

Predictive factors in overactive bladder improvement after pelvic organ prolapse repair

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ABSTRACT

Aims: The aim of this study was to search the predictors of Overactive bladder (OAB) symptom improvement after Pelvic organ prolapse (POP) repair. We also tried to examine the mechanism of OAB induced by POP.

Methods: A total of 106 patients with POP who underwent POP repair in our hospital were included and retrospectively analyzed. Each women had a urinalysis, pelvic examination, urodynamic study, MRI and answered urinary questionnaires. OAB was defined by OAB symptom score (OABSS), and POP severity was classified by POP Quantification. They were divided into clinically preoperative OAB group (n=47) and non OAB group (n=59). Factors correlated with OAB symptoms improvement after POP repair surgery were examined to elucidate the cause of OAB onset in POP patients.

Results: In 47 preoperative OAB patients, OAB symptoms were improved after surgical treatment in 31 cases (65.9%). There were significant correlation between OAB improvement after POP repair and preoperative POP-Q stage (OR 6.00, p<0.01), presence of para-vaginal defect (OR 9.17, P<0.01).

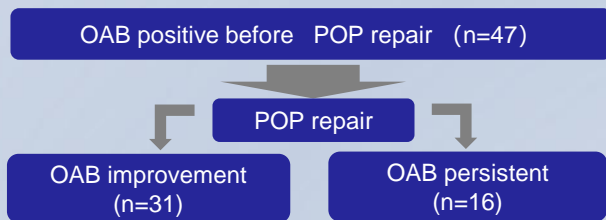
Conclusions: Women with severe POP or para-vaginal defect who undergo surgical repair experienced significant improvement in OAB symptoms after surgery. So, hyperextension of the posterior bladder wall and anterior vaginal wall was considered to be the cause of OAB by stimulating the peripheral nerves on the dorsal side of the bladder. Severe POP or present of para-vaginal defect are considered a predictor of improvement of OAB symptoms after POP surgery.

METHODS

1. Predictive factors of OAB improvement after POP repair

Of 109 patients who underwent POP repair surgery in our hospital, 47 patients who have OAB symptoms before surgery were included.

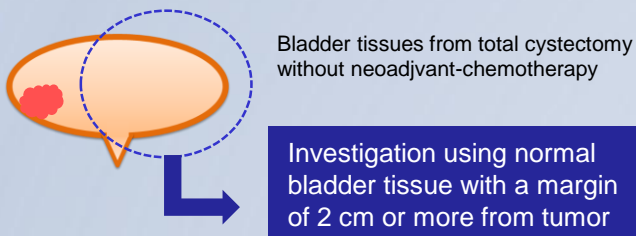
Patient characteristics, comorbidities, POP characteristics, urodynamic study's result were analyzed in 54 patients without OAB and 5 patients with de novo OAB.



2. Histological analysis using bladder tissue

To investigate the causal relationship between POP repair and OAB anatomically, we studied the bladder tissue. Especially the bladder nerves were evaluated histologically.

Among patients who underwent total cystectomy with bladder cancer diagnosis at our hospital, we used bladder tissue not undergoing neoadjuvant-chemotherapy before surgery.



Statistical analysis

Data analysis was performed using the Student t-test, Mann-Whitney U-test IBM SPSS ver 24.0 and p-value less than 0.05 was considered statistically significant. The odds ratio was calculated by the χ^2 test.

RESULTS

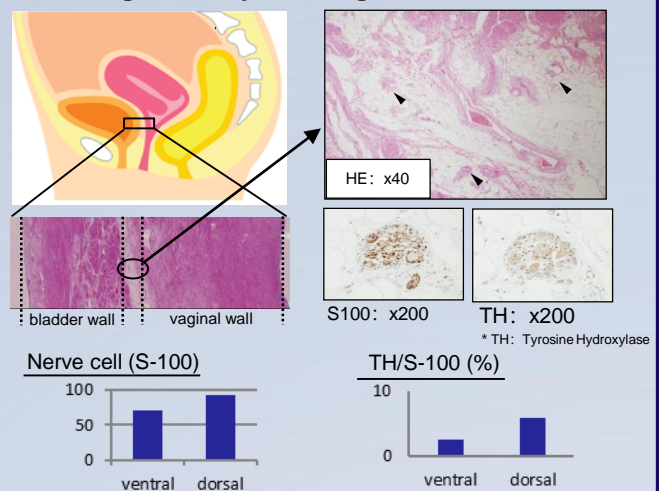
1. Predictive factors of OAB improvement after POP repair

	Univariate		Multivariate	
	c.c	p-value	c.c	p-value
age	- 0.165	0.280	-	-
Hypertension	- 0.075	0.619	-	-
Diabetes Mellitus	- 0.189	0.203	-	-
BMI	0.093	0.539	-	-
Pre-operation			-	-
Voiding volume	- 0.049	0.743	-	-
Residual urine	0.087	0.559	-	-
Peak flow	0.119	0.423	-	-
BCI	- 0.051	0.745	-	-
BOOI	0.150	0.340	-	-
Blaivas classification	0.031	0.837	-	-
ISD	0.047	0.768	-	-
Q tip test	- 0.182	0.295	-	-
POP stage	0.348	0.017	0.313	0.032
POP stage (>stage3)	0.374	0.009	0.374	0.009
Para-vaginal defect	0.538	< 0.001	0.538	< 0.001

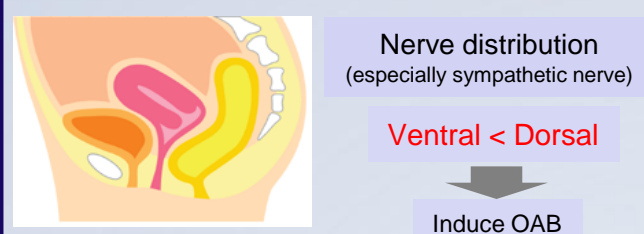
Odds ratio of each factors

factor	OR	P-value	95% CI
POP stage >3	6.00	0.013	1.41-25.42
Paravaginal defect	9.16	0.001	2.30-36.53

2. Histological analysis using bladder tissue



CONCLUSIONS



Patients with high stage POP or paravaginal defect improved OAB symptoms after POP repair. It was thought that the nerves present on the dorsal side of the bladder and the vaginal anterior wall is important in OAB symptoms appearance. In addition, the influence on the nerves by POP was thought to be reversible.

REFERENCES

- Johnson, J.R., et al., Female Pelvic Med Reconstr Surg, 2019
Petros, P.P. and U. Ulmsten, Eur J Obstet Gynecol Reprod Biol, 1998