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READJUSTABLE SLING PROCEDURE (REMEEX SYSTEM) FOR FEMALE STRESS URINARY INCONTINENCE WITH DETRUSOR UNDERACTIVITY

Hypothesis / aims of study

In patients with stress urinary incontinence (SUI) and detrusor underactivity (DU), many surgeons worry about the possibility of postoperative voiding problems. We hypothesized that adjusting tension after surgery would benefit patients with DU. We evaluated outcomes and quality of life of patients after a readjustable sling procedure (Remeex) for female SUI with DU.

Study design, materials and methods

We retrospectively analyzed the medical records of 27 patients who were treated with the Remeex system due to SUI with DU between 2007 and 2013. DU was defined as a contraction of reduced strength and/or duration, resulting in prolonged bladder emptying and/or failure to achieve complete bladder emptying within a normal time span. All patients were evaluated at baseline based on medical history, physical examination with stress test (cough provocation), uroflowmetry (UFM), post-void residual (PVR), and urodynamic study (UDS). Urodynamic evaluation consisted of filling and voiding cystometry, abdominal leak point pressure (ALPP), detrusor pressure at the time of maximum flow (PdetQmax) and maximal detrusor pressure (MaxPdet) measurements. All definitions and methods correspond to those of the ICS. We used the Sandvik incontinence severity index (ISI), which measures the severity of incontinence symptoms, Incontinence Quality of Life (I-QOL), which assesses incontinence-specific quality of life, and the incontinence visual analogue scale (I-VAS) to to evaluate the efficacy of the Remeex system before and 1 year after surgery. The treatment success was defined as no urine leakage on the Sandvik questionnaire.

Results

The mean follow-up period was 38.0 months (range, 1-75 months). Table 1 lists the baseline characteristics of the 27 patients who underwent the Remeex procedure due to SUI with DU. Patients had several etiologic factors leading to DU. Among the patients who underwent previous pelvic surgery, 16 patients (59.3%) underwent radical hysterectomy due to cervical cancer and one patient (3.7%) underwent Miles operation for rectal cancer. There were three patients (11.1%) with diabetes mellitus, two patients (7.4%) with spinal lesions (severe lumbar spine spondylosis and lumbo-sacral lipoma), and one patient (3.7%) with Parkinson disease. Four patients (14.8%) had idiopathic DU. Among the 27 enrolled patients, 1 patient was lost to follow-up. The treatment success was 81.5% (22/26). There were 7 patients who had no urine leakage after surgery but wanted removal of the Remeex system due to persistent postoperative urinary retention within a year. One patient underwent a long-term adjustment under local anesthesia at 6 years after the surgery. Among the treatment failure patients (4/26), 3 patients refused to be further readjusted and 1 patient underwent another midurethral sling (Miniarc®) operation at 5 months after surgery. In the subgroup analysis of 18 patients who had available I-VAS, ISI, and I-QOL questionnaires before and 1 year after surgery, there was significant improvement in I-VAS (<0.001). The mean total score of the I-QOL questionnaire increased (p=0.004) and mean avoidance and limiting behavior (p=0.004), psychosocial impact (p=0.006), and social embarrassment (p=0.009) domain scores also improved significantly. MFR decreased significantly after the procedure, but PVR did not change significantly (Table 2) Nine patients (50%) experienced I-QoL increases of more than 10 points, which represents the minimal important difference (MID) for I-QoL. MFR decreased significantly (p=0.044) after the procedure, but PVR did not change significantly (p=0.717) (Table 2).

Interpretation of results

The Remeex system is effective treatment option for patients with concomitant female SUI and DU with a success rate of 81.5%. Although further large-scale studies with a long-term follow-up period are needed, the Remeex system for female SUI with DU led to improved quality of life. Even though the symptoms of SUI can fluctuate and may recur if the midurethra is impacted by conditions such as atrophy, readjustment can be implemented easily whenever necessary.

Concluding message

The Remeex system for female SUI with DU led to improved quality of life. Our results demonstrated that the Remeex system could be considered as an option for patients with concomitant female SUI and DU.

Table1 Demographic data of 27 patients who underwent a readjustable sling procedure (Remeex) for female stress urinary incontinence with detrusor underactivity

Age, median (IQR)	59.0 (51-70)
BMI, mean ± SD (kg/m^2)	25.56 ± 3.12
No. of vaginal deliveries, median (range)	2 (1-9)
Mixed incontinence, n (%)	2 (7.4)
Previous anti-incontinence surgery, n (%)	
Tension-free suburethral sling operation	4 (14.8)
Bulking agent injection	5 (18.5)
Urodynamic study parameters, mean ± SD	
ALPP (cmH_20)	92.1 ± 36.8
PdetQmax (cmH_20)	17.4 ± 13.6
MaxPdet (cmH_20)	24.3 ± 16.1
MFR (ml/s)	12.6 ± 6.3
PVR (ml)	72.1 ± 88.8

IQR interquartile range, *BMI* body mass index, *ALPP* abdominal leak point pressure, *PdetQmax* detrusor pressure at the time of maximum flow, *MaxPdet* maximal detrusor pressure, *MFR* maximal flow rate, *PVR* post-void residual

Table 2 Changes in the severity of subjective symptoms as evaluated by questionnaire and uroflowmetry parameters in patients before and after the Remeex procedure

	Baseline	Post op	*P* value
I-VAS, mean ± SD	7.6 ± 2.3	3.1 ± 2.7	<0.001
Sandvik ISI			0.001
None	0	6	
Slight	1	3	
Moderate	0	3	
Severe	9	5	
Very severe	8	1	
I-QOL, mean ± SD			
Mean total I-QOL score	64.8 ± 90.2	146.8 ± 115.2	0.004
Mean avoidance and limiting behaviors	23.2 ± 32.8	51.2 ± 38.2	0.004
Mean psychosocial impacts	24.1 ± 29.9	51.3 ± 39.5	0.006
Mean social embarrassment	17.5 ± 29.3	44.1 ± 39.7	0.009
Maximal flow rate (MFR)	12.6 ± 6.3	8.9 ± 5.7	0.044
Post-void residual (PVR)	72.1 ± 88.8	56.8 ± 87.5	0.717

I-VAS Incontinence visual analogue scale, *ISI* Incontinence severity index, *I-QOL* Incontinence Quality of Life scale

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