (BCI) were measured. The urodynamic data were compared via one-way ANOVA and chi-square test with $P<0.05$ taken to indicate statistical significance.

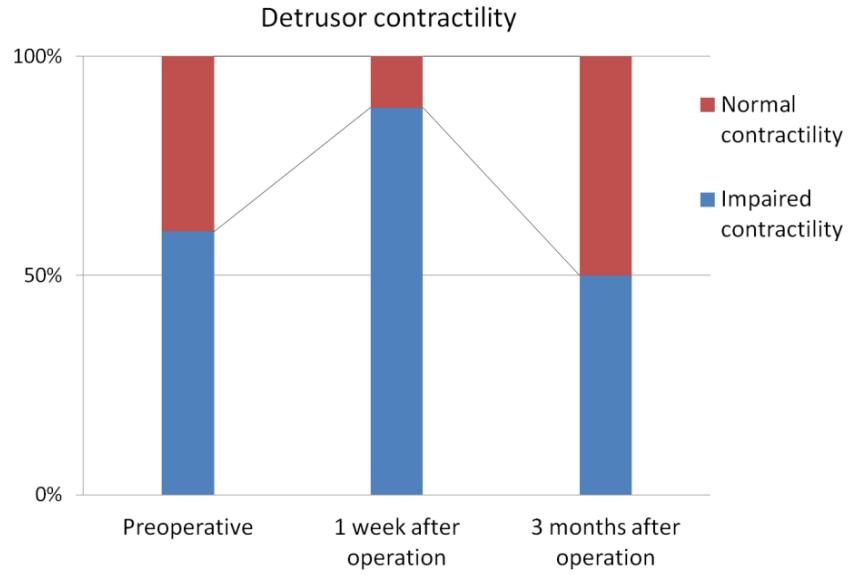
Results
The mean age of patients was 72.2 (49–81) years old. The pre-, 1w and 3m postoperative Qmax were 16.8±8.5, 9.1±6.4 and 13.8±9.2 ml/sec, respectively ($P<0.05$: Pre- vs. 1w). The voiding efficiency, Watts factor and BCI were also once decreased significantly after the operation and recovered at 3m postoperatively ($P<0.05$) (Table 1). The other parameters were not significantly changed. However, the number of DO was not analyzed statistically because of the small numbers of cases (Table 1).
Examinations were evaluated on Schäfer nomograms. Defining “Normal” or “Strong” and “Weak” or “Very Weak” as normal and impaired contractility, respectively, 40%, 11.8% and 50% of patients were classified as having normal contractility, respectively. The proportion of normal contractility was decreased significantly once after the operation ($P<0.05$, chi-square test). However, after 3 months the proportion was increased significantly ($P<0.05$, chi-square test) (Figure 1). With regard to obstruction, obstruction grade were not significantly changed.

Table 1

	Preoperative	1 week after	p	3 months after
Bladder capacity (ml)	395.1±194.1	389.8±213.5		372.7±183.4
No. of DO	4	3		2
Qmax (ml/sec)	16.8±8.5	9.1±6.4	*	13.8±9.2
Pdet at Qmax (cmH_2O)	17.3±11.5	16.5±11.7		18.7±13.5
VV (ml)	320.8±181.8	219.5±171.7		270.7±180.0
RU (ml)	88.6±137.0	187.6±148.4		99.6±98.2
Voiding efficiency (%)	83.4±28.4	55.4±36.8	*	69.0±30.1
Watts factor max (W/m^2)	9.1±78	4.3±2.9	*	6.9±8.1
BCI	100.8±45.4	58.3±35.7	*	78.1±48.7

(BCI: bladder contractility index (Pdet Qmax + 5 Qmax))
(*$P < 0.05$:Preoperative VS. 1 week after)

Figure 1



Interpretation of results

The results of the present study showed that postoperative POP patients have impaired detrusor contractility temporarily, which improve significantly after 3 months. To our knowledge, this is the first study to investigate voiding function by PFS in the preoperative, immediate postoperative and mid-term postoperative period. Voiding function depends on both detrusor contractility and bladder outlet obstruction in women as in men. As shown in our study, postoperative acute voiding difficulty was due to impaired detrusor contractility. However, detrusor contractility was significantly improved 3 months after the mesh surgery compared to the acute period preoperatively. Why does detrusor contractility temporarily impaired by POP surgery? Although the mechanism by which detrusor weakness occurs has remained unclear, we hypothesize that this may be due to temporary lack of blood flow caused by surgical procedure around the bladder. This may result in transient voiding difficulty that typically resolves in time as gradually improve. However, several other mechanisms might be considered.

Concluding message

Patients undergoing POP surgery have impaired detrusor contractility temporarily, which improve significantly after mid-term postoperative period.

Disclosures

Funding: none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee of Hokkaido University **Helsinki:** Yes **Informed Consent:** Yes